VATIS UPDATE

Ozone Layer Protection

Vol. 4 No. 120 • Sep - Oct 2013
ISSN 0971-5657

Apprise yourself with the latest technological innovations

Highlights

- Antarctic ozone hole hits 2013 peak size
- Steps to phase-out ozone depleting substances
- International cooperation to preserve ozone layer
- R290 partners with CO_2 for efficient industrial cooling
- Eco-friendly water-based adhesive for plastic-to-plastic bonding
- Low pressure mist technology
- Spray foam insulation offers environmentally sound option
- Researchers study organic alternatives to soil fumigants

APCTT
Asian and Pacific Centre for Transfer of Technology

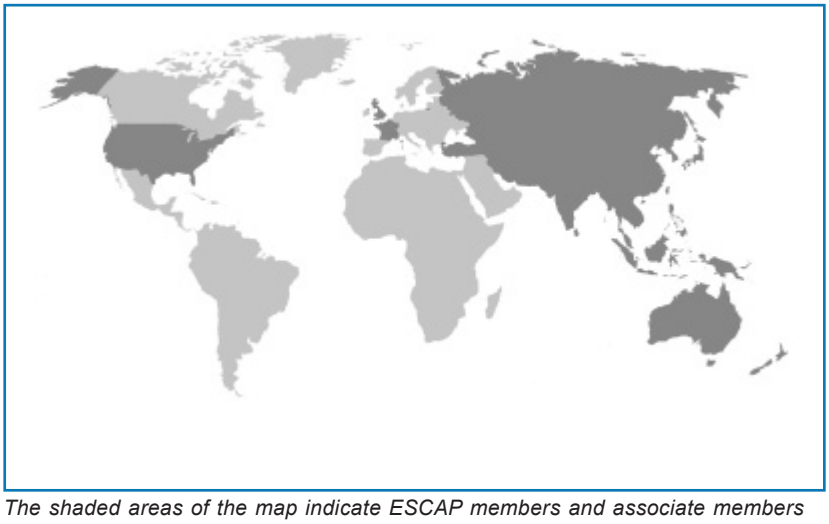
UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

Ozone Cell
Ministry of Environment and Forests
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

Inergen fire extinguishing agent containing nitrogen (52%), argon (40%) and carbon dioxide (8%)

(Credit: PROFIRE Sp. z o.o., Poland)

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 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-mef@nic.in
Website: http://www.ozonecell.com

*** Value Added Technology Information Service**

CONTENTS

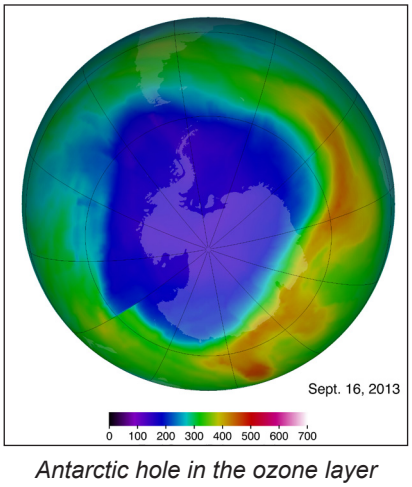
Vol. 4 No. 120 Sep - Oct 2013

Antarctic ozone hole hits 2013 peak size

The National Oceanic and Atmospheric Administration (NOAA), the Unitest States, has announced that the Antarctic ozone hole reached its biggest extent for the year on September 26, 2013.

Through an international treaty called the Montreal Protocol (first signed in 1987), 197 countries have agreed to phase-out the use of CFCs, the chemical responsible for destroying the ozone layer. The ozone layer is gradually recovering ever since. In February, scientists reported that the ozone hole reached a record low and was smaller than it had been the entire previous decade. Scientists estimate that the ozone hole will be closed by the middle of the century.

The southernmost continent is particularly prone to ozone depletion because the frigid winds circulating over Antarctica make CFCs particularly good at stripping oxygen atoms away from ozone molecules. The ozone hole also has effects on climate, because it alters the wind patterns over the icy continent, thereby altering cloud cover and the levels of radiation that reach the Earth's surface there.



Antarctic hole in the ozone layer

Source: http://www.foxnews.com

Africa is warmer due to ozone hole over Antarctica

Ever since its discovery in the early 1980s, a hole in the ozone layer opens up over Antarctica every year, decreasing ozone concentrations by as much as 70 per cent. The cause is human-produced chlorofluorocarbons (CFCs), which once were heavily used in aerosols and refrigeration. Now, researchers have found that the ozone hole may be linked to warming in southern Africa.

"At first, connecting the two [ideas] appeared quite absurd, and it never occurred to us until we carefully looked at the pointers in the data," said the lead author of a study, Desmond Manatsa, a climate scientist at Bindura University of Science in Zimbabwe. Scientists recently found that the ozone hole might help boost global warming slightly. By letting more energy penetrate deeper into the atmosphere, the ozone hole apparently shifted wind patterns over Antarctica. This shift pushed clouds closer to the South Pole, affecting how much of the sun's radiation the clouds reflect and, in turn, slightly warming the planet.

To see if the ozone hole might also explain the warming in southern Africa, scientists compared climate data on southern Africa from before the development of the ozone hole with the climate data from after the ozone hole had developed. They found that the ozone hole would have altered Southern Hemisphere wind patterns.

