VATIS UPDATE

Ozone Layer Protection

Vol. 4 No. 95 • Jul - Aug 2009
ISSN 0971-5657

Highlights

- Breakthrough systems for cold storage
- Non-ozone depleting vapour degreaser solvents
- Alternative blowing agents
- Reducing the global warming impact of aerosol cleaners
- New water mist-based systems
- Soil fumigants tested

United Nations
ESCAP

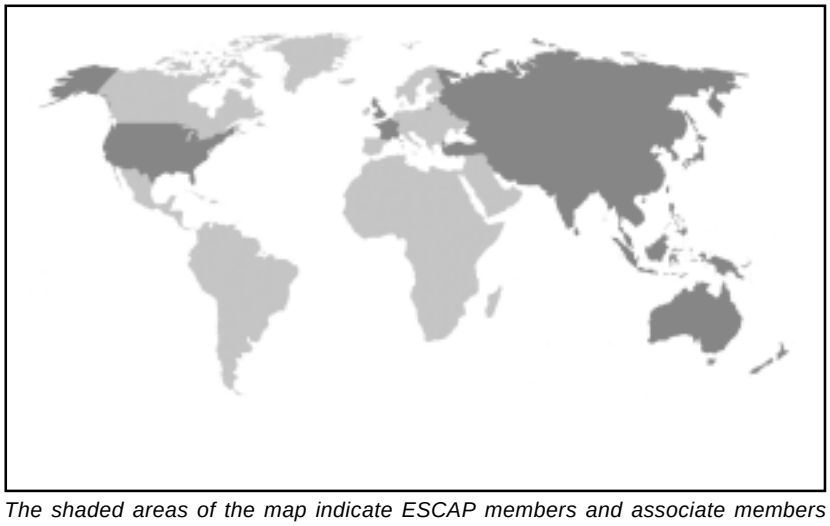
APCTT
ASIAN AND PACIFIC CENTRE FOR TRANSFER OF TECHNOLOGY

OZONE CELL
MINISTRY OF ENVIRONMENT AND FORESTS
GOVT. OF INDIA

The **Asian and Pacific Centre for Transfer of Technology (APCTT)**, a subsidiary body of ESCAP, was established on 16 July 1977 with the objectives: to assist the members and associate members of ESCAP through strengthening their capabilities to develop and manage national innovation systems; develop, transfer, adapt and apply technology; improve the terms of transfer of technology; and identify and promote the development and transfer of technologies relevant to the region.

The Centre will achieve the above objectives by undertaking such functions as:

- Research and analysis of trends, conditions and opportunities;
- Advisory services;
- Dissemination of information and good practices;
- Networking and partnership with international organizations and key stakeholders; and
- Training of national personnel, particularly national scientists and policy analysts.



The shaded areas of the map indicate ESCAP members and associate members

Cover Photo

Reclamation unit for CFC refrigerants recovered from railway coaches
(Credit: National CFC Consumption Phasing-out Plan, India)

VATIS* Update
Ozone Layer Protection
is published 6 times a year to keep the readers up to date of most of the relevant and latest technological developments and events in the field of Ozone Layer Protection. The Update is tailored to policy-makers, industries and technology transfer intermediaries.

Website: http://www.techmonitor.net

ASIAN AND PACIFIC CENTRE FOR TRANSFER OF TECHNOLOGY
Adjoining Technology Bhawan
Qutab Institutional Area
Post Box No. 4575
New Delhi 110 016, India
Tel: (91) (11) 2696 6509
Fax: (91) (11) 2685 6274
E-mail: postmaster@apctt.org
Website: http://www.apctt.org

OZONE CELL
Ministry of Environment and Forests
Government of India
Zone IV, East Court, 2nd Floor
India Habitat Centre, Lodhi Road
New Delhi 110 003, India
Tel: (91) (11) 2464 2176
Fax: (91) (11) 2464 2175
Telegram: PARYAVARAN NEW DELHI
E-mail: ozone@del3.vsnl.net.in
Website: http://www.ozonecell.com

*** Value Added Technology Information Service**

CONTENTS

Vol. 4 No. 95 Jul - Aug 2009

THE SCIENCE OF OZONE LAYER 4

Scientists reconfirm ozone depletion theory ✓ Sea ice extent at the poles linked to ozone hole

ODS PHASE-OUT IN INDIA 5

Carbon tetrachloride sector phase-out project – ODS IV ✓ Free consultancy on reducing use of carbon tetrachloride ✓ United Nations approves emission reduction plan ✓ Call to avoid carbon tetrachloride in stain removal

IN THE NEWS 6

Sub-regional workshop on ODSs ✓ Regional O-NET workshop on climate change ✓ CTC phase-out in Bangladesh's garment sector ✓ ODS to be banned ✓ Measures to control CTC imports in Pakistan ✓ EPA honours climate and ozone layer protection award winners ✓ UNEP initiates linkages between climate and ozone for Maldives ✓ Ozone award for SPREP ✓ Consumers and importers of HCFCs in Afghanistan ✓ Technician training on good practices in refrigeration

REFRIGERATION/AIR-CONDITIONING 9

Magnetic refrigerators ✓ New automotive refrigerant product line ✓ Spot air-conditioners use R-410A refrigerant ✓ Breakthrough systems for cold storage ✓ Air-cooled condensing units for efficient air-conditioning ✓ Solutions for industrial and commercial use ✓ Refrigerant circulation pumps for use with R-744

SOLVENTS 12

Non-ozone depleting vapour degreaser solvents ✓ Vapour degreasing ✓ Non-inflammable solvent blend ✓ Weapons cleaner degreaser ✓ Cleaning chemicals combine biodegradability, effectiveness

FOAMS 13

Fully integrated systems for PU foam production plants ✓ Alternative blowing agents ✓ High-pressure foaming machine ✓ Foam premixes feature improved processability

AEROSOLS 15

Safety of IB/A analysed ✓ Reducing the global warming impact of aerosol cleaners ✓ Phase III results for nasal aerosol in SAR ✓ Flutiform goes to FDA review

HALONS 16

Method for suppressing fires ✓ New water mist-based systems ✓ Water mist systems ✓ Alternative for shipboard machinery space fires

FUMIGANTS 17

Replacement for methyl bromide ✓ Soil fumigants tested ✓ Shank-and-drip-applied methyl bromide alternatives ✓ Alternative fumigants

RECENT PUBLICATIONS 18

TECH EVENTS 18

SCIENCE OF THE OZONE LAYER

Scientists reconfirm Ozone depletion theory

In Taiwan, a study undertaken by scientists at the Academia Sinica's Institute of Atomic and Molecular Sciences and National Chiao Tung University's Department of Applied Chemistry has confirmed that emissions of chlorofluorocarbons (CFCs) – major ingredients in refrigerants and propellants – cause ozone layer depletion, a theory that has been cast into doubt in the past two years. Mr. Jim J. Lin, an associate research fellow, and his colleagues were able to arrive at this conclusion by precisely measuring chlorine peroxide (ClOOCl) – generated when CFCs decompose – in a lab environment. ClOOCl has long been thought to trigger ozone destruction as the molecule absorbs sunlight and breaks into two chlorine atoms and an oxygen molecule, a process known as photolysis. Larger the absorption cross-section of ClOOCl, the faster ClOOCl absorbs sunlight and the faster chlorine atoms are generated, depleting the ozone layer. That fundamental theory was challenged, however, in 2007 when Mr. F. D. Pope and his co-workers from the Jet Propulsion Laboratory at the California Institute of Technology, the United States, presented contradictory data. The current work has reaffirmed traditional accounts of ozone layer depletion. (Source: www.etaiwannews.com)

Sea ice extent at the poles linked to ozone hole

Researchers from the British Antarctic Survey (BAS) and the United States National Aeronautics and Space Administration (NASA) report that the increased growth in Antarctic sea ice in the past 30 years is a result of changing weather patterns caused by the ozone hole. Sea ice plays a key role in the global environment – reflecting heat from the sun and providing a habitat for marine life. At both poles, sea ice cover is at its minimum during summer. However, during the winter freeze in Antarctica, this ice cover expands to an area about twice the size of Europe. Ranging in thickness from less than a metre to several metres, the ice sheets insulate the warm ocean from the frigid atmosphere above. Satellite images show that since the 1970s the extent of Antarctic sea ice has grown at a rate of 100,000 km^2 a decade. Satellite images of sea ice and computer models revealed that the ozone hole has strengthened the surface winds around Antarctica and deepened storms in the South Pacific area of the Southern Ocean surrounding the continent. This has resulted in greater flow of cold air over the Ross Sea (West Antarctica) leading to more ice production.

