VATIS UPDATE

Ozone Layer Protection

Vol. 4 No. 126 • Sep - Oct 2014
ISSN 0971-5657

Apprise yourself with the latest technological innovations

Highlights

- Researchers develop powerful magnetic refrigerant
- Cleaner degreaser solvents
- Novel foam enhancement technology
- Ultra-low GWP foam blowing agent
- Researchers develop new method for treating wood
- Phosphine as alternative to methyl bromide

APCTT
Asian and Pacific Centre for Transfer of Technology

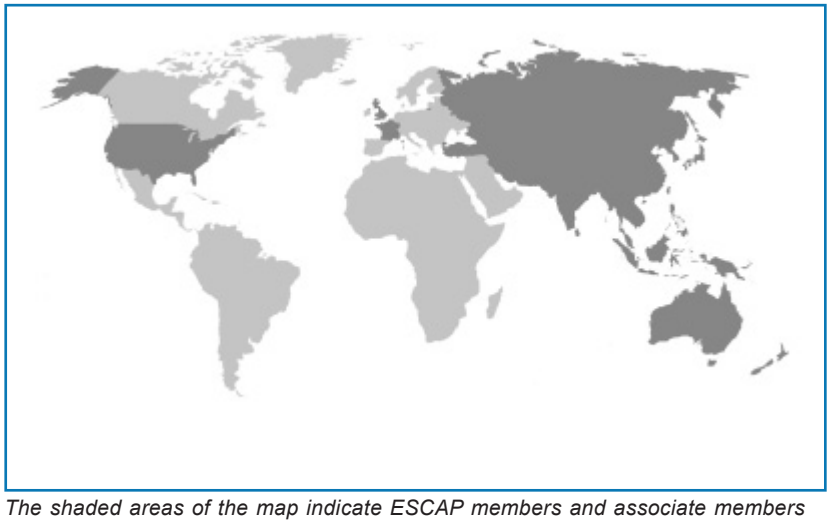
UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

Ozone Cell
Ministry of Environment, Forests & Climate Change
Government 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

Wood products are encased in a specially designed bladder tank and then treated using vacuum and steam to destroy invasive insects

(Credit: Virginia Tech, USA)

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: +91-11-3097 3700
Fax: +91-11-2685 6274
E-mail: postmaster.apctt@un.org
Website: http://www.apctt.org

OZONE CELL
Ministry of Environment, Forests & Climate Change
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-mef@nic.in
Website: http://www.ozonecell.com

*** Value Added Technology Information Service**

CONTENTS

Vol. 4 No. 126 Sep - Oct 2014

Scientists found ozone-depleting compound

A research from NASA, the United States, has showed that Earth's atmosphere contains an unexpectedly large amount of an ozone-depleting compound from an unknown source decades after the compound was banned worldwide.Carbon tetrachloride (CCl4), which was once used in applications such as dry cleaning and as a fire-extinguishing agent, was regulated in 1987 under the Montreal Protocol along with other chlorofluorocarbons (CFC) that destroy ozone and contribute to the ozone hole over Antarctica. Parties to the Montreal Protocol reported zero new CCl4 emissions between 2007-2012.However, the research has found worldwide emissions of CCl4 average 39 kilotons per year, approximately 30% of peak emissions prior to the international treaty going into effect.

"We are not supposed to be seeing this at all. It is now apparent there are either unidentified industrial leakages, large emissions from contaminated sites, or unknown CCl4 sources," said Qing Liang, an atmospheric scientist at NASA, and lead author of the study. As of 2008, CCl4 accounted for about 11% of chlorine available for ozone depletion, which is not enough to alter the decreasing trend of ozone-depleting substances (ODS). Still, scientists and regulators want to know the source of the unexplained emissions.For almost a decade, scientists have debated why the observed levels of CCl4 in the atmosphere have declined slower than expectations, which are based on what is known about how the compound is destroyed by solar radiation and other natural processes.

To investigate the discrepancy, scientists used NASA's 3-D GEOS Chemistry Climate Model and data from global networks of ground-based observations. Model simulations of global atmospheric chemistry and the losses of CCl4 due to interactions with soil and the oceans pointed to an unidentified ongoing current source of CCl4. The results produced the first quantitative estimate of average global CCl4 emissions from 2000-2012. In addition to unexplained sources of CCl4, the model results showed the chemical stays in the atmosphere 40 percent longer than previously thought. The research has been published in *Geophysical Research Letters*.

Source: http://www.nasa.gov

NASA to study Earth's ozone layer

A team of scientists at NASA, has been working to prepare a science instrument that will be mounted to the International Space Station to provide important information about Earth's atmosphere.NASA's Stratospheric Aerosol and Gas Experiment (SAGE III/ISS) will measure aerosols – tiny particles in the air – Earth's protective layer of ozone, and other trace gases. The space station's orbital inclination provides an ideal view for consistent ozone measurements. The SAGE III/ISS instrument has been undergoing rigorous testing and review leading up to the scheduled 2016 launch. Flight components are being put through a battery of environmental tests to ensure that they will perform as planned while withstanding the rigors of launch and the harsh environment of space.

SAGE III/ISS is set to launch on a SpaceX Falcon 9 rocket from NASA's Kennedy Space Center in Florida. Upon arrival at the space station, a robotic arm will install the instrument onto a carrier platform.In a process that could take up to 30 days, the SAGE instrument will be moved from the SpaceX vehicle and installed on the carrier platform attached to the space station. It will take another 30 days after installation for outgassing and to establish thermal control. After a series of calibrations and checkouts, and an on-orbit acceptance review, SAGE III/ISS will begin taking measurements. The data will be downloaded to Earth daily for use by the international science community."We are making great progress. It is important to extend the SAGE data record for the science community,"said Mike Cisewski, SAGE III/ISS project manager.

Like its predecessors SAGE I, SAGE II, and SAGE III Meteor-3M, which collected data from 1979 to 2005, SAGE III/ISS will measure aerosols, ozone, water vapor and other gases in Earth's atmosphere.More than 20 years after the Montreal Protocol agreement limited human emissions of ozone-depleting substances (ODS), satellites have monitored the area of the annual ozone hole and watched it essentially stabilize, ceasing to grow substantially larger.However, recent NASA studies has shown that signs of recovery are not yet present, and that temperature and winds are still driving any annual changes in ozone hole

size.Scientists said any recovery likely would not happen for up to another 50 years.SAGE III/ISS data will provide further insight into processes and trends, and predict global warming.

Source:
http://www.spacefellowship.com

Depletion of ozone could affect tropical region

Dr. GufranBeig, a senior scientist with Indian Institute of Tropical Meteorology (IITM), India, has found that the ozone layer might deplete further, if emission of greenhouse gases continue to increase at the same pace affecting the tropical region including several parts of Asia. Until now higher and lower lattitude regions were mostly affected by the depletion of ozone, but the trend may change by the end of the century if emissions continue at the same pace and affect the tropics.Indiafalls under tropical region.Dr. Beig's remarks has come after a United Nations report stated that the depleting ozone layer is well on track to recovery in the next few decades because of "concerted international action".

Dr. Beigwas part of the UN Enviornment Programme (UNEP) and World Meterological Organisation (WMO), which prepared the report that also said that carbon dioxide (CO_2), Nitrous Oxide and Methane will have an increasing influence on the ozone layer."Based on model projections, we feel that the advantage gained in ozone recovery may be reduced by the end of this century due to increase in greenhouse gases vizCO_2, methane and nitrous oxide if business as usual scenario of climate change continues," said Dr. Beig.The stratospheric ozone layer, a fragile shield of gas, protects Earth from harmful ultraviolet rays of the sun.