These changes, in turn, would have intensified the Angola Low, a low-pressure system in the atmosphere mostly located over Angola, situated on the west coast of southern Africa. This, in turn, would have led warm air from near the equator to flow into southern Africa. Their findings were detailed online in the Oct. 2013 issue of the journal Nature Geoscience. The ozone hole is largest in the early summer, coinciding with the recent warming in southern Africa. The new research from Manatsa and his colleagues now suggests that, if the Antarctic ozone hole closes after 2050, as it is currently projected to do, surface air temperatures could drop in southern Africa, though global warming will still affect the region.

Source: http://www.weather.com

Ozone hole over the South Pole shrinks

James Butler, director of the global monitoring division at the National Oceanic and Atmospheric Administration's Earth System Research Laboratory, the United States, said that the new figures are "sort of encouraging news." The news is that scientists say warm upper air this September and October helped shrink the man-made ozone hole near the South Pole slightly.

The hole is an area in the atmosphere with low ozone concentrations. It is normally at its biggest this time of year. The US space agency says on average it covered 8.1 million square miles this season. That's 6 per cent

smaller than the average since 1990. High-altitude ozone shields Earth from ultraviolet radiation.

NASA chief atmospheric scientist Paul A. Newman says the main reason for this year's result is local weather. The upper air has been warmer than normal, which led to fewer polar stratospheric clouds. These clouds are where ozone is destroyed by chlorine and bromine, which come from man-made products.

Source: http://www.telegraph.co.uk

Ozone hole closing but a slow process

The ozone hole is closing but it is a slow process and predictions are for it to recover between 2050 and 2100, an expert from University of Canterbury (UC), New Zealand, said.

Dr. Adrian McDonald says climate change in Antarctica really matters to New Zealand because it will cause ice to melt resulting in sea levels to rise. But, also the temperature difference between the poles and the equator controls wind patterns over NZ which could potentially mean increased-rainfall on the West Coast or dryer Canterbury Plains. The recent National science challenge aims to identify how climate is changing over Antarctica so that we can understand what our future might be in New Zealand.''

The Montreal Protocol, which effectively banned chlorofluorocarbons (CFCs), has helped to reduce the size of the ozone hole. The Protocol on substances that deplete the ozone layer is an international treaty which is phasing out the numerous substances believed to be responsible for ozone depletion. The treaty entered into force in 1989. It is believed that if the international agreement is adhered to, the ozone layer is expected to recover by 2050. Due to its widespread adoption and implementation, the Montreal Protocol has been hailed as an example of exceptional international co-operation.

Ironically, stratospheric ozone depletion may have indirectly protected Antarctica from the worst of greenhouse gas-related warming.

With the ozone recovery, the future of Antarctic climate is less certain, though the complex interactions in the atmosphere associated with climate change makes this region particularly hard to predict. The future recovery of the Antarctic ozone hole and increases in greenhouse gases will have significant impacts on the circulation in the southern hemisphere. The increasing ozone hole has until now acted to change the circulation of the Southern Hemisphere so that the strong winds linked to the jet streams have moved towards the pole.

Dr. McDonald said ozone recovery should act to move the winds back towards the equator, but this may be counteracted by greenhouse gas forcings. The jet-stream positions are one of the main things that help control the width of tropical and polar weather belts.

Source: http://www.scoop.co.nz

Ozone treaty accidentally slowed global warming

The Montreal Protocol, a treaty enacted in 1987 to protect the Earth's thinning ozone layer, has had the unintended benefit of helping to slow the rate of global warming since the mid-1990s, according to a new study. The study, published in the journal Nature Geoscience, relies on a statistical analysis of global average temperatures as well as greenhouse gas emission trends, including chlorofluorocarbons or CFCs, which both break down ozone in the upper atmosphere and help warm the climate.

The study provides evidence that the Montreal Protocol was an effective climate treaty, albeit an accidental one, and it is the first to link the treaty to the recent slowdown in warming. At the time the treaty was negotiated, CFCs were known to be greenhouse gases, but the treaty was not initially meant to address global warming, an issue that was just starting to gain public attention. According to the study, the phase down in the use of CFCs during the 1990s into the early 21st Century, which was solely intended to reverse the loss of Earth's protective ozone layer in the upper atmosphere, has shaved nearly 0.2°F of global warming since that time. While that may seem small, considering that the world has warmed by an average of about 1.6°F during 1901–2012, it is not a trivial amount.

Source: http://www.climatecentral.org

OzonAction Multi Media Collection (MMC) e-Library

The UNEP OzonAction e-Library contains several thousand publications related to the implementation of the Montreal Protocol dating from 1982 to the present. Most of the publications produced by the OzonAction Programme are available online in full-text PDF format for free download. When available, direct links are provided to online publications.

For more information, access:
http://www.unep.fr

Steps to phase-out ozone depleting substances

"State governments must cooperate with the Centre in its efforts to phase-out the ozone depleting substances (ODSs) in the country," said Mr. Susheel Kumar, additional secretary, Ministry of Environment, Government of India.

Addressing a meeting organised to mark the 19th International Day for Preservation of Ozone Layer in Chennai, he said the MoEF held discussions with industries to understand their concerns regarding phasing down of hydro fluorocarbons (HFCs).

The industrial houses have expressed concern over lack of environment friendly, technically proven and viable alternatives for most of the applications especially for refrigeration and air conditioning sector where HFCs are widely used.

The industries will find it hard to phase-out the consumption of HFCs in the coming years, since the country is the second largest producer among the developing world, he said.