Lead researcher Prof. John Turner states, "Our results show the complexity of climate change across Earth. While there is increasing evidence that the loss of sea ice in the Arctic has occurred due to human activity, human influence in the Antarctic via the ozone hole has had the reverse effect and resulted in more ice. Though the ozone hole is in many ways holding back the effects of greenhouse gas increases on the Antarctic, this will not last, as we expect ozone levels to recover by the end of the 21st century. By then there is likely to be around one-third less Antarctic sea ice." Satellite data reveal the variation in sea ice cover around the entire Antarctic continent. While there has been a small increase of sea ice during autumn around the coast of East Antarctica, the largest changes are observed in West Antarctica. Sea ice has been lost to the west of the Antarctic Peninsula – a region that has warmed by almost 3ºC in the past 50 years. Further west, sea ice cover over the Ross Sea has increased. (Source: www.sciencedaily.com)

On-line Database of Trade Names of Chemicals Containing Ozone Depleting Substances

The OzonAction Programme of UNEP's Division of Technology, Industries and Economics developed a global database of the commercial trade names of chemical products containing ozone depeleting substances (ODS). This database is a valuable resource for customs officers who must be able to identify permitted products, as well as those banned or restricted under the Montreal Protocol and national legislations. This on-line database allows customs officers to access information on about 900 commercial chemical products to determine their ODS status.

For more information, access:

http://www.unep.fr/ozonaction/library/tradenames/main.asp
Or contact: ozonaction@unep.fr

ODS PHASE-OUT IN INDIA

Carbon tetrachloride sector phase-out project – ODS IV

In 1992, the Indian government ratified the Montreal Protocol making India eligible for financial support from the Multilateral Fund for implementing the Montreal Protocol. In order to support the nation's goal to decrease its Montreal Protocol-controlled carbon tetrachloride (CTC) production and usage levels to 0 per cent of its baseline level (the average level between 1998 and 2000) by 1 January 2010, the Government of India is eligible for a grant of US$40 million. The CTC sector phase-out project will compensate beneficiary CTC-using enterprises that convert their manufacturing/production facilities to non-CTC technologies. This compensation will go towards meeting incremental costs related to the introduction of CTC actually utilized during the baseline year. The target CTC-using sectors are solvents and process agents (including chlorinated rubber, chlorinated paraffin and pharmaceuticals). Implementation of the project started in early 2005, with roughly 40 conversion sub-projects in the pipeline. (Source: siteresources.worldbank.org)

Free consultancy on reducing use of carbon tetrachloride

On 10 May 2009, the Tiruchi Productivity Council (TPC) offered free consultancy at its premises on reducing the use of carbon tetrachloride (CTC) for the benefit of industrialists and researchers. Mr. Raja Mutthirulandi, the Secretary General of TPC, said that with the prices of CTC (used for cleaning purposes by engineering industries, offset printing, foundries, jewellery industry, textile industry, power plants and oxygen manufacturing units) doubling in the last two years due to the phase-out process, industries can save costs and increase profits by opting for cheaper and safer alternatives. The free consultancy was provided by Mr. V. Rama Subramanian, Consultant, and Mr. Naveen of the Bangalore-based GTZ Proklima International. Mr. Subramanian expressed that occupational exposure to toxic CTC affects the central nervous system, causing lethargy, headache, weakness, nausea and vomiting. Inhalation of high concentrations could damage the liver and kidneys. Quoting the International Agency for Research on Cancer, Mr. Subramanian said CTC is possibly carcinogenic for humans. *Contact: Mr. Raja Mutthirulandi, Tiruchi Productivity Council, 24 A, Nachiyar Koil Road, Woraiyur, India. Tel: +91 (431) 2762 320; E-mail: tpcsecretariat@gmail.com.* (Source: www.hinduonnet.com)

United Nations approves emission reduction plan

The United Nations climate change body has approved an emission reduction project by Indian tyre cord maker SRF Ltd. that will earn 1.78 million carbon credits for the firm. According the United Nations website, under the project, SRF will install a thermal oxidation system at its refrigerant gas manufacturing facility in Rajasthan, helping cut emission of greenhouse gas HFC 23. One certified carbon credit is equivalent to 1 tonne of carbon dioxide emissions. (Source: www.in.reuters.com)

Call to avoid carbon tetrachloride in stain removal

The Karur Exporters Association conducted a workshop on "Stain removal in textiles without using carbon tetrachloride (CTC)". Participants were enlightened on the need to avoid CTC in the stain removal process for maintaining a better environment. The usage of CTC along with other ODSs has already caused severe damage to the protective ozone layer. At this juncture, 193 nations have signed an agreement called the Montreal Protocol to stop the production and consumption of ODS, including CTC for solvent applications.

Deutsche Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Cooperation, GTZ) is one of the implementing agencies for development cooperation. The German and French governments have mandated GTZ, through its sectoral programme GTZ Proklima, to assist the Indian government in phasing out CTC by the end of 2009. CTC has been a popular solvent for destaining of textiles owing to its non-inflammability, rapid evaporation and effectiveness in removing various types of stains. (Source: www.hindu.com)

IN THE NEWS

Sub-regional workshop on ODSs

A sub-regional two-day workshop on ODS phase-out in military applications was held recently in Sri Lanka. Inaugurating the workshop, Mr. Champika Ranawaka, Sri Lanka's Environment and Natural Resources Minister, stated there will be climate-related conflicts in the future if the global community fails to protect the ozone layer. Mr. Ranawaka expressed that climate-related negotiations have not been fruitful, and climate-related terrorism is in the making and is already being witnessed in countries in Africa. Furthermore, countries in the Asia-Pacific region will need to collaborate with environmental and military experts to shut out ODS in these regions with greater and improved communication and help.

Mr. K. Madhava Sharma, Executive Secretary of the Montreal Protocol, observed that nearly 99 per cent of the ODS have been put out of use and the remaining 1 per cent is mostly military hardware. The workshop was attended by top military officers and scientists from China, Sri Lanka, Bangladesh, Indonesia, India, Malaysia and Pakistan. Mr. Sharma stated that none of the new military applications have ODS such as Halons and CFCs, which are needed to support existing systems that were previously designed to use these materials, and most of the countries in the region are still reliant on this military hardware. (Source: www.dailymirror.lk)

Regional O-NET workshop on climate change

In the Philippines, a Regional Ozone Network (O-NET) seminar-workshop and re-orientation forum – initiated by the Department of Environment and Natural Resources together with its Environmental Management Bureau (DENR-EMB) Regional Office I – was held at the Regional Education and Learning Centre (RELC) on the topic of mitigating the effects of climate change. The event focused mainly on the protection of the ozone – a gas that is naturally present in the atmosphere. Aiming to enjoin the general public in saving the ozone layer from total destruction, the government has formed a Presidential Task Force pushing for mitigation and adaptation as the primary programme.

The primary objective of the Regional O-NET is to enhance awareness of participants on ozone depletion and its ill-effects, help protect the ozone layer through different advocacy programmes for the phase-out of ODS by 2010 and, also the continuous patronization of ODS alternatives or ozone-friendly chemicals, products and services. Also part of the O-NET activities in the region, students from the Don Mariano Marcos Memorial State University are going their own way to win the battle against climate change by planting trees in target areas and cleaning of coastal areas; participation in lectures/forum on climate change in schools and on different communities. Focal point/organization of the O-NETs are the EMB regional offices. (Source: www.pia.gov.ph)

CTC phase-out in Bangladesh's garment sector

The Bangladesh Garments Manufacturers and Exporters Association (BGMEA) and Department of Environment (DOE) have embarked on a joint initiative to phase out the use of carbon tetrachloride (CTC) from the garment sector by the end of this year. CTC is used as a cleansing agent for metal and rubber components and stain remover for fabric. About 4,800 garments units in Bangladesh, which boosted the country's economy earning about US$7 billion to US$10 billion a year, use CTC under various brand names. But, the export-oriented sector is needed to stop use of the CTC under Montreal Protocol by 1 January 2010 to sustain its business in the global market.