"What happens to the ozone layer in the second half of the 21st centurywill largely depend on concentrations of CO_2, methane and nitrous oxide – the three main long-lived greenhouse gases in the atmosphere. Overall, CO_2 and methane tend to increase global ozone levels. By contrast, nitrous oxide, a by-product of food production, is both a powerful greenhouse gas and an ozone depleting gas, and is likely to become more important in future ozone depletion," the report said.However, all this will have an impact on the tropics because of the air pattern and deplete the ozone endangering the region.

Source:
http://www.business-standard.com

Researchers measure ozone-depleting bromine

The Karlsruhe Institute of Technology (KIT), Germany, in cooperation with the German Aerospace Center (DLR) and the University of Heidelberg, Germany, has launched a multi-instrument gondola to find out the effect of bromine in stratospheric ozone. This high-altitude balloonaccommodates a unique combination of remote sensing instruments. The balloon flight was launched in September, as part of the international StratoScience2014 campaign that is operated by the Canadian and French space agencies. The balloon launched from Timmins (Canada) had a size of about 400,000 m³, it carried a load of about 760 kg, and ascended up to a height of nearly 40 km.

The gondola accommodates three complexremote sensinginstruments that cover a wide range of the electromagnetic spectrum. These instruments complement each other ideally in measuring stratospheric substances: The MIPAS-B infrared spectrometer of the KIT, the far-infrared/sub-mm spectrometer TELIS of the German Aerospace Center (DLR), and the UV/vis spectrometer mini-DOAS of Heidelberg University. This world-wide unique combination of instruments can measure about 40 ozone- and climate-relevant trace gases simultaneously. Remote sensing means that the gases are not measured directly. Instead, electromagnetic radiation is detected. From it, atmospheric parameters are extracted, as they interact with the solar and/or terrestrial radiation.

The pointing and stabilization system of the gondola was developed by KIT and ensures that all three instruments measure the same air masses. The remote sensing method also allows for the two- and three-dimensional daytime-dependent continuous measurement of trace gases. In this way, photochemical reactions of the species involved can be studied, which is an important prerequisite for improving chemistry and climate models. The campaign is embedded in an international balloon campaign under cooperation between the French and Canadian Space Agencies CNES and CSA.

Source:
http://www.phys.org

20th international day for the preservation of the ozone layer

The Ozone Cell, Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India, celebrated the international ozone day on 16th September, 2014 at Hyderabad, India. The theme for the 20th international day for the preservation of the ozone layer for the year 2014 was "Ozone Layer Protection: The Mission Goes On". The Montreal Protocol on substances that deplete the ozone layer has so far been successful in meeting the targets on phasing out ozone-depleting substances (ODS). As a result, the abundance of ODS in the atmosphere is declining and the ozone layer is expected to recover around the middle of this century. This year's theme was to galvanize all stakeholders to increase their efforts to address the challenges.

Source: http://www.ozonecell.com

Ozone-depleting gas new favourite of smugglers

The Central Board of Excise and Customs (CBEC), India, has alerted its offices at ports about smuggling of ozone-depleting substances (ODS),as there has been an increase in attempts to illegally ship R-22 gas, which is used in refrigerants and air-conditioners (ACs). According to the top officials, CBEC flagged the gas along with gold, fake Indian currency notes, drugs and red sanders on which it will maintain a special focus this year as the department of revenue intelligence has spotted new ways of smuggling these items into the country.

However, given the growing market for fridges and air-conditioners, the demand is higher than licensed supply.In certain countries, use of the gas will be banned in 2015, while manufacturers were barred from using them in products launched after 2004. In several cases, R-22 gas cylinders were found to be concealed in consignments where the importer had declared shipments of furniture, photocopiers and even fruits, which were from China and Malaysia and the gas was sought to be smuggled through Mumbai, Chennai and Tuticorn ports.

Source: http://www.timesofindia.indiatimes.com

HCFC phase-out in servicing sector

India's HCFC Phase-out Management Plan (HPMP) Stage-I comprises of a combination of interventions such as technology conversions, policies and regulations, technical assistance, training, awareness, coordination and monitoring in selected HCFC consuming sectors, to be implemented for the period from 2012 to 2015, to enable compliance with the 2013 and 2015 control targets for consumption of HCFCs (Annex-C, Group-I substances).

The HPMP Stage-I is being implemented under the direct supervision of the Ozone Cell, Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India. The Government of India has assigned the implementation responsibilities to the implementing agencies, UNDP has been designated as lead implementing agency for HPMP Stage-I. The Servicing Sector is being implemented by GIZ-Proklima as the lead implementing agency along with UNEP as the cooperating implementing agency for the implementation of the HPMP Stage-I.

HCFCs are the widely used in India in various sectors including Foam, Refrigeration and Air-Conditioning (RAC) manufacturing sector, RAC servicing sector etc. The Servicing Sector has a significant consumption of HCFCs, namely, HCFC-22, HCFC-123 due to large and increasing population of RAC equipment in the country. The total number of enterprises in the Servicing Sector is about 37,000 and the total number of technicians is about 115,000.

The Servicing Sector Plan under HPMP Stage-I is focussing on training programs for servicing technicians on good servicing practices across the country. It is also proposed to focus on the existing reclamation centres with institutional users as these could adopt policy, reclamation and reuse of refrigerants. Promotion of recovery and reclamation in the private sector will also be tried on a pilot basis with the existing reclamation centres. The implementation of Servicing Sector Plan under HPMP Stage-I would reduce consumption of HCFCs in the servicing sector to meet the compliance targets of 2013 (freeze) and 2015 (10% reduction) in line with the accelerated phase-out schedule of the Montreal Protocol.

Source: http://www.ozonecell.com

Ozone layer recovering but remains threatened

According to an assessment of 300 scientists in the summary document of the Scientific Assessment of Ozone Depletion 2014, published by the UN Environment Programme (UNEP) and the UN World Meteorological Organization (WMO), the Earth's protective Ozone layer is on track to recover by the middle of the century, the United Nations urging unified action to tackle climate change and curb continued fluctuations to the composition of the atmosphere. "International action on the Ozone layer is a major environmental success story. This should encourage us to display the same level of urgency and unity to tackle the even greater challenge of climate change," Michel Jarraud, Secretary-General of WMO.

The Ozone layer, a fragile shield of gas, protects the Earth from the harmful portion of the sun's ultraviolet rays, thus helping to preserve life on the planet. Its recovery is attributed to the collective action through the Montreal Protocol, which since 1987, has led countries to carry out policies to reduce and then phase-out their use of ozone-depleting chemicals. Without the Montreal Protocol and associated agreements, atmospheric levels of ozone depleting substances could have increased tenfold by 2050, according to today's report. "However, the challenges that we face are still huge. The success of the Montreal Protocol should encourage further action not only on the protection and recovery of the Ozone layer but also on climate," said Achim Steiner, Executive Director of UNEP.

"The Montreal Protocol community, with its tangible achievements, is in a position to provide strong evidence that global cooperation and concerted action are the key ingredients to secure the protection of our global commons," Mr. Steiner added. Among the key findings of the report, the authors noted that what happens to the Ozone layer in the second half of the 21st century will largely depend on concentrations of CO2, methane and nitrous oxide – the three main long-lived greenhouse gases in the atmosphere. The Scientific Assessment Panel is expected to present the key findings of the new report at the annual Meeting of the Parties to the Montreal Protocol, to be held in Paris in November 2014. The report will be issued early next year.