He said India and the United States have been working together to create awareness among stakeholders on phasing-down HFCs. A draft report prepared by India-US Task Force on HFCs is being finalised, he added.

Source: http://www.deccanchronicle.com

HCFC phase-out plan for Stage-I servicing sector

HCFC Phase-out Management Plan (HPMP) Stage-I of India comprises 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).

HCFCs are 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 refrigerant consumption in the Servicing Sector not only depends on the installed base of RAC equipment, but also on product quality and the quality of servicing during product life cycle. The quality of servicing depends on knowledge and skill levels of technicians, appropriate equipment and tools etc. 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 practices need to be improved not only for reducing the refrigerant requirement in servicing, but also for proper and efficient functioning of the RAC equipment. During servicing, recovery of refrigerant is not a common practice, especially in developing countries. The refrigerant is often simply vented out and after repair the equipment is recharged with the virgin refrigerant. There is also a practice to top up the RAC equipment with the refrigerant without proper leak detection and repair. There could be potentially significant savings in refrigerant use if proper recovery of refrigerant and good servicing practices are implemented.

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 centers.

Source: http://www.ozonecell.com

MoEF to comply with HPMP Stage-I targets

HCFC Phase-out Management Plan (HPMP) Stage-I is being implemented to meet the 2013 freeze and 2015 phase-out targets as per the above Montreal Protocol schedule.

In order to comply with the HPMP Stage-I, it has been decided the following with immediate effect:

- Introduction of quota system for production and consumption of Group VI substances (HCFCs) for non-feedstock applications;
- Monitoring and reporting system for all feed stock applications including use of Carbon tetrachloride;
- Prohibition of issuance of license for import of blends containing Ozone Depleting Substances (ODS) including Group VI substances;
- Ban on creating new capacities to manufacture products made with or containing Group VI substances (HCFCs); and
- Prohibition of issuance of license for import of pre-blended polyols containing Group VI substances (HCFCs).

Source: http://www.ozonecell.com

International cooperation to preserve ozone layer

United Nations Secretary-General Ban Ki-moon has called on the international community to continue efforts that will preserve the world's ozone layer and protect the environment. In his message for the International Day for the Preservation of the Ozone Layer, Mr. Ban pointed to the Montreal Protocol as an example of how Member States are capable to work for the common good. "Extraordinary challenges require extraordinary responses," he said. "A generation ago, the world's nations agreed to act definitively to protect the ozone layer, initiating an intergovernmental process that blazed new trails."

Signed on 16 September 1987, the Montreal Protocol aims to protect the ozone layer by taking measures to control total global production and consumption of substances that deplete it, with the ultimate objective of their elimination.

Mr. Ban called the Protocol a "remarkable success story" which provides a "beacon of hope," and serves to chart a new vision beyond 2015, the deadline for the eight anti-poverty goals known as the Millennium Development Goals (MDGs). "Sustainable development — enabled by the integration of economic growth, social justice and environmental stewardship — must become our global guiding principle and operational standard," Mr. Ban said.

"On this International Day for the Preservation of the Ozone Layer, I commend all who have made the Montreal Protocol such an outstanding example of international cooperation. I urge Governments, industry, civil society and all other partners to apply the same spirit to the other great environment and development challenges of our times."

Source: http://www.un.org

India's interests on HFCs phase-out

In a breather for domestic manufacturers of cooling appliances, New Delhi has succeeded in conveying to the G-20 that it will not compromise its interests on the issue of phasing out of hydrofluorocarbons (HFCs), which are used in refrigeration.

The recently concluded G-20 Summit in St. Petersburg has attempted to balance India's concerns with the demands of the United States and the European Union that HFCs should be discussed under the Montreal Protocol, the international agreement aimed at protecting the earth's ozone layer.

Developing nations like India have started switching to use of HFCs from the ozone-depleting hydrochlorofluorocarbons (HCFCs) as refrigerant gas. However, industrialised countries want them to move toward use of environment-friendly, but relatively unproven alternative refrigerant gases instead of HFCs.

The Montreal Protocol, which is binding on all signatories, requires India to cut back on its use of HCFCs starting January 2013. With growing consumerism and improving living standards, India and China are fast emerging as big markets for air conditioners and refrigerators.

Industrialized countries have been pushing India to both bypass the transition to HFCs and to agree to bring these gases under the purview of the Montreal Protocol. Unlike the Kyoto Protocol, which is binding on the industrialised countries, the Montreal Protocol applies to all countries. The recent G-20 summit took the middle path approach, taking on board arguments by both the developed and developing members of the group.

Source: http://www.articles.economictimes.indiatimes.com

BASIC nations agree with India's stand on HFCs

A powerful group of nations working on climate change has agreed with India's stand against the United States and some developed countries' move to push for the phasing out of hydrofluorocarbons (HFCs). Secretary in the Environment Ministry, Dr. V. Rajagopalan, represented India in the meeting.

In its meeting held at Brazilian city of Foz de Iguacu, Brazil, South Africa, India and China, known as BASIC group of nations, have agreed with India's stated position that unless there was a cost effective and environmentally sound technology, such a proposal seeking phasing out of HFCs could not be accepted.

"Ministers agreed that hydrofluorocarbons (HFC) should be dealt with through relevant multilateral fora, guided by the principles and provisions of UNFCCC and its Kyoto Protocol," a joint statement, issued after the meeting, said.