With support from the United Nations Development Programme (UNDP), BGMEA and DOE arranged a workshop for garments businesses to equip them with the knowledge to phase out CTC. Addressing the inaugural session of the workshop, BGMEA President Mr. Abdus Salam Murshedy said initially representatives of 70 garment units were being trained on CTC phase-out and gradually it would be extended to all factories in the country. UNDP consultant Mr. Ksyem Prasad said many potential alternatives to CTC are available in the market. But, the garments industry should know about the measures that need be taken in order to use the alternatives. (Source: www.nation.ittefaq.com)

ODS to be banned

Bromochloromethane has been banned in Hong Kong under a new regulation. The Ozone Layer Protection Ordinance (Amendment of Schedule) Order 2009 will bring Hong Kong into compliance with the additional requirements under the Montreal Protocol. The Environment Bureau said this is another step by Hong Kong in restoring the ozone layer, which protects life on Earth against harmful ultraviolet radiation. Bromochloromethane was included as an ODS to be controlled under the Protocol in 1999. Implementation of the order is slated for 1 October 2009. (Source: www.news.gov.hk)

Measures to control CTC imports in Pakistan

Pakistan, a party to the Montreal Protocol since 1992, has been in full compliance with regard to import of various ODS. However, carbon tetrachloride (CTC) emerged as an area of concern due to its excessive import, which put the country at the risk of non-compliance under the Montreal Protocol. At the 41st meeting of the Executive Committee of the Multilateral Fund, Pakistan had signed an agreement whereby it *inter alia* agreed that allowable consumption of CTC during the years 2005, 2006, 2007, 2008 and 2009 would be 61.9, 42, 32, 15 and zero ODP tonnes, respectively. To regulate CTC imports, the Ministry of Commerce, on the recommendation of Ozone Cell, Ministry of Environment, allocated CTC import quota to five eligible importers in December 2004. Owing to lack of coordination between national and international stakeholders, a few importers manoeuvred to import CTC in excess of the allocated quota. The Ozone Cell accelerated its coordination with the national stakeholders, specially the Federal Bureau of Revenue and Ministry of Commerce, to monitor and control the import of CTC to bring the country back into compliance. However, as there is no restriction on the exporting country to export an ODS under the Protocol, the sword of unauthorized imports of CTC was hanging.

In order to arrest the problem, the Compliance Assistance Programme (CAP) team and its leader Mr. Atul Bagai, UNEP Regional Officer, provided an opportunity to the Programme Manager (Ozone Cell, Pakistan) to meet with his counterpart in the Republic of Korea, Mr. Lim, on the sideline of the South Asia and Southeast Asia Network Meeting of the ODS officers held in 2006 at Bangkok to exchange views for controlling the export of CTC from the Republic of Korea to some unauthorized importers in Pakistan. During this informal meeting initiated by UNEP, the ozone officer of the Republic of Korea provided information about an attempt of CTC import by a Karachi-based unauthorized importer. Later on, the National Ozone Unit (NOU) of Pakistan and NOU-Republic of Korea continued their cooperation under informal Prior Informed Consent system to exchange information on the import/export of ODS. This interaction and coordination facilitated NOU-Pakistan to curb the issue of illegal CTC trade, thereby bringing Pakistan back into compliance. In the wake of a ban imposed on CTC import and with the UNEP-initiated cooperation between NOU-Pakistan and NOU-Republic of Korea, CTC imports were brought down to zero in 2008 – one year ahead of the CTC phase-out target under the Montreal Protocol. The importing and exporting countries may follow this precedent of the UNEP-initiated South-South Cooperation to meet the challenge of illegal trade of various ODS. *Contact: Mr. M. M. Akhtar, National Programme Manager, Ozone Cell (Montreal Protocol Project), Ministry of Environment, Government of Pakistan, 339, Ravi Road, G-8/2, Islamabad, Pakistan. Tel: +92 (51) 9260 686; E-mail: Ozonecell@ymail.com.* (Source: www.unep.fr)

EPA honours climate and ozone layer protection award winners

The United States' Environment Protection Agency (EPA) is recognizing the achievements of more than 40 individuals, organizations and companies actively contributing to the restoration and protection of the Earth's ozone layer and climate system. The 2009 Ozone Layer Protection Award winners have enforced regulations on ODSs, increased public awareness of skin cancer prevention and also developed advanced supermarket refrigerant technologies. Further, the winners were responsible for eliminating ODS in medical, pest control and agricultural applications, where alternatives are difficult to implement.

The 2009 Climate Protection Award winners made exceptional contributions to climate protection.

Collectively, their actions are expected to avoid the equivalent of more than 6 billion metric tonnes of carbon dioxide emissions by 2020. The award winners are achieving these savings by slashing energy consumption, unveiling renewable energy technologies, initiating state policies to address climate change and promoting international action to reduce emissions of greenhouse gases. The Ozone Layer Protection Awards were established in 1990 to recognize outstanding contributions to ozone layer protection, while the Climate Protection Awards were established in 1998 to recognize firms, organizations and individuals for reducing emissions of greenhouse gases. Since the annual awards began, EPA has honoured recipients from over 50 nations. (Source: www.yosemite.epa.gov)

UNEP initiates linkages between climate and ozone for Maldives

UNEP Division of Technology, Industries and Economics' OzonAction Programme started development of the HCFC Phase-out Management Plan (HPMP) in Maldives during 18-22 April 2009. The initiative, headed by Mr. Atul Bagai, Regional Network Coordinator for South Asia, is the first of its kind and will explore the linkages between ozone and climate change while Maldives strives to initiate the phase out of HCFCs during 2010-2015. HCFCs are used extensively in refrigeration and air-conditioning in Maldives and in the tourism and fish processing industry, the two main backbones of the Maldivian economy. In addition to consultation meetings with government officials, stakeholders as well as industry representatives, Mr. Bagai met with Vice-President Dr. Mohammed Waheed Hassanmanik on Maldives' efforts in CFC phase-out and the challenges ahead for HCFC phase-out. The HPMP will be evaluating carbon emissions from the HCFC use and will suggest activities to phase out this use which will strengthen efforts of Maldives to make it carbon neutral in the next 10 years. (Source: www.unep.fr)

Ozone award for SPREP

The Secretariat of the Pacific Regional Environment Programme (SPREP) was honoured by the United States' Environmental Protection Agency with an Ozone Layer Protection Award for 2009. SPREP, the region's leader in environmental management and conservation, has coordinated regional ozone protection activities since its inception. SPREP's work with Pacific island countries and territories has resulted in the implementation of national legislation and other measures in the shift away from ODSs in the region. Mr. Espen Ronneberg, SPREP's Climate Change Adviser, stated that the award recognises the efforts of the region to deal with this important environmental issue. While the region contributes little to the global emissions of ODS, it is certainly doing its part to address the problem. (Source: www.solomontimes.com)

Consumers and importers of HCFCs in Afghanistan

Afghanistan ratified the Montreal Protocol on 17 June 2004 and has been implementing project activities, regulations and capacity-building activities to facilitate the phase-out of ODS. HCFCs are controlled substances used in air-conditioning and foam applications. Under the Montreal Protocol, consumption and production of these substances were required to be phased out by 2040 with a cap at 2015 levels from 2016 to 2039. In 2007, the parties to the Montreal Protocol came together and agreed to an accelerated phase-out of HCFCs. Under this accelerated HCFC phase-out, the baseline was defined as the average production and consumption for 2009 and 2010 for developing nations, which are required to freeze their HCFC consumption by 2013 at baseline level, and reduce by 10, 35, 67.5 and 97.5 per cent by 2015, 2020, 2025 and 2030, respectively. Between 2031 and 2040, 2.5 per cent average of baseline would be allowed for consumption in refrigeration and air-conditioning servicing applications. An important element of the accelerated HCFCs phase-out is to achieve this through adoption of technologies that minimize green house gas emissions.