Source: http://www.un.org

Philippines steps up HCFCs phase-out campaign

The Department of Environment of Environment and Natural Resources (DENR), Philippines, through the Philippine Ozone Desk (POD) and Environmental Management Bureau (EMB) 12, Philippines, conducted an orientation seminar on the HCFCs phase-out management plan on August 7. Among participants were over 30 persons involved in the servicing industry using Hydrochloroflourocarbons (HCFCs). Basically HCFCs are a large group of compounds, whose structure is very close to that of Chlorofluorocarbons (CFCs). Since CFCs have been phased out HCFCs are now being used in several applications such as refrigerants in refrigerators, freezers and air conditioning systems as well as in insulated foams.

Being greenhouse gases (GHG), HCFCs which possess high global warming potential (GWP) are also being phased out. At the same event, the mentioned agencies also led the updating of the database for the registration of dealers, resellers, and retailers of ozone-depleting substances (ODS). "The HCFC Phase-out Management Plan (HPMP) in the country was launched in 2010. This year marks the opportunity to intensify our IEC campaign of the said compounds in the country, especially in Region 12," said Ma. Socorro Lanto, Regional Director of EMB 12

"HCFC is the only remaining ODS to be phased-out in the Philippines," said Lanto. She also requested the dealers, resellers and retailers of ODS to monitor the products they sell to protect not only the environment, but also the consumers. Part of the plan is to intensify public awareness on HCFCs and sustain the phase-out of ODS. The Philippines is committed to completely phase-out the use of HCFCs by 2040 as a signatory to the Montreal Protocol on substances that deplete the Ozone layer. The Montreal Protocol, was designed to reduce the production and consumption of ODS in order to reduce their abundance in the atmosphere, and thereby protect the earth's fragile Ozone layer.

Source: http://news.pia.gov.ph

Philippines to test refrigerants

The Metro Iloilo Airshed (MIA), Philippines, in partnership with the Environmental Management Bureau (EMB) of the Department of Environment and Natural Resources 6 (DENR

6), Philippines, has conducted a random vehicle roadside Mobile Air Conditioning (MAC) Testing as part of the efforts to monitor the use of and educate the public on environment friendly refrigerants. "The refrigerant testing was part of the activities for the National Ozone Protection Month in September with the theme "Ozone layer Protection: The Mission Goes On," said Ronald Limua, Division Chief Engineer at DENR-EMB 6

"The country is a signatory to the Kyoto and Montreal Protocols, international treaties which aim to protect the Ozone layer and to reduce global warming. As a signatory, the government through the Department of Transportation and Communications and DENR issued Joint Administrative Order in 2007 to ban the use of Chlorofluorocarbons (CFCs) in the air conditioning systems of motor vehicles," added Limua. CFCs are organic compounds that are considered ozone-depleting substances.

Source: http://www.news.pia.gov.ph

Indonesia to end use of ozone-depleting substances

The Ministry of Environment, Indonesia, is working on to entice air-conditioner and refrigerator manufacturers in Indonesia into moving away from their use of ozone-depleting chemicals with the offer of a hefty grant from the United Nations Environment Program (UNEP). "Fifteen manufacturers have signed a pledge to gradually phase-out their use of hydrochlorofluorocarbons (HCFCs), as refrigerants," said the deputy minister, Arief Yuwono, His deputy, Ema, said that another 16 air-conditioner manufacturers and 24 refrigerator makers were in talks with the ministry to sign a similar agreement. "We are confident that they'll soon sign the agreement," said Rachmawati.

Under the agreement, each manufacturer will be entitled to a grant of $12 million or more from the UNEP to help them switch from HCFC compounds to non-HCFC compounds in their manufacturing processes. "It was important to engage all stakeholders in the campaign to phase-out HCFCs, which were themselves introduced to replace chlorofluorocarbons, or CFCs, which have an even more deleterious effect on the Ozone layer. This condition poses a threat to human safety and health. So it's important for all of us to start keeping our environment clean from substances that could exacerbate damage to the Ozone layer," said Arief

In 2007, Indonesia successfully halted the use of CFCs, halon and methyl bromide, methyl chloroform and carbon tetra chlorides (CTCs), all substances that contribute to the depletion of the Ozone layer – two years earlier than a target set under the 1987 Montreal Protocol on Substances that Deplete the Ozone layer. The Montreal Protocol calls for the complete phasing out of HCFCs by 2030 – a decade before the Indonesian government's target. Indonesia was among 197 countries that ratified the Montreal Protocol, which obliges signatories to comply with reduction targets for substances that damage the Ozone layer. The protocol has generally been hailed as successful in slowing the rate of depletion of the Ozone layer, the region of the Earth's stratosphere that absorbs ultraviolet radiation.

Source: http://www.thejakartaglobe.com

Major reduction in ozone depleting gases in China

China has announced the closure of five hydrochlorofluorocarbons (HCFCs) production lines, resulting in the phase-out of 58,864 tons of HCFC production, reduction of HCFC production capacity by 88,000 tons and elimination of over 93 million tons of CO_2 equivalent in greenhouse gas emissions. The announcement was made at an event commemorating the International Day for the Preservation of Ozone layer. The event was attended by senior representatives of the Government of China, the Ozone Secretariat of the United Nations Environmental Program (UNEP) and the World Bank. HCFCs targeted for elimination are ozone depleting substances (ODS) with global warming potential (GWP) that are used principally in refrigeration, air-conditioning and the manufacture of foam products. China's reduction means a major leap forward for the Montreal Protocol's global HCFC phase-out targeted for 2015.

"Management and phase-out of ODS in the production sectors is the most effective way to achieve elimination. Through quotas management, China's HCFC production in 2013 was reduced by 8.38% over the baseline year (2009-2010 average), and consumption reduced by 9.14% over the baseline year," said Zhai Qing, Vice Minister, Ministry of Environmental Protection, China. This is an important step and a significant milestone in the first

stage of China's HCFC phase-out effort. "However, there remain many difficulties and challenges on the way ahead," said Qing. Since April 2013, the Government of China, in concert with the World Bank Group, has been working with enterprises on the first stage of China's HCFC production sector phase-out plan, itself part of a larger strategy to completely eliminate the country's production capacity of ODS by 2030.

This stage is supported by an USA $95 million grant from the Multilateral Fund for the Implementation of the Montreal Protocol (MLF), which disburses against verified annual reductions of HCFC production levels. "As China is the single biggest producer of HCFCs today, such early achievement is laudable. Under its HCFC strategy, China will phase-out its HCFC production, contributing not only to protect the Ozone layer but also to mitigate climate change because HCFCs are also powerful greenhouse gases. The funds from the MLF will cover the incremental costs of the phase-out, but clearly China's own effort and contribution is the key. China and its people will be putting in a lot of work and effort. China has a unique opportunity to proceed with its production sector project in a manner that demonstrates leadership in ensuring the success of the Montreal Protocol," said Tina Birmpili, Executive Secretary at UNEP.

Source: http://www.worldbank.org

Sri Lanka seeks support to tackle ODS

In a workshop, organised by the National Ozone Unit (NOU) and Sri Lanka Customs, the Ministry of Environment and Renewable Energy, Sri Lanka, has asked the support of Government and Non-Governmental Organizations (NGOs) to eliminate ozone depleting substances (ODS) in the atmosphere. "The ministry has already launched many programmes to reduce the emission of chlorofluorocarbon (CFC) which damages the Ozone layer. In the middle of global chaos to the save 'ozone', we as a country have done our best," said Minister Susil Premajayantha. Since Sri Lanka was not producing any of the ozone depleting substances (ODS), consumption was based on imports, the CFC included in perfumes, refrigerators, air conditioners and pesticides was depleting the Ozone layer largely. However, Sri Lanka was one of the few countries with low emission levels of ODS.