The statement assumes significance in the wake of India having differences with the US and other developed countries over drafting a proposal in the Montreal Protocol on substances depleting the Ozone layer.

Environment and Forests Ministry Additional Secretary Mr. Susheel Kumar has articulated India's stand. "We are not agreeing to the proposal of phasing out hydrofluorocarbons (HFCs). We are saying that we don't have any alternative technology. Our stand has been approved by our Cabinet," he said in Chennai while participating at a function on the theme of preservation of ozone layer.

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

Training for the technicians in Fiji

The Department of Environment (DoE) of Fiji, has trained more than 400 technicians in the refrigeration and air conditioning sector as it continues efforts to protect the ozone layer.

Department of Environment ozone depletion substance (ODS) Inspector Seru Ramakita said they were obligated to concentrate on key stakeholders and end users of ODS. Mr. Ramakita said this was an international recommendation for the cause to protect the ozone layer since 2003 and through special funding from United Nations Development Programme, they managed to fulfil the refrigerant management training. He said they conducted courses four times a year at the Fiji National University and the program was under review to facilitate present challenges.

Source: http://www.fijitimes.com

Fiji targets ozone depleting substances

THE Fiji Revenue and Customs Authority (FCRA) is strengthening its ties with the business community in a bid to facilitate imports and exports. FRCA border control manager Semesa Bulikiobo said this was one of the pillars of the authority. "In this case the facilitation of ODS (ozone depleting substances) commodities imported and exported," he said.

ODS is a synthetic chemical such as chlorofluorocarbon (CFC), chlorofluoromethane, or halon used in aerosol cans, plastic foams, refrigerants, and certain solvents.

Mr. Bulikiobo said they had seized a lot of ODS commodities and collected revenue from those who did not comply with regulations put in place for the import and export of those items. "It is our business now and our responsibility to control the ODS commodities at our border. We are having discussions about modern ways to export and import of these commodities," he said.

Source: http://www.fijitimes.com

Pakistan observes Ozone day

The International Day for the Preservation of the Ozone Layer was observed in Pakistan with the theme "A Healthy Atmosphere, the Future We Want".

The United Nations' Environment Programme dedicated the day in 1994 to sensitize the world community on the significance of this issue. Since then, it is being observed every year on September 16 and various awareness activities are organised by governments, NGOs and other organisations to mark the day.

The Sindh Environmental Protection Agency (SEPA), Pakistan, has launched a one-day awareness campaign through cable networks to make people aware of the role of the ozone layer.

The day commemorates the date of signing of the Montreal Protocol on Substances that Deplete the Ozone Layer in 1987.

On December 19, 1994, the UN General Assembly proclaimed September 16 as the International Day for the Preservation of the Ozone Layer. The day was first celebrated on September 16, 1995. On this day primary and secondary school educators throughout the world organise classroom activities that focus on topics related to the ozone layer, climate change and ozone depletion.

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

Philippines campaign on the preservation of the ozone layer

The Environmental Management Bureau (EMB) of the Department of Environment and Natural Resources (DENR), the Philippines, has intensified its campaign for the preservation of the ozone layer, a fragile shield of gas that protects the Earth from the harmful portion of the rays of the sun.

This is in accordance with the global observance of the International day for the Preservation of the Ozone layer every September 16 as proclaimed by the United Nations (UN) general assembly.

This is also part of the efforts of the Philippine government to implement programs in phasing out ozone-depleting substances or ODS like chlorofluorocarbons (CFCs) that were used as cooling chemicals for refrigerators and air conditioners, blowing agents and propellant for spray cans, among others, that cause health and environmental problems.

EMB is also urging its partner agencies to reproduce posters, streamers, tarpaulins, publications and other promotional materials that will feature images of the sun, sky and other natural resources of the earth to represent the ozone's importance in protecting the environment.

The phasing out of the use of ODS have not only helped to protect the ozone layer but is reported to have also contributed significantly to global efforts to address climate change. In 2012, it was reported that the ozone hole has shrunk and was recorded to be the smallest in the last decade.

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

Indonesia committed to protecting ozone layer

Indonesia's strong commitment to protect the ozone layer is demonstrated in its initiative to invite all parties to choose an alternative to ozone-depleting products, Environment Minister Balthasar Kambuaya said on Monday. He believes the declaration serves as a reminder and invitation to all parties in the country to choose an alternative to ozone-depleting substances by considering the technological aspects of reducing the potential for global warming. He also believes that all parties need to conduct studies on appropriate technologies to protect the environment, and urged developed countries to provide funding through the Multilateral Fund to minimise any impact on global climate.

Various efforts to achieve the desired targets are being conducted by the government, including joint efforts by the ministers for the environment, industry and trade who since last year have fixed the national HCFC import quota to control the entry of HCFCs into Indonesia.

Source: http://www.bernama.com.my

Protecting the ozone layer is everybody's concern

Two dates, September 14 and 16 mark important events in the field of international cooperation to protect the global commons.

September 14, according to the Department of Environment and Natural Resources (DENR), marks the 25th anniversary of the signing by the Philippines in 1988 of the Montreal Protocol on Substances that Deplete the Ozone Layer in 1988. The international resolution gave birth to a much bigger or global celebration — the International Day for the Preservation of the Ozone Layer, which was proclaimed by a UN Assembly resolution adopted in 1994.