In order to develop an overall HCFC phase-out strategy and to achieve the immediate targets of 2013 and 2015, National Ozone Unit, National Environment Protection Agency of Afghanistan, will prepare an HCFC Phase-out Management Plan with financial assistance from Multilateral Fund and UNEP. The government believes that data collection and strategy development is very important to achieve HCFC phase-out systematically, in line with the nation's commitments under

the Protocol. Refrigeration and the other relevant sectors need to assist in providing data and other inputs sought by consultants and government in this process. Government will also have periodic dialogues with the relevant agencies, specifically in the refrigeration sector, in the next few months and is expected to develop and implement a strategy for HCFC phase-out as per its Montreal Protocol commitments. *Contact: Mr. H.A. Haleemzai, National Ozone Officer, National Environmental Protection Agency, Shisdarak Kabul, Afghanistan. Tel: +93 (774) 758 811; E-mail: haroon.haleemzai @ozone-afghan.gov.af.* (Source: www.unep.fr)

Technician training on good practices in refrigeration

The Technician Training Programme on Good Practices in Refrigeration is aimed at strategically phasing out ozone depleting refrigerants in Sri Lanka. It was commenced in June 2001 as part of the Refrigerant Management Plan (RMP) for Sri Lanka with the assistance of UNEP under the Montreal Protocol. The RMP project consists of two components, Phase I and Phase II. Phase I commenced in June 2001 and ended in August 2002, while Phase II commenced in September 2001 and closed in September 2004. In October 2004, an Extension Training on Good Practices in Refrigeration was commenced as part of the National Compliance Action Plan (NCAP) for Sri Lanka with the assistance of UNEP under the Montreal Protocol. This first part of the project was successfully completed at the end of 2006 as scheduled, exceeding the targets set in the memorandum of understanding (MoU). Part two of the project commenced in January 2007 and was successfully completed at the end of 2008 as scheduled, again exceeding the targets set under the MoU. (Source: www.noulanka.lk)

Selection and Safe Use of Alternatives to CTC: Electrical Applications

India's National CTC Phase-out Plan has published technical document titled "Selection and Safe Use of Alternatives to CTC: Electrical Applications". Contact:

National CTC Phase-Out Plan
GTZ Proklima Country Office
A-33 Gulmohar Park, New Delhi, 110 049, India
Tel: + 91 (11) 2661 1021
Web: http://www.ctc-phaseout.org

REFRIGERATION/ AIR-CONDITIONING

Magnetic refrigerators

Researchers at Imperial College London, the United Kingdom, report significant progress on the path to making eco-friendly "magnetic" refrigerators and air-conditioning systems. Magnetic refrigeration technology could provide a "green" alternative to traditional gas-compression refrigerators and air-conditioners, requiring up to 30 per cent less energy without the use of ozone depleting chemicals or producing greenhouse gases.

A magnetic refrigeration system works by applying a magnetic field to a magnetic material, causing it to heat. That heat is removed from the system by water, cooling the material back to its original temperature. When the magnetic field is removed, the material cools even further, and it is this cooling property that researchers hope to harness for a wide range of applications. Imperial College London researchers' discovery of the pattern of crystals inside different alloys has a direct effect on how well they perform. According to Prof. Lesley Cohen, "This is an exciting discovery because it means we may one day be able to tailor-make a material from the 'bottom up' … so it ticks all the boxes required to run a magnetic fridge. This is important because finding a low-energy alternative to the refrigerators and air-conditioning systems in our homes and work places is vital for cutting our carbon emissions and tackling climate change." (Source: www.upi.com)

New automotive refrigerant product line

Empack, Canada, has launched the emzone automotive refrigerant product line, which includes premium products specially designed for the repair, maintenance and testing of mobile air-conditioning systems, replacing R-134a and R-12 products and substitutes. The emzone product line offers quality, value and superior performance resulting in colder vent temperatures, lower head pressure, improved system efficiency and greater gas mileage. The company's 12A products are eco-friendly,

non-ozone depleting and system safe. They are also ideal for car, truck, tractor and boat A/C systems. Products include refrigerant with UV dye, stop leak, dryer, system conditioner, oil charge and OdorStop. Kits and accessories are also available. (Source: www.autoserviceworld.com)

Spot air-conditioners use R-410A refrigerant

MovinCool®, the United States, reports to have upgraded all models in the Office Pro® and Classic Plus lines of portable spot air-conditioners, as well as the latest ceiling-mounted CM12 model, to use the environmentally friendly refrigerant R-410A. Unlike HCFC-based refrigerants such as R-22 (Freon), R-410A does not contain greenhouse gases, which contribute to the depletion of the ozone layer. The portable spot air-conditioners provide emergency, supplemental and seasonal cooling and moisture removal for a wide variety of applications, including server and telecom rooms, data centres, offices, warehouses, assembly lines, manufacturing processes and outdoor events. MovinCool's ultracompact, ceiling-mounted CM12 spot air-conditioner offers an efficient and cost-effective solution for applications where space is at a premium, such as server and telecom closets. *Contact: Mr. Eddie Stevenson, MovinCool, CIS Marketing Manager, United States of America. Tel: +1 (310) 9527 955; E-mail: eddie_stevenson @denso-diam.com; Website: www.movincool.com.* (Source: www.businesswire.com)

Breakthrough systems for cold storage

C&L Refrigeration, a United States-based provider of high-quality maintenance, engineering as well as construction services to the commercial and industrial air-conditioning and refrigeration industry, has announced the completion of new breakthrough systems for cold storage and green refrigeration. C&L Refrigeration was part of a 10-member design team and over 40 sub-contractors to address and resolve the commercial refrigeration challenges present in creating a solar-powered, energy-efficient cold storage compliant with Leadership in Energy and Environmental Design (LEED). The 134,511 sq. ft cold storage building for Innovative Cold Storage Enterprises Inc. (ICE) is a unique industrial refrigeration project because it is ground-breaking in its design and energy efficiency.

C&L's specific job involved resolving industrial refrigeration challenges related to building design, integration of the refrigeration system with the solar panels and handling wastewater generated from the refrigeration system. C&L was able to devise refrigeration solutions for not-so-typical challenges. Key goals of these solutions are:

- Reduce energy costs by about 75 per cent by producing the majority of the energy with solar panels to reduce carbon dioxide emissions; and
- Provide more storage capacity (6.5 million cubic feet) using less power. Because ICE II has another, older cold storage building, it will be possible to compare energy usage. The new building stores four times as much product at half the cost of ICE's first building.

Contact: Mr. Ron Cassell, President, C&L Refrigeration, United States of America. Tel: +1 (714) 9906 966. (Source: www.prweb.com)

Air-cooled condensing units for efficient air-conditioning

Advansor, a Denmark-based carbon dioxide (CO_2) expert, reports two new developments to its range of air-conditioning systems. The compSUPER AC series, derived from Advansor's existing range of the same brand, features high operational reliability and stable temperature control at low costs of operation and ownership. It can be employed for efficient air-conditioning in offices, production facilities and server room and rack cooling. Designed as a simple one-stage system for direct expansion, compSUPER AC can outperform the efficiency of HFC-based and hydrocarbon water chillers. Based on installation and application, Advansor's R-744 solution will decrease seasonal energy consumption between 10 and 20 per cent, compared with both solutions in Northern climate conditions. Moreover, the need for indirect water-based systems is eliminated, lowering both the installation costs and energy consumption.