According to the National Ozone Unit (NOU), the annual per capita consumption of ozone, of a Sri Lankan, is just 0.3 kilograms. "Worldwide reduction of the use of CFCs had drastically reduced skin cancers and cataract. The number of global skin cancer patients had reduced by 295 million and cataract patience by 22 million. CFC emitting equipment such as refrigerators and air conditioners were being replaced by new equipment which do not use CFCs," said Premajayantha. Meanwhile, the Minister also said that Sri Lanka had been recognized as a country which achieved many of the Millennium Development Goals (MDG) announced by the UN and the UNESCO due to the high literacy rate in the country.

Source: http://www.island.lk

Pakistan progressing on Ozone layer protection

Pakistan has successfully completed four out of five projects of Stage-I of HCFC Phase-out Management Plan (HPMP), which will keep the country in compliance with the current targets of Montreal Protocol that relates to the Ozone layer. These projects were funded by Multilateral Fund with United Nations Industrial Development Organization (UNIDO) as implementing agency. This was disclosed at a consultative meeting arranged by the Ozone Cell, a climate change division, in collaboration with Ministry of Commerce and Customs Collectorate, Lahore. The meeting discussed the progress of Pakistan's compliance to Montreal Protocol (MP) for protection of Ozone layer. The phase-out of hydrochloroflurocarbons (HCFC), future actions plans, and queries and reservations of stakeholders also came under discussion.

The meeting was moderated by UNIDO consultant Iqbal P. Sheikh and other attendees included representatives of Haier Pakistan, Varioline Intercool, Pakistan, commercial importers and traders of ozone-depleting substances (ODS). Pakistan is a signatory of Montreal Protocol for the protection of Ozone layer. One of the suggestions was to reduce the custom duty on the Ozone and Climate friendly alternatives to HCFC to encourage the use of these gases which would help meet Pakistan's MP targets and discourage illegal trade of HCFC. It was also discussed that quotas of HCFCs shall be strictly implemented to prevent illegal import of HCFC. The meeting concluded with recommendation that such meetings shall continue in future at larger scale and seminars shall also be conducted to raise awareness among the general public.

Source: http://www.nation.com.pk

New environmentally friendly refrigerant

AGC Chemicals Americas Inc., the United States, has announced that its parent company AGC, the United States, has developed Amolea™, a new refrigerant technology. Amolea will dramatically reduce global-warming potential (GWP) for air conditioning systems. It will provide one-sixth of the GWP of conventional refrigerant HFC-410A while providing equivalent energy performance. AGC is planning to begin commercial production of Amolea in 2016.

AGC Chemicals Americas Inc. is a wholly owned subsidiary of Asahi Glass Company Ltd., a $13 billion multinational corporation and one of the world's largest manufacturers of glass, electronic displays and chemical products. The company was formed in 2004 through the merging of sister companies Asahi Glass Fluoropolymers USA and AGA Chemicals. *Contact: AGC Chemicals Americas, Inc., 55 E. Uwchlan Avenue, Suite 201, Exton, PA 19341, USA. Tel: +1-610-423-4300; Fax: 800-424-7833.*

Source: http://news.thomasnet.com

New refrigerants under development

At the 15th International Refrigeration and Air Conditioning Conference at Purdue University, the United States, research papers were presented at a session titled "Evaluating Alternative Refrigerants and Technologies." And during the papers were being presented, Mark McLinden of the National Institute of Standards and Technology, the United States, used a plenary session to predict that what is being worked on now.

A paper presented by Xudong Wang of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), the United States, updated conference attendees on AHRI's Low Global Warming Potential Alternative Refrigerants Evaluation Program (Low-GWP AREP). In addition, he said AHRI launched a second phase of testing that includes newly developed refrigerants and performance testing under high ambient conditions that were not covered in the first phase. The technical art of finding the best replacement for a high global warming potential (GWP) refrigerant was shown in a paper presented by Radia Eldeeb of the University of Maryland, the United States. They looked at three refrigerants currently being studied and defined as low GWPers in a 10.55 kW heat pump. One is HFC-32, while the other two are developmental refrigerants.

In looking at low GWP alternatives to both HCFC-22 and HFC-410A, Ankit Sethi reported a new refrigerant L-20 and the progress made at Honeywell International Inc., the United States. "Experimental results suggest that without significant system modifications, L-20 can match the performance of R-22 across the range of ambient temperatures observed in various countries in the Middle East. Hence, L-20 is a promising low global warming replacement for R22 in cooling-only systems designed to work in regions. Theoretical results indicate that in hydronic systems, L-20 would be expected to have reasonable efficiency with an operating envelope very similar to R-410A. Hence, L-20 seems to be an attractive R-410A replacement in hydronic systems

Source: http://www.phys.org

Hydrocarbon refrigerant tested in ice cream freezer

Developed by Green Way Solutions Inc., the United States, the Priority Cool™ refrigerants are direct replacement hydrocarbon refrigerants for a wide range of refrigeration and air conditioning systems. In August 2014, American Classic, the United States, an ice cream company tested Priority Cool hydrocarbon refrigerant (HC12a/134+) in a 10 hp freezer, with the objective of saving energy during the peak New York summer months. An initial 28% decrease in compressor amperage was recorded, while keeping the freezer almost 10 degrees cooler than the previous refrigerant used (R408A). Due to high energy consumption all year round as a result of ice cream production in wholesale quantities, American Classic was open to replacing an R408A system with a Priority Cool hydrocarbon refrigerant, HC12a/134+, on a trial basis in order to gage the potential improvement in energy efficiency.

As hydrochlorofluorocarbon (HCFC) contribute both to ozone depletion and global warming, their use, including that of R408A, is being phased out according to the schedule set out in the Montreal Protocol. The refrigeration system used for the testing maintained a temperature of –10°F (–23°C) and stored ice cream products. American Classic aimed to compare such values as

voltage, amperage draw, temperature, and pressure ratings during normal operating conditions, as well as under the hot gas defrost cycle. Some considerations were:

- No need to completely overhaul the existing refrigeration system;
- No excessive investment costs; and
- No need to change oil, expansion valves or dryers.

The refrigerant conversion-test aimed to lower the compressor amperage and operating pressures; consequently saving energy and extending equipment life. American Classic reportedly immediately observed a nearly 30% reduction in the compressor amperage, as well as a significant drop in the high and low pressure readings, indicating the possibility to extend compressor life. Calculating the potential savings in electricity costs, American Classic estimates approximately $51,114 (€37,711) per year can be saved by converting all their equipment to Priority Cool refrigerant. Currently 50 days into testing, the same low pressure readings and significantly lower amperage draw are still being recorded; however, the defrost time has been increased by 5 minutes in order to account for the lower temperature in the hot gas defrost cycle

Source:
http://www.hydrocarbons21.com

Researchers develop powerful magnetic refrigerant

Researcher at the A*STAR Institute of Materials Research and Engineering (IMRE), Singapore, and the National University of Singapore (NUS) believe they have created a powerful magnetic refrigerant that is easy to make in the lab – and therefore cheaper – than simply using the rare earth mineral gadolinium. The researchers simply mixed gadolinium acetate, nickel acetate and an organic molecule called 2-(hydroxymethyl) pyridine in an organic solvent at room temperature. The magnetic refrigerant contained a cubic structure made of two gadolinium ions, two nickel ions and four oxygen atoms, surrounded by 2-(hydroxymethyl) pyridine molecules.