The Philippine Ozone Desk of the DENR-Environmental Management Bureau has been leading the annual celebration of Ozone Day since 1995. The DENR said the Montreal Protocol has been hailed as a prime example of successful international cooperation to protect the global commons, which are indentified under international law as the High Seas, the Atmosphere, Antarctica, and Outer Space.

The country has contributed to the global key achievements of the Protocol to include the following: (1) the phase-out of 98 percent of the historical production and consumption of ODS; (2) universal ratification of the Montreal Protocol with 197 member countries; (3) the recovering ozone layer — in 2012, it was reported that the ozone hole has shrunk and was recorded to be the smallest in the last decade; (4) since most ODS are also greenhouse gases, the Montreal Protocol has already averted greenhouse gas emissions equivalent to more than 135 billion tons of carbon dioxide; and (5) controls implemented under the Protocol have enabled the global community to avoid millions of cases of fatal skin cancer and tens of millions of cases of non-fatal skin cancer and eye cataracts.

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

Arkema to invest €200 million for 1234yf refrigerant gas

Arkema has selected Changshu (near Shanghai) in China for its first facility in Asia to manufacture 1234yf refrigerant gas, as a part of its strategy announced on September 4, 2013 to construct a 1234yf low global warming potential (LGWP) refrigerant gas production plant. As per the strategy, Arkema is executing a two phase strategy based on proprietary technology: this first phase, based in Asia, is a project capable of supplying the emerging needs for 1234yf and a second phase investment in Europe with the objective to fully replace R134a after 2017.

This announcement is very important for the car makers market in Europe as the current gas used in Europe in cars (R134a) will be forbidden in all the new cars in Europe, according European directive. Currently, only Honeywell (HW) has a production site (in China with DuPont), so from 2016, there will be HW-Dupont and Arkema.

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

Power reduction for innovative cooling technology

NEC Corporation has developed an innovative, multi-stage cooling technology that enables data centers to reduce air conditioning power consumption by up to 50%.

NEC is leveraging phase change coolants that are able to remove a large amount of heat from the system at the temperature point when they change from liquid to vapor. The company said its technology is able to substantially reduce the air conditioning load inside server rooms because the heat from devices is collected before dispersed and is transported directly to the outside of the server room. In the case of a server room in which power consumption per rack is 12 kW, total air conditioning power consumption (i.e. power consumed by fans and cooling machines) can be reduced by as much as 50%. Recent tests conducted at an NEC facility with 10 servers demonstrated that approximately 50% of the heat exhausted from the back of a rack was transported to the outside of the server room.

NEC has also developed a technology used to distribute and efficiently circulate coolant through each level of a multi-stage rack based on the amount of heat generated. The system uses an environmentally friendly coolant with an ozone depletion potential (ODP) of zero and a global warming potential of less than one half of conventional products such as HFCs, thus providing an ideal balance between high-efficiency cooling and low environmental impact.

Source: http://www.nec.com

Naturally refrigerated trailer

Sainsbury's is trialing the world's first naturally refrigerated trailer to transport chilled and frozen goods. The CO_2 refrigerated unit trial is part of the retailer's review of its transport refrigeration gas as it aims to reduce its carbon footprint, which includes converting its stores to natural refrigeration by 2030.

Sainsbury's was the first UK retailer to commit voluntarily to phasing out harmful HFC refrigerants. It converted its refrigerated depots in 2011 and is on track to switch 250 stores to CO_2 refrigerant by 2014 — over 160 stores have already moved to the natural refrigeration system. Currently all new stores are fitted with CO_2 as standard and its Haslucks Green Local store in Solihull is also trialling the very first small-scale CO_2 refrigeration system, making it Britain's greenest convenience store.

Nick Davies, Sainsbury's Head of Transport Operations, said: "The new carbon dioxide technology has much less of an impact on climate change and we hope it will play a big part in helping us reduce our carbon emissions. We will be monitoring its performance closely and if successful, in line with our replacement plan, it could help us save over 70,000 tonnes of CO_2 compared to the current refrigerated trailer fleet."

Sainsbury's is working with Carrier Transicold in a two year trial of the new HFC-free cooling technology for road transport, using a modified version of Carrier's NaturaLINE™ refrigeration system, which was initially developed for deep sea containers and completed a rigorous sea trial programme in 2012.

Source: http://www.internationalsupermarketnews.com

Keeping the world cooler with ozone-friendly refrigerants

Decades ago, few people thought common conveniences like refrigerators and air conditioners would contribute to environmental concerns. But with mounting unease over ozone depletion, a significant focus was placed on a hydrochlorofluorocarbon (HCFC) called R-22, and in 2004, the Clean Air Act moved to phase-out HCFCs by 2020 in favor of ozone-friendly refrigerants (HFCs). The industry needed a new, cleaner replacement refrigerant it could retrofit into existing equipment, as well as a responsible way to phase-out its R-22 use — and DuPont moved to address both options.

DuPont developed ISCEON® MO99™ ozone-friendly refrigerant — a zero-ozone-depleting HFC refrigerant designed to replace R-22 in existing air conditioning and refrigeration systems. It provides similar cooling capacity and energy efficiency to R-22, and with a significantly lower discharge temperature that can help prolong compressor life. ISCEON® MO99™ refrigerant retrofits are quick and cost-effective for most R-22 systems — simply recover the R-22, replace critical seals, charge refrigerant, and restart. DuPont and industry groups also collaborated to create www.phaseoutfacts.org, which details responsible use of refrigerants, as well as pointing users towards the DuPont Refrigerant Reclaim Program and its options for

recovering and recycling R-22 at authorized centers.