The other product is a modified version of the company's transcritical CO_2 booster systems compSUPER (Type B). The new product range of

modular refrigeration systems has been developed to meet more specialized customer needs and respond to technical preferences. It already encompasses more than 15 different configurations in the capacity range between 10 kW and 250 kW, covering a temperature range from -45°C to 15°C. In contrast to the basic compSUPER series, the R-744 booster models use Bitzer compressors and are designed to expand their application range towards both smaller set-ups in the retail sector and large supermarket and light industry segments. The first two systems of the compSUPER (Type B) have been successfully installed in Danish supermarkets, already proving their efficiency and reliability. *Contact: Advansor, Bautavej 1A, 8210 Arhus V, Denmark. Tel: +45 8744 1141; E-mail: info@advansor.dk.* (Source: www.r744.com)

Solutions for industrial and commercial use

In the United States, Carrier Corporation, one of the world's largest providers of domestic and industrial climate control solutions, has joined R744.com as a Gold Partner and will showcase its wide range of integrated solutions that make carbon dioxide (CO_2) systems an attractive alternative to HFC systems. Carrier is actively supporting developments in booster systems to decrease energy consumption, complexity and cost for combined low-temperature (LT) and high-temperature (HT) systems. Two ground-breaking technologies for Carrier are transcritical CO_2 refrigeration systems and CO2OLtec™ technology. Carrier Commercial Refrigeration installed the world's biggest transcritical CO_2 refrigeration unit. The equipment cools food in a hypermarket in North Germany, where three HT packs with a total capacity of 670 kW and two LT packs with a capacity of 130 kW are in operation. Carrier has also developed a two-step technology with CO_2 refrigerant, allowing the pressure on the supermarket shop floor to be kept at reasonable levels (around 40 bar), with only the plant areas requiring higher pressures. At Sainsbury's in Greenwich, the United Kingdom, Carrier has completed the first transcritical store based on water cooling, converting the store's refrigeration system to CO_2 with only 10 days of shutdown.

CO2OLtec technology is a viable long-term solution which significantly reduces direct and indirect emissions. In addition, this technology utilizes smaller pipe diameters compared with traditional HFC refrigerants due to the 4- to 6-fold increase in volumetric cooling capacity of CO_2. Carrier's CO2OLtec system is increasing traction in the European food retail sector, with particular success in Switzerland, Germany and Scandinavia. For LT applications, 120 stores with a total of 3,900 kW installed cooling capacity are in operation at present; in addition, 61 stores with a total capacity of 9,000 kW are fitted with CO2OLtec technology for medium temperature applications. Furthermore, Carrier has extended its CO2OLtec technology beyond its use in supermarkets and hypermarkets to discount store applications. CO2OLtec systems, ranging in capacity from 50 kW to 90 kW, are now being used in environmentally sound and efficient refrigerating plants in Aldi Sud discount stores. (Source: www.r744.com)

Refrigerant circulation pumps for use with R-744

Grundfos, a leading pump manufacturer based in Denmark, expects to launch its first series of variable-speed refrigerant pumps that are designed and optimized for carbon dioxide (CO_2) beginning 2010. Currently in the development phase, the new product is meant to be innovative in many ways compared with existing products and will offer new possibilities to the CO_2 refrigeration industry. A key benefit of the new product series will be the use of intelligent capacity control to obtain high energy efficiency of the pump and low system energy uptake. The variable-speed refrigerant pumps are primarily designed for commercial as well as industrial refrigeration applications.

Grundfos was so far focused only on the secondary (water) sides of the systems, but is now getting ready to complete its product programme for air-conditioning and refrigeration with pumps available for both primary and secondary circuits. Grundfos and Johnson Controls have jointly demonstrated results from a field test of a prototype refrigerant pump in a CO_2/R-404a cascade system. Using a variable speed for pump capacity control and improving the pump energy efficiency led to an 8 per cent energy optimization for the system, with further energy saving potential envisaged. (Source: www.r744.com)

SOLVENTS

Non-ozone depleting vapour degreaser solvents

Designed to clean electronics, optics and metal parts, Precision-V solvents from Techspray Inc., the United States, leave no residue, evaporate quickly and are non-inflammable with no flashpoint. The non-ozone depleting replacements for cleaners containing Freon, HFC-141b and AK225 ensure that electronics, optics and metal parts are quickly and thoroughly cleaned, eliminating the need for further rinsing. Exposure to Precision-V solvents is less hazardous compared with several other solvents commonly used in vapour degreasers like TCE, nPB and Perc. Moreover, these solvents have a lower boiling point than most other vapour degreaser solvents. This reduces heat stress on the components being cleaned and reduces energy consumption from the boil sump and chiller coils.

Parts Cleaner 1654 and Flux Remover 1655 have azeotropic properties that allow them to maintain stability as they are cycled in a vapour degreaser. They are neither reactive nor corrosive to metals commonly found in the construction of vapour degreasers. Parts Cleaner removes oil, grease, silicone and other industrial contaminants. Flux Remover cleans R, RA, RMA and SA type flux residues after high-temperature reflow, wave and hand soldering. It is ideal for lead and lead-free processes. *Contact: Mr. Kevin Pawlowski, Senior Product Manager, Techspray Inc., 1001 Northwest 1st Street, Amarillo, TX 79107, United States of America. Tel: +1 (806) 3728 523; Fax: +1 (806) 3728 750; Website: www.techspray.com.* (Source: news.thomasnet.com)

Vapour degreasing

Enviro Tech Europe's EnSolv 5408 product has been widely accepted as the alternative to the carcinogenic trichloroethylene (TCE) in aerospace manufacturing. More recently, a leading United States' military aerospace manufacturer approved the product under strict criteria after performance testing. Boeing has already approved EnSolv 5408 for degreasing commercial aircraft components. Under the Boeing PS 12020 specification, the use of EnSolv 5408 has been extended to include military applications – for vapour degreasing of aircraft of the F-18 and F-16 range.

Enviro Tech Europe reports its commitment to aerospace testing is providing clear testimony to the high-performance criteria to be found when using EnSolv 5408 for critical cleaning. Vapour degreasing is the first choice for the manufacturing industry when seeking to degrease finished or semi-finished components. While EnSolv 5408 holds a unique position with aerospace, it is available for any critical application in industry. This continuing level of approval offers users a number of assurances regarding performance traits to be gained. (Source: www.manufacturingtalk.com)

Non-inflammable solvent blend

Solvokane™ was developed by Solvay Fluor GmbH of Germany to meet the present and upcoming demands of the precision cleaning industry. This new solvent blend is based on Solkane® 365mfc (1,1,1,3,3-pentafluorobutane) and t-DCE (1,2-dichloroethylene). Solvokane, which offers product characteristics very close to HCFC-141b and CFC-113, can be used for a wide range of cleaning applications. *Contact: E-mail: solvents@solvay.com.* (Source: www.solvaychemicals.com)

Weapons cleaner degreaser

ABC Green 115 weapons cleaner (WC) from the United States-based American Bio-Clean Corp. is a non-toxic, heavy-duty product utilized for the removal of hydrocarbons as well as residues from weapons and other metal surfaces. ABC WC was developed to eliminate concerns associated with health, safety, disposal and/or transportation of liquid hydrocarbon wastes found in common solvent cleaning fluids. The bioremediating, water-based cleaner/degreaser provides superior results while decreasing or eliminating waste disposal problems caused by the use of ordinary solvent cleaners. Benefits provided by ABC Green 115 WC are:

- Microbes transform wastes into harmless by-products and then function to clean any previously existing contamination;
- Quick breakdown, encapsulation and removal of oily wastes and propellant residues;

- Non-pathogenic, fumeless and gentle to the skin;
- Breaks the liquid waste liability trail with no need for off-site disposal of the cleaning fluid;
- WC will not cause flash rusting;
- Aquatic toxicity test results available;
- Has South Coast AQMD (California) approval;
- Bioremediation action begins immediately and continues at an accelerated rate; and
- Non-hazardous, non-toxic, non-inflammable and contains no butyls, caustics, acids or phosphates.

Contact: American Bio-Clean Corp., 5412 Bolsa Avenue, Ste. D, Huntington Beach, CA 92649, United States of America. Tel: +1 (888) 924 6468; Fax: +1 (714) 3731 991; E-mail: sales@americanbioclean.com; Website: www.americanbioclean.com. (Source: www.americanbioclean.com)

Cleaning chemicals combine biodegradability, effectiveness

Daimer Industries, a leading manufacturer and distributor of commercial cleaning products based in the United States, announced a new line of eco-friendly cleaning chemicals. Designed to set a new green standard for the cleaning industry, the Eco-Green® series includes more than 100 products and formulations derived from plants and vegetables. These products do not contain any ODS, synthetics or VOCs while being effective on stains and dirt. Certified as readily biodegradable, the chemical formulas biodegrade by more than 90 per cent within 28 days and are also safe to use. Eco-Green chemicals are also safe to use, as evidenced by all zero values on the National Fire Protection Association (NFPA) hazard diamond.