Magnetic refrigerants commonly use the gadolinium (III) ion (Gd3+), because it has seven unpaired electrons. Most gadolinium complexes are made under harsh conditions or take a very long time to form, which limits their wider application. In contrast, the magnetic refrigerant is 'remarkably easy to make'. After 12 hours, the chemicals had assembled themselves into an aggregate containing a cube-like structure of atoms at its heart. The team measured how an external magnetic field affected this 'cubane' material as the temperature dropped. Below about 50 K, they found that the material's magnetisation increased sharply, suggesting that it could be an effective magnetic refrigerant below this temperature.

The scientists then tested the effects of varying the external magnetic field at very low temperatures. They found that at 4.5 K, a large external field caused an entropy change that was close to the theoretical maximum for the system – and larger than most other magnetic refrigerants under similar conditions. According to the team, the magnetocaloric effect of magnetic refrigerants has typically been enhanced by creating ever-larger clusters of metal atoms. In contrast, their cubane shows that much simpler aggregates, prepared under straightforward conditions, are promising as magnetic refrigerants.

Source:
http://www.racplus.com

New water-cooled chiller technology by Carrier

Carrier Corp. has launched its water-cooled, variable-speed, screw chiller line, the AquaEdge 23XRV series, with Greenspeed intelligence, in the United Kingdom. The tri-rotor screw-compressor chiller complements and is claimed to enhance the existing 30XWV AquaForce range of twin-screw compressor units. According to Carrier, the 23XRV range, formerly known as the 'Evergreen' chiller, has been improved and extended for its UK launch. Carrier AquaEdge 23XRV is also believed to be the world's first fully integrated, variable-speed, water-cooled screw chiller range, and it incorporates significant breakthroughs in water-cooled technology, according to the company.

The AquaEdge 23XRV uses non-ozone depleting HFC-134a refrigerant and patented tri-rotor compression technology. These new models can provide an ideal solution for new, water-cooled chiller systems.The AquaEdge 23XRV can achieve Part L PSEER's (Plant Seasonal Energy Efficiency Ratios) in excess of 10. With Integrated Part Load Values (IPLV), as low as 0.299 kW/Ton, the 23XRV exceeds the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) 90.1 efficiency standards by as much as 44%.

Source:
http://www.racplus.com

Vapor degreasing and duo-solvent cleaning

The cleaning equipment manufacturer Controls System Design & Automation Inc., the United States, and Kyzen Corporation, the United States, have jointly developed the Duo-Solvent cleaning process that works within a vapor degreaser and eliminates the need for a water rinse. Duo-Solvent technology creates the benefits of a vapor degreasing process without the hazards. The Duo-Solvent process incorporates an engineered cleaning solvent that matches a wider range of flux residues and is then rinsed with an environmentally friendly rinsing solvent. A unique feature of the Duo-Solvent process is a secondary distillation process that removes the solvating agent drag out in combination with soils that are accumulated in the rinse fluid boil sump. The parts are rinsed with a fluorinated rinsing fluid. The vapor blanket formed from the rinsing fluid is condensed, drained into the final rinse tank and overflowed back into the boil sump. This waterless process provides the beneficial properties that vapor degreasing while overcoming health, cleaning, and material limitations associated with common vapor degreasing solvents used today. *Contact: Kyzen Global Corporate Headquarters, 430 Harding Industrial Dr., Nashville, TN 37211, USA. Tel: +1-615-831-0888.*

Source: http://www.kyzen.com

HFC based solvent formulation

Developed by NuCalgon, the United States, the Rx11-flush is a unique solvent that has been engineered for flushing refrigeration and air conditioning systems. Its patented hydrofluorocarbon (HFC) based solvent formulation is powerful enough to flush away sludge, carbon residue, oils, acids, water and other particulate. This makes it ideal for system flushing after burnouts, retrofits and for flushing line sets for R-410A conversions. It is non-toxic, non-flammable and is non-ozone depleting.

From time to time, refrigeration and air conditioning systems suffer failures, which result in contamination. The most common such failure is a compressor burnout. During such an event, the refrigeration system becomes contaminated with large quantities of unwanted particulate, sludge, acids, carbon residues and possibly moisture. All of these contaminants must be removed before the system can be returned to duty. *Contact: NuCalgon, 2008 Altom Court, St. Louis, MO 63146, USA. Tel: +1-800-554-5499; Fax: +1-800-221-6302; E-mail: info@nucalgon.com.*

Source: http://www.nucalgon.com

New precision cleaning agent

Developed by DuPont, the United States, Vertrel® XH specialty fluid is a proprietary azeotrope of Vertrel® XF and heptane. Vertrel® XH has zero ozone depletion potential (ODP), ideally suited for use in a vapor degreasing equipment for precision cleaning and rinsing for removal of particulate and light soils from metal, glass, and plastic parts. It is used to replace current hydrochlorofluorocarbon (HCFC) and perfluorocarbon (PFC) fluids in most applications. Vertrel® XH can be used for the following applications:

- Particulate/Ionic Removal;
- Light Soil Removal;
- Precision Cleaning; and
- Drying/Rinsing Agent.

Because there are multiple Vertrel® specialty fluid products that can be used for the same application depending on the specifics of your application, please contact us so we can guide you to the best solution for your specific needs. Vertrel® XH is compatible with most plastics and elastomers and can be used to clean a wide variety of soils, including cutting oils, gear oils, heavy greases, hydraulic oils, stamping oils, vacuum oils, waxes, and mineral oils. Vertrel® XH is non-flammable and does not become flammable during normal operation. Also, the product does not have vapor flammability limits in air. It is thermally stable and does not oxidize in air or degrade during storage.

Source: http://www2.dupont.com

Cleaner degreaser solvents

The new range of high purity solvents by Chemtronics®, the United States, are the finest, most effective products made for the critical cleaning and degreasing of electronics, electrical assemblies and sensitive components. Each cleaning agent possesses unique properties suited to specific applications – from precision cleaning of solvent sensitive components to degreasing of electrical and electronic equipment. Several of these products can be used in bench top ultrasonic, immersion, and vapor degreaser cleaning systems.

Electro-Wash® CZ Cleaner Degreaser is an all-purpose cleaner for electronics that is non-flammable, non-ozone depleting, and safe on plastics. This fast drying precision cleaner contains Cirozane™, which is based on HFE technology. It is excellent for removing grease, oil, and flux residues from energized equipment.

Cleaner degreaser solvents by Chemtronics

CIROZANE™ Cleaning Chemistry (CZ), is a proprietary solutions from Chemtronics. CIROZANE-based products offers a high performance, ultra-safe "drop-in" replacement to all chlorofluorocarbon (CFC) and hydrochlorofluorocarbons (HCFC) chemistries. CIROZANE chemistry is the result of an 18-month research effort. Its applications includes:

- Removes handling soils from live circuits;
- Cleans oil and residue from sensitive surfaces; and
- Liquid can be used with ultrasonics, vapor degreasers, as a cold immersion solvent, or with spray dispensing system.

Contact: Lillian Henson, Chemtronics, 8125 Cobb Center Drive, Kennesaw, GA 30152, USA. Tel: +1-800-645-5244; Fax: +1-770-424-4267; E-mail: lhenson@chemtronics.com.