Implementing a refrigerant management plan that includes retrofitting to HFCs such as ISCEON® MO99™ ozone-friendly refrigerant, and recycling existing R-22, allows business owners to move away from HCFC usage and its negative impact on the environment, while remaining efficient and operational. By working together and taking advantage of DuPont programs and product offerings, equipment owners and facility managers will be protecting their businesses and protecting the environment.

Source: http://www.dupont.com

R290 partners with CO_2 for efficient industrial cooling

Schiessl's cascade CO_2/R290 system for hop cooling has proven significant gains in decreasing power consumption compared to an R404A system. This is just one of the projects that will be presented during the Technology Case Study Session of the upcoming ATMOsphere Europe 2013.

Since November 2012, the cascade CO_2 and R290 unit Schiessl took into commission has been running fault free and has shown noticeable reduction in power consumption when compared to the predecessor unit, which used R404A. The unit's duty is 140 kW for brine at –37°C, which is used for the industrial process of hop cooling. It is designed as a compressor rack with three Bitzer reciprocating compressors at each stage. To keep operational and investment costs low, heat exchangers were integrated for sub-cooling the R290 and desuperheating the R744. Electronic expansion valves and frequency inverters for the compressor and condenser were also employed. This basic design can be used as a model for any cooling duty by brine or direct expansion between –25°C and –48°C.

Source: http://www.hydrocarbons21.com

Cooling technology to replace drinks refrigeration

Enviro-Cool (UK) Limited, the United Kingdom, has created a rapid drinks cooling technology with the potential to replace the need for drinks refrigeration in shops and homes across Europe.

The technology chills a can from room temperature to chilled (5°C) in fewer than 45 seconds using technology based on a Rankine vortex, now patented as V-Tex. The commercial product will begin trials in a Dutch supermarket.

Enviro-Cool (UK) Limited was supported as part of a wider EU industry consortium — Rapidcool — which received a grant of €932,000 from the European Union to progress the technology to commercial development. The Rapidcool consortium estimate that the average saving on electricity costs equate to £700 per replaced fridge per year.

Kelvin Hall, founder of Enviro-Cool (UK) Limited, said: "The development grant from the EU has enabled us to develop Rapidcool as a replacement to the existing, expensive, high energy use equipment, such as multi-deck open refrigerators and beverage merchandisers."

Source: http://www.fdbusiness.com

Refrigeration system uses CO_2 to reduce carbon footprint

Carrier Corp., the heating and air conditioning giant, has figured out a way to use carbon dioxide to reduce its carbon footprint.

They have enlisted the troublesome gas for use as a refrigerant, one that is well-suited for a variety of commercial applications involving low-temperature cooling. It turns out that carbon dioxide, when used under high pressure, can function as a very effective refrigerant, producing cooling with significantly less energy than conventional CFC-based refrigerants.

Carrier recently announced availability of its NaturaLINE marine container refrigeration system. The market for this product is the 175,000 refrigerated container ships that ply the ocean cooling roughly $6 billion worth of cargo every year.

This system, with its CO_2-based refrigerant, reduces the carbon footprint by 35 per cent compared to its predecessor, primarily due its higher energy efficiency. Its carbon footprint also shrinks due to the fact that CO_2 is a far less potent greenhouse gas (GHG) than its CFC-based predecessor, Freon. NaturaLINE systems also recycle CO_2 that has been pulled out of the environment, making them carbon neutral in this regard. The amount of refrigerant used in each system is relatively small, so this does not represent a substantial opportunity for carbon sequestration. This was a technical challenge for Carrier, since the use of CO_2 as a refrigerant requires high pressures, which typically involves a good deal of power consumption.

Source: http://news.thomasnet.com

Eco-friendly water-based adhesive for plastic-to-plastic bonding

AquaBased Technologies, a division of ADM Tronics Unlimited, Inc., New Jersey, the United States, has introduced AquaTack™ 7001-PAA, a new, eco-friendly, water-based adhesive specifically designed for use in flexographic presses and other applicators for the lamination of virtually any type of low surface energy plastic films as well as for other plastic-to-plastic bonding applications. Most plastic bonding adhesives use a solvent base to achieve bonding to plastic surfaces. It has been a challenge to achieve high bond levels to plastic surfaces with water-based adhesives — until the development of AquaTack™ 7001-PAA.

AquaTack™ 7001-PAA was developed based on customer demands for a safe alternative to replace solvent based adhesives used in plastic-to-plastic laminating and other manufacturing applications. In particular, it was designed to be applied by flexographic presses used in both web and sheet-fed production equipment. AquaTack™ 7001-PAA is completely water-based and contains no Volatile Organic Compounds (VOC-free) or ozone depleting ingredients, making it environmentally safe, without requiring emission controls or safety procedures necessary for competitive, hazardous, solvent-based adhesives. It is easy to clean up without the use of caustic or hazardous cleaning products. *Contact: Mr. Thomas Kistler, AquaBased Technologies, 224, Pegasus Avenue, Northvale, New Jersey 07647, USA. Tel: +1-201-767-6040; Fax: +1-201-784-0620; E-mail: sales@aquabased.com.*

Source: http://www.online.wsj.com

Non-ozone depleting, solvent cleaner

Cantol Corp., Canada, has developed a ready to use, nonflammable, noncombustible, non-ozone depleting, solvent cleaner and degreaser, and doesn't contain 1,1,1-Trichloroethane. The J-88 is designed for the spray cleaning of electrical and mechanical equipment where grease, oils, lubricants, grime, tar, and other contaminants can reduce the efficiency of the equipment. It contains no CFC's, ozone depleting chemicals or petroleum distillates.