Micro-Blasting® technology optimizes effectiveness by using nano-based particles to pierce carbon bonds of stains/build-up. This action breaks unwanted substances into billions of tiny particles that disperse in water and repel one another. As a result, the particles are easy to remove and are less likely to re-adhere to the cleaned surfaces. The Eco-Green line offers solutions for a variety of cleaning needs, including adhesive and ink remover, deodorizer, hard surface cleaner, etc. *Contact: Daimer Industries, 16 Tower Office Park, Woburn, MA 01801, United States of America. Tel: +1 (781) 3934 900; Website: www.daimer.com.* (Source: news.thomasnet.com)

FOAMS

Fully integrated systems for PU foam production plants

Polyurethane Process Industries LLC, the United States, designs, manufactures and supplies fully integrated, turnkey systems for the production of insulating foam panels, domestic and industrial refrigerator cabinets and doors, building materials and many other end uses. The plant installations and retrofits include start-up, testing, training of plant personnel, and ongoing service and support. From raw material storage to final stacking and packing lines, the company provides systems to manufacture virtually any type of insulating foam product. Key highlights of the systems are:

- Continuous flexible and rigid face panel plants for large-scale production of high-quality panels using different substrates, such as paper or metal, and PIR/PUR type polyurethane foam or rockwool bonded with polyurethane adhesive;
- Discontinuous panel plants for the production of metal-faced panels for walk-in cooler and building panel applications; and
- Domestic and commercial refrigerator plants – Complete plants for manufacturing cabinets and doors, featuring modular equipment designed for versatility and improved production.

Contact: Polyurethane Process Industries LLC, 410 Unity Street, Suite 820, Latrobe, PA 15650, United States of America. Tel: +1 (724) 5394 505; Fax: +1 (724) 5394 507; E-mail: info@pu-process.com. (Source: www.pu-process.com)

Alternative blowing agents

The need for insulation materials with improved energy efficiency and environmental profiles has led Arkema, the United States, to investigate low-global warming potential (GWP) blowing agents designed for most polyurethane (PU) foam applications, such as appliances, pour-in-place, spray and PIR boardstock. These fourth-generation blowing agents – the AFA series – are being developed in both liquid and gas formulations to replace HFCs such as HFC-245fa and HFC-134a. All the AFA molecules have very low GWP values – less than

15 – and negligible ozone depleting potential (ODP) values. AFA-G1 and AFA-G2 have a lower inflammability limit at ambient temperature. However, AFA-L1 showed neither a flashpoint nor an inflammability limit in ambient conditions. Both AFA-L1 and AFA-L2 have low gas-phase thermal conductivity, comparable with HCFC-141b, which should contribute to the insulation value of rigid PU foam.

DuPont Fluoroproducts, based in the United States, has developed a fourth-generation expansion agent for PU foams. FEA-1100 is characterized by zero ODP, very low acute toxicity and a low GWP value of 5. Since it is liquid at room temperature, problems associated with the use of lower boiling agents like HFC-245fa are eliminated. In addition, FEA-1100 has been shown to be non-inflammable in standard ASTM tests. PU foams produced with FEA-1100 are characterized by low foam density, uniform cell size and R values higher than HFC-245fa. Similarly, polyisocyanurate foams produced with FEA-1100 are characterized by low foam density, uniform cell size and R values higher than foams blown with HFC-245fa. While foam expansion agents can be used singly, mixtures of different physical foam expansion agents can be useful for optimizing foam performance.

As HCFC-22 has been phased out, manufacturers of urethane insulation panels for the construction and commercial appliance industries are faced with the difficult decision of either staying with a froth type blowing agent, such as HFC-134a, or transitioning to a liquid (or near liquid) alternative such as pentane, water, HFC-245fa or ecomate, a patented methyl-formate use developed by Foam Supplies. A comparison of properties shows that ecomate has a GWP of 0, compared with 1,300 GWP for HFC-134a, 140 GWP for HFC-152a and 950 GWP for HFC-245fa. Regarding inflammability, ecomate has less potential to burn than either n-pentane or c-pentane, and ecomate has better inflammability traits than HFC-152a. Ecomate can be formulated into polyol systems having flashpoints for the compounded system greater than 35°C, making them safe for shipments without Red Placards. (Source: www.appliancedesign.com)

High-pressure foaming machine

Zhangjiagang Strength and Industrious Machinery Co. Ltd., China, offers HPM-P series high-pressure foaming machine with cyclopentane that is widely used in all the non-HCFC polyurethane foaming industries, meeting requirements for producing green products. Key advantages of the HPM-P machine include enclosure and gas-exhausting system for polyol/cyclopentane units, long-distance monitoring system for production area, grounding, leakage monitoring and control, and inflammable gas detecting and monitoring system. *Contact: Zhangjiagang Strength and Industrious Machinery Co. Ltd., Sanxing Economic-Developing Zone, Jinfeng Town, Zhangjiagang City, Jiangsu Province, China. Tel: +86 (512) 5857 8986; Fax: +86 (512) 5853 5299; E-mail: liqin@zsim.com; Website: www.zsim.com/egsjj.htm Or www.zsim.en.alibaba.com.* (Source: www.alibaba.com)

Foam premixes feature improved processability

Arkema Inc., the United States, has obtained a patent for its method to improve the processability of foam premixes containing HFC and/or pentane-based blowing agents in polyols, which method comprises adding trans-1,2-dichloroethylene to foam premix in an amount effective to enhance the processability. Preferred HFCs include HFC-245fa, HFC-365mfc and HFC-134a. Preferred pentanes include n-pentane and iso-pentane.

The practice of the invention is illustrated in more detail in the following non-limiting examples. First, compatibility of HFC blowing agents (HFC-245fa and HFC-365mfc) with and without trans-1,2 was tested in polyester polyol (Stepan Co.'s Stepanol PS2412 with hydroxyl number of 230-250). When 39 parts of HFC-245fa was added to 100 parts of the polyester polyol without trans-1,2, phase separation occurred. When trans-1,2 was added to HFC-245fa, in 50:50 weight ratio, a homogeneous, one-phase polyol mixture was obtained at a level equivalent to about 50 parts of HFC-245fa to 100 parts polyol. Similar results were found when HFC-365mfc replaced HFC-245fa. Second, the vapour pressure of HFC-134a and HFC-134a/trans-1,2 blends in polyether and polyester polyols was measured. In both polyols, addition of trans-1,2 was found to lower the vapour pressure of the premix, although the improvement was found to be most significant with the polyester polyol. (Source: www.freepatentsonline.com)

AEROSOLS

Safety of IB/A analysed

A study has revealed that the efficacy and safety of ipratropium bromide/albuterol (IB/A) inhaled via a propellant-free inhaler (Respimat) are on par with that of IB/A CFC inhaled via a metered-dose inhaler, and superior to IB alone inhaled via a propellant-free inhaler, in patients with moderate to severe chronic obstructive pulmonary disease (COPD). Designed to replace the metered-dose inhaler, a propellant-free inhaler can improve the efficiency of the drug being delivered to the lungs by generating a slow-moving aerosol over 1.5 s. According to Mr. Richard ZuWallack, St. Francis Hospital Medical Centre, the United States, this facilitates coordination with inhalation and a higher fine particle fraction. In the randomized, double-blind, 12-week, parallel study, researchers studied the efficacy, safety and pharmacokinetics of IB/A 20/100 mcg inhaled via propellant-free inhaler with IB/A 36/206 mcg inhaled via metered-dose inhaler, and IB 20 mcg inhaled via propellant-free inhaler. (Source: www.docguide.com)

Reducing the global warming impact of aerosol cleaners

The new propellant from Honeywell, the United States, is reported to reduce the global warming impact of some industrial aerosol cleaning products by up to 99.6 per cent. The HFO-1234ze propellant with low-global-warming potential is being used by MicroCare – a leading precision cleaning, coating and lubricating products company – in four best-selling aerosol cleaners in Europe.