Source: https://www.chemtronics.com

Environmentally friendly cleaning specifications

The South Coast Air Quality Management District (SCAQMD), the United States, has recently imposed restrictions limiting the use of solvents with volatile organic compound (VOC) contents no greater than 25 g/L for immersion-cleaning processes or requiring the use of airtight cleaning systems. To meet this need, the Naval Air Warfare Center Aircraft Division (NAWCAD), the United States, has developed NAVSOLVE™, an effective, environmentally friendly cleaning solvent that meets and exceeds the new low volatile organic compound (Low-VOC), free of hazardous air pollutants (HAP-free) specifications. Invented by Dr. El Sayed Arafat, NAVSOLVE™ incorporates the advantages of a solvent-based cleaner, while offering the Low-VOC/HAP-free benefits of water-based or semi-aqueous cleaners

According to the US Military Performance Specification (MIL-PRF-32295) a solvent must be free of HAPs, contain no more than 25 grams per liter of VOCs, be effective on grease and oil, not contain ozone-depleting substances (ODS), be nontoxic and compatible with metals and non-metals and, most important of all, be safe to use. Further, the Aerospace National Emission Standards for Hazardous Air Pollutants (NESHAPS) require that immersion-cleaning solvents have vapor pressures less than 7 mm Hg and wipe cleaning solvents have vapor pressures less than 45 mm Hg. The specification classifies low vapor pressure solvents as Type I (less than 7 mm Hg) and moderate vapor pressure solvents as Type II (less than 45 mm Hg). Although a few other commercially available solvents meet the Type I specification for MIL-PRF-32295,

NAVSOLVE™ is the only product that has been shown to meet both Type I and Type II, with the exception of the storage stability testing. As a result of the significant impact, all solvent markets in the manufacturing, transportation and construction industries have felt that NAVSOLVE™ could eventually replace the currently widely used MIL-PRF-680 cleaner, which contains high VOCs above the new specification. NAVSOLVE™ will be of interest to commercial cleaning operations in automobile/truck fleet maintenance, commercial aviation, industrial maintenance, and other similar industries. NAVSOLVE™ provides a healthier and safe environment for those using the solvent, as well as the solvent's impact on the environment itself.

Source: http://www.federallabs.org

UNEP launches Ozone Assessment Report

The Assessment for Decision-Makers, a summary document of the Scientific Assessment ofOzone Depletion 2014, is being published by the United Nations Environment Programme(UNEP) and the World Meteorological Organization (WMO), and is the first comprehensiveupdate in four years.The Scientific Assessment of Ozone Depletion 2014 was prepared and reviewed by 282 scientists from 36 countries.

The Scientific Assessment Panel is expected to present the key findings of the new report at theannual Meeting of the Parties to the Montreal Protocol, to be held in Paris in November 2014. The full body of the report will be issued in early 2015.

For more information, contact: At UNEP:Shereen Zorba, Head of News and Media, Tel: +254 788 526000, E-mail: Shereen.Zorba@unep.org

At WMO: Clare Nullis, Media Officer, Communications and Public Affairs, Tel: +41 (0)22 730 8478, E-mail: cnullis@wmo.int

Novel foam enhancement technology

At the international Blowing Agents & Foaming Processes 2014 conference, held on May 13-14, Austria, the INNOVEX® Flame Retardant (FR) novel foam enhancement technology, developed by Ferro Engineered Polymer Products, the United States, won the runner-up winner award. The INNOVEX® flame retardant masterbatch (INNOVEX® FFSB-0352) was praised by the award program's independent judging committee for its effectiveness in addressing environmental issues; economic factors, such as energy and materials cost savings it can generate; and also the general impression its use can help achieve, which referred to the look, feel and surface quality of the extruded polystyrene (XPS) insulation boards that were produced using INNOVEX® technology.

The INNOVEX® FR technology additives enables XPS insulation panels with lower values in thermal conductivity (λ value), increased compressive strength properties and a better density profile across their thickness compared with alternative solutions such as hexabromocyclododecane (HBCDD) or polymeric flame retardants. All of these properties are achieved by a 25-65% reduction in the average cell size as a consequence of the use of novel nucleating/reinforcing clay particles, which have a favorable interaction with carbon dioxide (CO2) blowing agent. Additionally, a new synergistic effect of a flame retardant organic molecule/clay makes INNOVEX® a REACH-compliant alternative to HBCDD. The INNOVEX® flame retardant MB (INNOVEX® FFSB-0352) is patent-protected. *Contact: Dr. José Luis Feijoo-Gómez, Ferro Corporation, Spain. Tel: +34-964-504-135; E-mail: jose.feijoo@ferro.com.*

Source: http://www.finance.yahoo.com

Ultra-low GWP foam blowing agent

Honeywell, the United States, has announced that its ultra-low-global-warming-potential (GWP) foam blowing agent "Solstice® Liquid Blowing Agent (LBA)", has been used to help insulate a net-zero energy home project at Purdue University, the United States. The blowing agent, which causes closed-cell spray foam insulation to expand and provides the majority of the foam's excellent insulating properties, was used to retrofit a residential home in West Lafayette. It marked the first application of the new blowing agent in spray foam wall insulation. Solstice LBA is already used to insulate high-efficiency refrigerators.

"Closed-cell spray foam insulation seals gaps, cracks and holes as it is applied, making it one of the most energy-efficient insulation products available today. Solstice LBA has 99.9% lower global warming potential than traditional hydrofluorocarbon (HFC) foam blowing agents, yet provides higher insulating performance than HFC blowing agents," said Laura Reinhard at Honeywell.

According to Lapolla Industries, the United States, the Solstice LBA demonstrates about 8-10% better thermal performance compared to the systems formulated with HFC blowing agents. Use of Solstice LBA allows spray foam manufacturers such as Lapolla to cost-effectively meet current and future energy efficiency and environmental regulations. Solstice LBA is a next-generation blowing agent with a GWP of 1, significantly lower than previous-generation HFC blowing agents such as HFC-245fa, which has a GWP of 858. Solstice LBA is nonflammable, and has received U.S. Environmental Protection Agency (EPA) approval under the Significant New Alternatives Policy (SNAP) Program.

Source: http://www.sprayfoam.com

Haier to use new LBA for large refrigerators

Haier, China, has announced that will adopt Honeywell's new low-global-warming-potential (GWP) Solstice® Liquid Blowing Agent (LBA) in China in the manufacture of large-capacity refrigerators. Blowing agents allow closed-cell polyurethane foam insulation to expand and provide the majority of the foam's insulating properties. Solstice LBA can help home appliance manufacturers an 8-10% energy efficient improvement when compared to cyclopentane. Cyclopentane is used in European and Asian markets as a blowing agent in appliance insulation. It is also seeing increased use in appliance manufacturing in the United States.

"For the past three years, we have been working with Haier under their Open Innovation System to transition to Solstice LBA," said Sanjeev Rastogi, at Honeywell. Solstice LBA has an ultra-low GWP of 1, which is 99.9% lower than HFC-245fa, a commonly used blowing agent in the United States. The polyurethane material that is foamed to create insulation in Haier refrigerators is supplied by Dow Chemical. Solstice LBA is non-flammable and is not a volatile organic compound. It is approved by the U.S. Environmental Protection Agency under the Significant New Alternatives Policy (SNAP) Program and is also registered under the European Union's REACH program.