The controlled evaporation of J-88 allows for the flushing of insoluble matter and the dissolving of soluble oils; yet dries fast. J-88 leaves no residue to attract dirt or grime. With J-88, there is no need to turn off motors or electrical equipment or disassemble since the J-88 liquid formula has no flash point; is nonconductive and works its way into hard to reach areas. Metals, many plastics, paints and insulating materials are not affected by J-88. Restore efficiency and conserve energy by the regular use of J-88 as a spray, dip, wipe, brush or soak solution. *Contact: Cantol Corp., #199, Steelcase Road, West Markham, ON L3R 2M4, Canada. Tel: +1-905-475-6141; E-mail: info@cantol.com.*

Source: http://www.cantol.com

Ozone safe cleaners

Daphne Alpha Cleaner Series is a series of highly purified synthetic hydrocarbon cleaner/ degreaser specially developed by Idemitsu, Malaysia. The series is able to meet today's stringent requirement for industrial cleaning & degreasing and being totally environment friendly at the same time for it does not contain ozone depleting substances. Recommended as a cleaner/ degreaser for all types of metals. It is also able to clean rubber and plastic parts.

Daphne Cleaner NM/NH is a highly purified napthenic hydrocarbon specially developed by Idemitsu. It is an environmental friendly product as it does not contain any ozone-depleting chemicals. Recommended to degrease and clean all types of metals, it can also be used to clean rubber and plastic parts. *Contact: Idemitsu Lube Malaysia (KL), Malaysia. Tel: +03-615-795-29; Fax: +03-61579636.*

Source: http://www.idemitsu-ilm.com.my

Ultrasonic vapor degreaser

The Branson B-Series Ultrasonic Vapor Degreaser from Branson Ultrasonics, the United States, is the latest in a series of environmentally sound, cost-effective, precision degreasers. Liquid vapor degreasing with solvent has been an accepted method of precision cleaning for over 50 years. It incorporates washing, rinsing, drying, and solvent reclamation in compact, cost-effective unit. This alone makes it a very attractive process for many production cleaning applications.

Environmental concerns raised in the last decade have changed both the chemistry and hardware technology for degreasing. Solvents have been modified or replaced to eliminate ozone depletion potential and other hazards. Equipment designs and operating processes have been totally re-engineered to reduce solvent losses to near zero. All Branson

solvent degreasers meet NESHAP regulations, Environmental Protection Agency directives, and other applicable regulations.

Perhaps the most attractive aspect of liquid vapor degreasing as a cleaning technology is the simplicity of the process itself:

- Parts are placed in a basket or carrier;
- They are moved into the vapor zone (A) for pre-cleaning with hot vapors;
- Then parts are transferred to the precision cleaning sump (B) for ultrasonic cleaning;
- Parts cooled in the cleaning sump are returned to the hot vapor zone (A) for final rinsing; and
- A final stop in the freeboard area (C) allows any residual solvent vapors to return to the vapor zone.

Branson's full line of precision ultrasonic, vapor degreasers have been designed to operate with a broad range of commercially available solvents. This includes many of the traditional materials like methylene chloride, trichloroethylene, and perchloroethylene. They are also suitable for use with newer solvents like HCFC, HFC, HFE, n-propyl bromide, and others. *Contact: Branson Ultrasonics Americas Headquarters, 41 Eagle Road Danbury, CT 06810, USA. Tel: +1-203-796-0400; Fax: +1 203-796-9838; E-mail: info@BransonUltrasonics.com.*

Source: http://www.emersonindustrial.com

HFC based solvent

Rx11-flush developed by NuCalgon, USA, is a unique solvent that has been engineered for flushing refrigeration and air conditioning systems. Its patented 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

Eco-friendly solvent cleaner/degreaser

Poly Systems', the United States, has developed the Solvon solvent cleaner and degreaser, an azeotrope-like blend formulated to perform like trichloroethylene (TCE) without adverse effects on the environment. It has been approved under the U.S. EPA Significant New Alternatives Policy (SNAP) as a replacement for ozone-depleting solvents in vapor degreasing applications.

Solvon uses a patented stabilizer for longer solution life and has no flash point. It is not a reportable chemical under the EPA's Superfund Amendments and Reauthorization Act of 1986 (SARA), and is not regulated as a hazardous waste under the Resource Conservation and Recovery Act (RCRA) or as a hazardous air pollutant under National Emission Standards for Hazardous Air Pollutants (NESHAP). Solvon has been used to clean aerospace, automotive, medical, electronic and general metal components, and in a variety of specialty applications.

Source: http://www.pfonline.com

Drop-in solvent replacement

VaporFlor™ 4.5 Solvent from Florachem, USA, is the ultimate drop-in replacement for trichloroethylene (TCE), perchloroethylene (PERC), HCFC-225 and other regulated solvents in open top and vacuum vapor degreasers. VaporFlor 4.5 is non-flammable, SNAP approved and has outstanding solvency. Used as directed, VaporFlor 4.5 will help reduce hazardous emissions, minimize environmental reporting and is considered the low cost alternative when switching from chlorinated solvents.