By European Union standards, HFO-1234ze is non-inflammable and has zero ozone depletion potential (ODP) and a global warming potential (GWP) of six. In some aerosol applications, HFO-1234ze serves as a direct replacement for HFC-134a, which has a GWP of approximately 1,300. The HFO-1234ze propellant can be used as a drop-in for current gases such as HFC-134a, achieving very similar functionality with superior environmental properties. HFO-1234ze propellant offers European consumers an environmentally friendly alternative to products containing higher GWP propellants. Earlier, the company had introduced another low-GWP product, HFO-1234yf, as a replacement for R-134a in automotive A/C systems. *Contact: Website: www.honeywell.com.* (Source: sev.prnewswire.com)

Phase III results for nasal aerosol in SAR

Sepracor Inc., the United States, has announced the results of a large-scale, 707-patient Phase III study of Omnaris® (ciclesonide) HFA, an aerosol nasal formulation of ciclesonide, for the treatment of seasonal allergic rhinitis in adolescent and adult patients. Omnaris HFA met its primary efficacy endpoint by exhibiting a statistically significant reduction in the 24 h reflective total nasal symptom score (TNSS), which assesses common allergy symptoms of nasal congestion, itching, sneezing and runny nose versus a placebo. Also, Omnaris HFA statistically significantly met its key secondary endpoints of improvement in the 24 h TNSS and the 24 h reflective total ocular symptom score (TOSS) versus a placebo. The HFA device has been designed to deliver a fine, dry mist of medication, administered by a metered-dose device, to the patient's nose. *Contact: Ms. Jonae R. Barnes, Sepracor Inc., United States of America. Tel: +1 (508) 4816 700.* (Source: www.reuters.com)

Flutiform goes to FDA review

The United States Food and Drugs Administration (FDA) has accepted SkyePharma Plc.'s new drug application (NDA) for its lead development product, Flutiform (fluticasone propionate/formoterol fumarate), an investigational treatment for persistent asthma in patients 12 years of age and older. If approved, Flutiform will be the first-ever fixed-dose medication combining fluticasone, an inhaled corticosteroid (ICS), and formoterol, a long-acting beta agonist (LABA), in the United States. Flutiform, which uses an eco-friendly aerosol propellant, hydrofluoroalkane, in a metered-dose inhaler, is aimed at the combination ICS/LABA inhaler market, which is forecast to generate about US$10 billion worldwide by 2010. The regulatory review timeline for asthma treatments is typically longer than the standard 10-month Prescription Drug User Fee Act (PDUFA) timeline, said a press release from SkyePharma. (Source: www.domain-b.com)

HALONS

Method for suppressing fires

Great Lakes Chemical Corp., the United States, is patenting an invention related to the field of fire extinguishing compositions and methods to deliver those fire extinguishing compositions to or within a protected hazard area. According to one embodiment of the invention, a method is provided for extinguishing fires which comprises a system consisting of a fluorocarbon fire suppression agent stored in a suitable cylinder, and an inert gas fire suppression agent stored in a second cylinder. Both the fluorocarbon and the inert gas cylinders are connected through an appropriate piping and valves to discharge nozzles located within the hazard being protected. Upon detection of a fire, the suppression system gets activated. *Contact: Great Lakes Chemical Corp., 1 Great Lakes Boulevard, West Lafayette, IN 47906, the United States.* (Source: www.freepatentsonline.com)

New water mist-based systems

Japan External Trade Organization (JETRO) is offering Mistex and Fogex water mist fire protection systems that create very fine water mist droplets. The nozzles for Mistex and Fogex are usually installed at the ceiling level (just like conventional sprinklers) or can also be installed on the walls of rooms. Mistex is a low-intermediate pressure water mist fire extinguishing system operating up to 22 bars. Fogex is a high-pressure water mist fire extinguishing system operating at up to 110 bars. The light-weight, reliable, efficient and safe-to-use Mistex and Fogex units are alternatives to halon, carbon dioxide and conventional water sprinklers. These products have various Classification Society approvals and can be used on electrical fires, e.g. in computer rooms, electrical switch gear rooms, telecommunication rooms, electric transformers and escalator rooms. Systems can be manufactured and supplied as:

- Skid units (used when electric or diesel pump options are not required);
- Pump units (fixed installations for relatively large projects, e.g. high-rise buildings, rail sub-stations, electric transformer sub-stations); and
- Portable sets (used when mobility is required, e.g. around fuel depots and fire brigades vehicles).

Contact: Japan External Trade Organization, Ark Mori Bldg., 6F 12-32, Akasaka 1-chome, Minato-ku, Tokyo 107-6006, Japan. (Website: www.jetro.go.jp)

Water mist systems

Fogtec Brandschutz GmbH & Co. KG, Germany, offers 100 per cent environmentally friendly and safe systems. The key to Fogtec's fire-fighting effectiveness is the generation of very fine water droplets. The size of the droplets is classified as NFPA 750 Class I. This extremely small droplet size makes the Fogtec system highly effective while using only small amounts of water. Crucial factors are the systems' ability to cool and the localized oxygen displacement effect.

As a result of the water being atomized at high pressure, the surface area available for cooling is considerably greater than conventional low-pressure systems. This means Fogtec systems extract the energy (heat) far more rapidly and effectively from the fire. A pre-warning time prior to activation to protect persons normally is not necessary. There are no corrosive by-products generated to impair electrical or electronic parts. *Contact: Fogtec Brandschutz GmbH & Co. KG, Schanzenstraße 19a, 51063 Köln, Germany. Tel: +49(0221) 962 230; Fax: +49 (0221) 962 2330; E-mail: information@fogtec.com.* (Website: www.fogtec-international.com)

Alternative for shipboard machinery space fires

Research at the Australian Defence Science and Technology Organization has determined water mist to be a preferred alternative to Halon-1301 total flooding for extinguishing fires occurring in ship machinery spaces and pump rooms, as it is toxicologically and physiologically inert. Water mist systems produce a drop size distribution with a range of drop sizes under 1,000 µm, while the more conventional sprinkler systems produce much coarser particles. Mist systems also have lower water demands than sprinkler systems, which is beneficial in shipboard applications where prolonged sprinkler discharges may affect stability. (Source: www.defensetechbriefs.com)

FUMIGANTS

Replacement for methyl bromide

Dr. Harold Walker of Auburn University, the United States, recently presented the latest research on his work in finding a replacement for methyl bromide fumigant in sod production. Dr. Walker's research examines several pest management tools, namely mechanical (primary and secondary tillage), biological (using Velvet bean to ward off nematodes), chemical (selective and non-selective herbicides) and cultural (using two seeding rates in seeded turf-grass production). Of all of the methods tested, Dr. Walker reported that a combination of chemical herbicides Basamid and Eptam yielded the best results. Dr. Walker has also drawn up estimated timetables for the safe sprigging of certain grass varieties after utilizing Eptam as a pest control. (Source: www.athleticturf.net)

Soil fumigants tested

In the United States, a student research team led by Fresno State biology professor Ms. Alice Wright is looking for ways to help California's agricultural industry transition from the use of methyl bromide to less toxic chemicals that will still help control unwanted soil organisms. The team has spent the last three years studying the performance of four alternative chemicals – chloropicrin, methyl iodide, propargyl bromide and dichloropropene – that may be useful to agriculture.