Source: http://www.plasticstoday.com

Researchers develop new method for treating wood

According to the National Firewood Association, the United States, the rising cost of energy for heat has resulted in a dramatic increase in demand for firewood to fuel fireplace inserts, wood-burning stoves, and outdoor boilers. The increased demand, however, raises concerns about transporting firewood unknowingly infested with invasive insects. The currently available methods for treating wood to kill invasive pests use either chemicals or extreme heat. Now two researchers Dr. Zhangjing Chen and Emeritus Marshall White from Virginia Tech, the United States, have developed a new method for treating wood that addresses these concerns while saving time, energy, and resources. Invasive insects have had a devastating effect on trees in various parts of the country. Those insects that bore deeply into trees are especially troublesome to detect and are often inadvertently transported to uninfested areas.

Their method was tested with firewood from ash infested with emerald ash borer in West Virginia and proved successful at killing all of the insect's life stages in the wood. The pest destroyed all of the ash trees within only two years; the only ash remaining in the park is firewood. The vacuum and steam method took less than half the time and 25% less energy than the 140-degree, 60-minute heat treatment required by the U.S. Department of Agriculture before wood can be moved off site. "Steam carries a large amount of heat, and condensation releases the energy to heat up logs faster. In addition to saving time and energy, two major advantages of the steam and vacuum treatment are it doesn't require chemicals and it can be portable," said Chen. The chemical used to fumigate wood is methyl bromide

The system Chen and White designed consists of a vacuum pump, control unit, flexible vacuum container, and steam generator. The wood to be treated is encased in a bladder tank, which looks like a large plastic bag with a zipper. This portable technology can be used by small business operators to treat firewood, pallets, and other products. The two researchers first tested a vacuum and steam treatment to control insects, fungi, and mold in wood used for pallets in 2006. Further research has proven successful with large logs, such as veneer logs for export, without loss of quality, and for other wood products and packing materials. They are now researching the use of the vacuum and steam method to combat snails in ceramic tiles. "The goal is to develop technology to address urgent issues on a global scale, to eliminate pathways for the transport of insect and disease pests," said Chen.

Source: http://www.woodworkingnetwork.com

US approves new methyl bromide alternative

The U.S. Environmental Protection Agency (EPA) has approved a new non-fumigant nematicide that it said is safer than methyl bromide, which is being phased out. The agency is registering a new active ingredient, fluensulfone, which can be a tool against nematodes, which are difficult to control and can cause significant economic damage by reducing crop yield and quality. "The product must still be registered by the EPA," said Carolyn O'Donnell, at California Strawberry Commission. Fluensulfone provides lower-risk chemical control of nematodes than its seven existing alternatives, including methyl bromide. Most of the tools used in the past five years are fumigants, and all are restricted-use pesticides that require special application training and certification, reporting and record-keeping.

The methyl bromide phase-out was agreed to in the 1987 Montreal Protocol, an international treaty involving nearly 200 nations. It was supposed to be completed by 2005, although agricultural users with no feasible alternatives have been given a critical-use exemption. A state study in 2013 acknowledged that California's $2.3 billion strawberry industry will have to keep using fumigants for years to avoid a drop in revenue. Methyl bromide has also been used as a soil fumigant for almonds and other crops.

The California Strawberry Commission has spent millions of dollars in recent years on researching alternatives to injecting methyl bromide and other gaseous pesticides into soil, including crop rotation, using natural sources of carbon to eliminate soil pathogens and sterilizing soil with steam. The EPA's final regulatory decision document is available online at http://www.regulations.gov.

Source: http://www.capitalpress.com

Thermal remediation for managing insect pests

When the Montreal Protocol and U.S. Clean Air Act declared the fumigant, methyl bromide, an

ozone-depleting chemical and phased out its use in 2005, food processing facilities were challenged to develop new solutions for managing insect pests. To discover safe, effective alternatives to manage the insect populations, entomologists and practitioners looked to heat. Now Dr. Bhadriraju Subramanyam, a professor at Kansas State University (KSU), the United States, has been studying heat treatment and other tactics to strategically eliminate insects. His research shows that heating food processing facilities between 122-140ºF will kill insects at all life stages, without introducing harmful chemicals. The treatment must be maintained over a period of 24 hours to ensure there is no place for the insects to seek refuge from the heat. In addition, facilities must undergo thorough sanitation prior to heat treatment.

According to Dr. Subramanyam, the optimum temperature for maximum insect survival, development, and reproduction is between 82-90ºF. Lower and upper temperature limits, in general, for stored-product insect existence are between 55-105ºF. Temperatures 122ºF or above can disrupt the ionic balances across cell membranes, injure cellular DNA, dehydrate insects, destroy protein synthesis machinery, or denature enzymes – all of which can cause insect death. Depending on the insect species and the life stage exposed, death occurs within minutes to hours at these high temperatures. While high temperatures are an important factor, maintaining the temperature for a sufficient time is also critical because heat needs to encompass all parts of the facility. For example, insects may try to "hide" within equipment or hidden spaces to escape the heat treatment.

While heat treatment is an optimal solution for managing pests, it can present risks to the facility if the temperatures are not properly controlled. Excessive, prolonged heat can potentially damage the mechanical structure in facilities, or even its electrical components. Since materials expand and contract at different rates, mechanical components or even the building structure can be compromised if temperature is elevated too quickly. Furthermore, electrical components exposed to excessive heat outside of their recommended operating temperature can fail. The rate of heating should be slow and a temperature of 122ºF should be attained in about 10 to 12 hours. Temperatures should not exceed 140ºF. In addition to costly repair and replacements, damaged mechanical structures and equipment can have a significant impact on production – causing downtime.

Source: http://www.bannerengineering.com

Phosphine as alternative to methyl bromide

According to recent tests carried out by U.S. Department of Agriculture (USDA), scientists have indicated fumigation of fresh fruit using phosphine is a promising alternative to the widespread methyl bromide, for an array of reasons including environmental impacts and food quality. Methyl bromide fumigation is being gradually phased out throughout the world, partly as it is particularly damaging to the environment and destroys the atmospheric ozone.

At the International Seminar on the Potential Uses of Phosphine as a Fumigation Treatment, organized by the company Fosfoquim, Chile, held in Santiago, chemical researcher Dr. Spencer Walse from U.S. Agriculture Research Service (ARS) said the produce industry was eager to find practical alternatives to methyl bromide.

"There's an enormous push from our fresh fruit exporters to put another tool in the basket. Methyl bromide is a ball of politics, economics and science. It is safe to say it is now out of the court of science and into a political and economic issue," said Dr. Walse. The benefits of using phosphine as an alternative fumigation were in no way limited to environmental impacts, but included being able to maintain the cold chain supply, not having to adjust the treatment according to the type or weight of specific commodities, and improving worker safety. In addition to the safety credentials of the phosphine treatment, Dr. Walse discovered that it had a positive effect on the quality of fruits like cherries compared to control samples after a couple of days, as browning occurred at a slower rate.

Companies like Fosfoquim have been successfully using phosphine fumigation treatments since 2001, and there has been a huge diversification in its global application in recent years. "We need the efficacy data and the insecticidal toxicity needs to be consistent with international phytosanitary protocols," said Dr. Walse. Thus far the tests into insecticidal toxicity have been encouraging, with the fumigation treatment found to be effective against common fruit pests such as the Asian citrus Psyllid, *Aonidiella aurantii* (red scale), Drosophila Suzukii

and Epiphyas postvittana (light brown apple moth). While Walse praised several key aspects of phosphine fumigation and said it was a strong and feasible alternative to methyl bromide, there would undoubtedly be a large cost for companies who wished to make the transition and they would have to wait longer for the fruit to be treated.