Prof. Wright has also developed a protocol for testing the effects of the chemicals. The protocol involves application of various formulations of the fumigants to soil samples with typical bacterial and fungal populations, then monitoring the samples for up to 36 weeks to determine micro-organism mortality rates. The researchers used molecular study techniques to characterize changes in the soil microbial communities after each treatment application. Long-term soil monitoring indicated no significant increase of micro-organisms after 3 weeks, suggesting the impacts of the fumigants is lasting. Examinations at 36 weeks indicated that the soils had returned to normal condition in terms of micro-organism repopulation. (Source: www.fresnostatenews.com)

Shank-and-drip-applied methyl bromide alternatives

In California, the United States, producers of perennial crop nursery stock like fruit and nut trees and garden roses must meet stringent regulations to ensure that the crops are free of economically important nematodes. Two fumigation trials in perennial crop field nurseries with sandy loam and clay loam soils were undertaken to compare efficacy of fumigants applied through standard shank-injection equipment or as emulsifiable compounds applied through drip irrigation equipment. In the garden rose nursery trial, nematodes were detected at planting in the untreated control, no-tarpaulin 1,3-dichloropropene + chloropicrin, and chloropicrin alone several months after treatment. Nematode genera included *Tylenchorhynchus* spp. (stunt nematode) and *Meloidogyne* spp. (root-knot). At harvest two years later, root-knot nematode was detected in rose roots from untreated plots and plots treated with untarped 1,3-dichloropropene + chloropicrin, metam sodium and chloropicrin alone. In the tree nursery field trial, shank-injected treatments typically provided better nematode control than the same chemicals applied via drip lines, even though results for weed control and marketable trees were similar among treatments. (Source: www.ars.usda.gov)

Alternative fumigants

A study was undertaken as part of the Area-wide Pest Management Project for Methyl Bromide Alternatives (South Atlantic Region) of the United States Agriculture Department's Agricultural Research Service, and the long-term continuing effort by the Auburn University Southern Forest Nursery Management Cooperative to evaluate methyl bromide (MeBr) alternatives. Results showed seedling densities above their target level of 22 trees/sq. ft for all fumigant treatments. Soil data at 4 weeks post-sowing showed higher levels of *Trichoderma* in MeBr treatment, consistent with earlier Nursery Cooperative research showing *Trichoderma* as a key soil-borne fungus necessary for proper growth of pine seedlings. Nematodes were not detected in any fumigated treatment at four weeks post-sowing. Low and trace levels of Stunt, Ring and Stubby root nematode were found in the non-fumigated treatment. (Source: www.mbao.org)

RECENT PUBLICATIONS

Fumigants and Nematicides

This report covers supply and demand statistics for fumigants and nematicides in the United States, Western Europe and Japan. A limited amount of information on producers of fumigants in other world regions is also provided, as available. Key highlights provided in the report are:

- In the United States, consumption of fumigant and nematicide active ingredients is expected to increase at an average annual rate of 0.2 per cent during the 2008-2013 period;
- In Japan, the nematicides and fumigants market is expected to decline during 2008-2013, and growth in Europe, the Middle East and Africa is expected to be slight; and
- In Asia, there are a number of fumigant and nematicide producers as well as users. Aluminium phosphide is produced and exported by China and India. In Indonesia, methyl bromide is used for pre-shipment and quarantine applications.

Contact: SRI Consulting, 4300 Bohannon Drive, Suite 200, Menlo Park, California, 94025, United States of America. Tel: +1 (650) 3844 300; Fax: +1 (650) 3301 149.

Vapour Compression Heat Pumps with Refrigerant Mixtures

This handbook provides the first comprehensive, single-source treatment of working fluid mixtures and their applications in vapour compression units. Topics covered include detailed thermodynamics of refrigerant mixtures, which is vastly complex than that of individual refrigerants; fundamentals of various refrigeration cycles and methods for improving their efficiency; examples of utilizing refrigerants and their mixtures; and critical operational issues like control issues, refrigerant mixing and mass fraction shifts.

Contact: CRC Press, United Kingdom. Tel: +44 (1235) 400 524; Fax: +44 (1235) 400 525; E-mail: book.orders@tandf.co.uk.

TECH EVENTS

7-11 Sep
Bangkok
Thailand

RHVAC 2009
Contact: Thai Trade Fair,
22/77, Rachadapisek Road,
Chatuchak, Bangkok, 10900,
Thailand.
Tel: +66 (2) 5116 020;
Fax: +66 (2) 5116 008-10;
E-mail: titfd@depthai.go.th.

14-19 Oct
Jakarta
Indonesia

AIRCON Indonesia 2009
Contact: PT. Pamerindo Buana Abadi,
Deutsche Bank Building,
13th Floor, Jl. Imam Bonjol No.80,
Jakarta, 10310, Indonesia.
Tel: +62 (21) 3162 001;
Fax: +62 (21) 3161 981;
E-mail: info@pamerindo.com.

6-8 Nov
Manila
Philippines

Refrigeration Philippines 2009
Contact: Global-Link Marketing
and Management Services Inc.,
1003, Antel 2000 Corporate Centre,
121, Valero Street, Salcedo Village,
Makati City, The Philippines.
Tel: +63 (2) 7508 588;
Fax: +63 (2) 7508 585;
E-mail: jing@globallinkph.com.

10-13 Nov
San Diego
United States

2009 Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions
Contact: Methyl Bromide Alternatives
Outreach, 6556 N. Dolores Avenue,
Fresno, CA 93711,
United States of America.
Tel: +1 (559) 4499 035;
Fax: +1 (559) 4499 037;
E-mail: gobenauf@agresearch.nu;
Website: www.mbao.org.

19-21 Nov
Jakarta
Indonesia

HVACR Indonesia 2009
Contact: IIR Exhibitions Pte. Ltd.,
205 Henderson Road, #03-01,
Henderson Industraial Park,
Singapore 159549, Singapore.
Tel: +65 6319 2668;
Fax: +65 6319 2669;
E-mail: sharon.lim@iirx.com.sg.

2-4 Dec
Belgrade
Serbia

International Congress on Heating, Refrigeration and Air-Conditioning
Contact: Mr. Branislav Todorovic,
Society for Air-Conditioning, Heating
and Refrigeration (KGH),
Kneza Milosa 7a/II,
Belgrade, 11000, Serbia.
Tel: +381 (11) 3230 041;
Fax: +381 (1)1 3231 372;
E-mail: todorob@EUnet.yu.

PUBLICATIONS from APCTT

PERIODICALS

(Free access at www.techmonitor.net)

- ❑ Asia Pacific Tech Monitor (6 issues/year) (e-version)
- ❑ VATIS Update (6 issues/year)
  - ❍ Biotechnology (e-version)
  - ❍ Non-conventional Energy (e-version)
  - ❍ Food Processing (e-version)
  - ❍ Ozone Layer Protection [#] (e-version)
  - ❍ Waste Management (e-version)

BOOKS

	Indian Rupees* (India, Bhutan and Nepal)	US Dollars*
❑ Managing Innovation for the New Economy: Training Manual, 2002 Volume 1: How to Guide & Quick reference materials Volume 2: Articles & Lectures	1,000.00	50.00
❑ Regional Capacity-building for the Adoption of ISO-14000 and Transfer of Environmentally Sound Technology: Training Manual, 2000	600.00	30.00
❑ Small Rural Industries in the Asia Pacific Region: Enhancement of Competitiveness of Small Rural Industries in a Liberalized Economic Environment and the Impact of Poverty Alleviation, 2000	600.00	30.00
❑ Technology Transfer and Technological Capacity-building in Asia and the Pacific		
❍ Volume 1: Big Countries and Developed Economies, 1999	600.00	30.00
❍ Volume 2: ASEAN, NIEs, SAARC and the Islamic Republic of Iran, 1999	600.00	30.00
❍ Volume 3: Least Developed and Pacific Island Countries and Economies in Transition, 1999	600.00	30.00
❍ Volume 4: Emerging Issues in Regional Technological Capability-building and Technology Transfer, 1999	600.00	30.00
❑ Rural Industrialization as a Means of Poverty Alleviation: Report of the Regional Seminar on the Enhancement of Partnerships among Governmental, Non-governmental and Private Sector Entities for the Promotion of Rural Industrialization for Poverty Alleviation, 1999	600.00	30.00
❑ Institutional Development for Investment Promotion and Technology Transfer, 1999	500.00	25.00
❑ Ozone Depletion Substances Phase-out Technologies: Problems & Issues on Technology Transfer, Absorption and Generation, 1998	300.00	15.00
❑ Development and Utilization of S&T Indicators: Emerging Issues in Developing Countries of the ESCAP Region, 1998	300.00	15.00
❑ ODS Phase-out: A Guide for Industry, 1998	500.00	25.00
❑ Proceedings of the Consultative Meeting on Technology Management Education and Training for Developing Countries, 1997	800.00	40.00

Notes: Amount less than Rs 500 should be sent through a demand draft only. Otherwise, payment should be made by cheque/ demand draft/UNESCO coupon in favour of the Asian & Pacific Centre for Transfer of Technology, payable at New Delhi.

[#] Print version supported by the Ozone Cell, Ministry of Environment & Forests, Government of India, for distribution to a select target group.

** Amount to be sent to APCTT with the order for covering costs and handling charges.*