Source: http://www.agrihortcommunications.com.au

A biological alternative to toxic fumigants

Marrone Bio Innovations, Inc. (MBI), the United States, a leading global provider of bio-based pest management and plant health products has announced that it has submitted MBI-601 EP, a biofumigant, to the US Environmental Protection Agency (EPA) for registration. The product controls and suppresses plant parasitic nematodes, insect pests and soil-borne plant diseases in agricultural and horticultural soils. The active ingredient, Muscodor albus strain SA 13, produces volatile compounds that inhibit the growth of or kill economically important pests and plant diseases.

It targets the most destructive species of nematodes – root knot, sting, ring, spiral, cyst, lance, and lesion and also the highly-damaging plant diseases Fusarium root rot, damping off, southern blight and Verticillium wilt. With this control, field trials show increased yields in treated strawberries, lettuce and other crops. "We expect MBI-601 to fill a real need for high value fruit, vegetable, and ornamental growers. Soil fumigants have been valuable tools in protecting these crops worldwide and making their production economically feasible. However, many fumigants have been restricted or removed from the market due to increased regulatory restrictions and concerns about their toxicity to humans and the environment," said Jim Lappin, at MBI.

MBI-601, a naturally occurring, biologically-based fumigant, will provide an alternative to the traditional synthetic materials. In fact, it is anticipated that workers can return to the treated acres quickly after the product has been applied and planting the crop after application will be shorter than with traditional fumigants. Additional uses in the future, may include post-harvest, turf, silviculture and seed treatments in further development. MBI-601 is the seventh new active ingredient submitted by MBI to the EPA. "MBI continues to execute on its strategy of rapid development of multiple products across the full range of customer needs. With the losses and restrictions of chemical fumigants, biologicals have the potential to help fill an unmet market need," said Pam Marrone. at MBI.

Source: http://www.marronebioinnovations.com

Float trays as an alternative to methyl bromide

Recently the Zimbabwe Open University, has carried out a study in Hurungwe district in Zimbabwe to evaluate the feasibility as well as the challenges of using float trays as an alternative to the use of methyl bromide in tobacco production. The study made use of the qualitative and quantitative research design. Questionnaires, interviews, economic analysis and field observations were used as data collection instruments. Descriptive analysis was used in the research. The results of the study indicated that floating trays can effectively substitute the use of methyl bromide in tobacco seedling production. This is because of their accessibility, ability to produce excellent quality seedlings because of reduced insect pest, weeds and disease attack and also a reduction in labor requirement.

The float trays maintain or improve productivity because the transplanting shock is reduced; when the seedlings are ready for transplanting, there is a reduction land required for seedling production as well as the cost effectiveness of the float trays. There are, however, challenges that affect the float tray system, although the challenges are outweighed by the advantages. The challenges include the technical knowhow that is associated with the float tray system. The unavailability of additional substrates, the distance to the float tray distributors where the trays are procured, high initial establishment costs and the need for farmer to stay on the farm until the seedlings are transplanted onto the field are also factors affecting the adoption of the float trays.

From the results of the research, it can be concluded that float trays can substitute methyl bromide in insect pest, weeds and disease control while being environmentally friendly. It is recommended that there is need for farmer training on the use of float trays, government subsidies in initial establishment of the technique, ready supply of the float trays and decentralization of the manufacturers of float trays into tobacco growing areas. The study has been published in the Asian Journal of Applied Science and Engineering.

Source: http://www.ajase.weebly.com

RECENT PUBLICATIONS

Adsorption Refrigeration Technology: Theory and Application

Systematically covering the technology of adsorption refrigeration, this book provides readers with a technical understanding of the topic as well as detailed information on the state-of-the-art from leading researchers in the field. Introducing readers to background on the development of adsorption refrigeration, the authors also cover the development of adsorbents, various thermodynamic theories, the design of adsorption systems and adsorption refrigeration cycles. The book guides readers through the research process, covering key aspects such as: the principle of adsorption refrigeration; choosing adsorbents according to different characteristics; thermodynamic equations; methods for the design of heat exchangers for adsorbers; and the advanced adsorption cycles needed. It is also valuable as a reference for professionals working in these areas.

Contact: John Wiley & Sons Singapore Pte. Ltd., 1 Fusionopolis Walk, #07-01 Solaris South Tower, Singapore-138628. Tel: +65-6643-8333; Fax: +65-6643-8397; E-mail: csd_ord@wiley.com

Ozone and Ozone Depletion: Sources, Environmental Impact and Health

In recent years, several new concepts have emerged in the field of ozone science, creating a need for an in-depth publication covering the various ozone related issues. This book fills that void in the literature by providing a unique collection of our understanding of the "good" and "bad" of ozone gas. The one-of-a-kind compilation of chapters written by leading experts in the field from all over the world will serve world scientists, teachers, students, and regulators as a single reference to a global perspective on: What are the various sources for ozone? What is happening to the good ozone layer? How does the depletion of good ozone affect human health and the environment? There is an enormous amount of information coming out of the scientific and political arenas concerning ozone. This book's objective is to try and give the 'overall picture' to the readers on different topics in the field of ozone.

Contact: Nova Science Publishers, Inc., 400 Oser Ave Suite 1600, Hauppauge NY 11788-3619 USA. Tel: +1-631-231-7269; Fax: +1-631-231-8175; E-mail: nova.main@novapublishers.com

TECH EVENTS

2014

20-21 Nov
Kobe, Japan

The International Symposium on New Refrigerants and Environmental Technology 2014
Contact: The Symposium Secretariat
The Japan Refrigeration and Air Conditioning Industry Association
Kikai Shinko Bldg. 201, 3-5-8, Shibakoen, Minato-ku,
Tokyo 105-0011, Japan
Tel: +81-3-3432-1671
Fax: +81-3-3438-0308
E-mail: kobesympo2014@jraia.or.jp
Web: http://www.jraia.or.jp

1-4 Dec
Paro, Bhutan

Thematic Workshop on HCFC Policy and Enforcement of the South Asia Network of Ozone Officers
Contact: Atul Bagai
UNEP Regional Office for Asia and the Pacific (ROAP) United Nations Building Rajdamnern Nok Avenue
Bangkok-10200, Thailand
Fax: +66-2-280 3041
E-mail: atul.bagai@unep.org

8-9 Dec
Bandar, Islamic Republic of Iran

Thematic Workshop on follow-up Tehran Dialogue on HCFC Policy and Enforcement
Contact: Atul Bagai
UNEP Regional Office for Asia and the Pacific (ROAP) United Nations Building Rajdamnern Nok Avenue
Bangkok-10200, Thailand
Fax: +66-2-280 3041
E-mail: atul.bagai@unep.org

2015

26-28 Feb
Bangalore, India

ACREX India 2015
Contact: ISHRAE
502, DDA Building District Centre, Laxmi Nagar, New Delhi-110092
Tel: +91-11-22540537
Fax: +91-11-43001814
E-mail: acrex2015@ishraehq.in

8-10 Apr
Shanghai, China

China Refrigeration Expo 2015
Contact: Ms. Zhang Ping/Mr. Zhong Weiqin Chinese Association of Refrigeration (CAR) Fl.10, Yindu Tower, 67, Fucheng Rd., Haidian District, Beijing, 100142, China
Tel: +86-10-68719984
Fax: +86-10-68420694
E-mail: wqzhong@car.org.cn
Web: http://www.cr-expo.com

PUBLICATIONS from APCTT

PERIODICALS

(Free access at www.techmonitor.net)

- ❑ Asia Pacific Tech Monitor (4 issues/year) — (e-version)
- ❑ VATIS Update (4 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.

[#] Six issues per year. A print version for distribution to a select target group is supported by the Ozone Cell, Ministry of Environment & Forests, Government of India.

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