VaporFlor 4.5 is a precise mixture of n-propyl bromide (nPB), alcohol and stabilizers. This powerful azeotrope is perfect for cleaning, rinsing and drying all types of precision parts in a waterless process. VaporFlor 4.5 should only be used in tightly controlled open top or vacuum vapor degreasers to minimize operator exposure and emissive losses. VaporFlor Solvent is compatible with most materials and parts typically cleaned with chlorinated solvents in vapor degreasers. *Contact: Florachem Corporation, 5209, San Jose Blvd., Jacksonville, Florida, USA-32207-7663. Tel: +1-904-733-5759; Fax: +1-904-733-5950; E-mail: cleaning@florachem.com.*

Source: http://www.cleaning.florachem.com

Low pressure mist technology

Life Mist Technologies, Inc. (LMT) in the United States, has been chosen to participate in an Airbus funded Water Mist Fire Suppression Project, the NERO Project, with an objective to prove the effectiveness of the LMT low pressure mist technology as a suitable, weight efficient replacement for halon in commercial aircraft cargo holds. Airbus has contracted with Life Mist Technologies, Inc. to conduct an extensive test campaign of Life Mist's water mist/nitrogen fire suppression system using the protocols outlined in the Federal Aviation Administration Minimum Performance Standard for Aircraft Cargo Compartment Halon Replacement Fire Suppression Systems (FAA MPS).

Most high pressure water mist nozzles create mist by forcing water through tiny holes. Experts state that by increasing the pressure, often to over 1,000 psi, a small droplet profile may be obtained. In contrast, the enabling technology behind the Life Mist system is a dual-fluid nozzle that atomizes water into sub 100 micron sized droplets utilizing water and gas at very low pressures. Invented by Professor Yulian Borisov of the Andreyev Acoustics Institute of Moscow, Russia, the Yulian Nozzle creates high volumes of water mist in a narrow, small-droplet profile through an acoustic shock-wave phenomenon. This proprietary nozzle is a rugged device with no moving parts. Gas enters the nozzle at a nominal 60 to 80 psi and is accelerated to supersonic speeds. Upon its exit from the nozzle, the gas impinges on a resonator plate creating extremely efficient shock waves. Water enters the nozzle at a very low 4-10 psi, and it is then atomized at the resonator plate producing an ultra fine mist. By adjusting the gas and water pressures, the mist droplet volume and size profile can be scaled appropriately for the application. *Contact: Robert D. Gaudette, Life Mist Technologies, Inc., P.O. Box 239, Paoli, PA 19301, USA. Tel: +1-610-644-0419; E-mail: rdgaudette@lifemist-tech.com.*

Source: http://www.pyrolance.com

Clean agent fire suppression system

The SEVO™ 1230 FORCE500™ Clean Agent Fire Suppression System from SEVO™ Systems, USA, is a revolutionary new technology for clean agent systems that utilizes 3M™ Novec™ 1230 Fire Protection Fluid and its unique ability to be pressurized to 500 psi (34.5 bar).

It allows for longer pipe runs and smaller pipe diameters in addition to its cost saving benefits of using less clean agent in smaller and/or fewer cylinders per project. Along with these new engineering capabilities, it includes standard monitoring components such as an integrated pressure switch, pressure gauge, and gauge guard. The low vapor pressure of Novec 1230 FLuid allows for the use of low pressure welded cylinders and Schedule 40 piping. With these revolutionary features, the FORCE500 is a standout to conventional 360 psi (25 bar) systems.

The higher flow rate of the FORCE500 system allows for enhanced piping limitations. When protecting a main and subfloor hazard with a 360 psi system, a minimum additional 5% agent is required in the subfloor to compensate due to these piping limitations. By utilizing the FORCE500 system, no additional agent is required for the subfloor or subsequent areas. *Contact: SEVO™ Systems, 14335 West 97th Terrace, Lenexa, KS. 66215, USA. Tel: +1-913-677-1112; Fax: +1-913-384-5935; E-mail: NorthAmerica@SEVOSystems.com.*

Source: http://www.sevosystems.com

A safer alternative to halon

A new extinguisher by Siemens using a special protection fluid has been designed as environment-friendly while being useful in mission-critical areas. This system is used to replace the halon and other specialty hazard systems which exist in many of the highly sensitive areas such as computer rooms, tape storage, head end facilities and other critical areas.

Using 3M NovecFire Protection Fluid, the Sinorix 1230 from Siemens Industry Inc. is a green solution based on sustainable technology that ensures quick extinguishing in mission critical areas without negatively impacting the environment. With a global warming potential of 1 and zero ozone depletion, Sinorix 1230 allows system engineers to replace existing suppression agents and achieve U.S. Green Building Council LEED-EB certification credits. The Sinorix 1230 is a non-toxic, non-flammable, and non-conductive solution that requires no cleanup after discharge. The extinguishing system is designed to interrupt combustion processes at its earliest stage. The agent suppresses fire before there is enough heat to damage adjacent equipment or ignite other potentially combustible materials. At room temperature, Sinorix remains a liquid, but it behaves like a gas when the suppression system is activated. Siemens also offers a range of storage options for agent storage capacity from 16 to 1,200 pounds in a single cylinder.

Source: http://www.pyrosignal.com

Spray foam insulation offers environmentally sound option

ProSeal Eco™ developed by Icynene, the United States, is a 100% water-blown, medium-density, closed-cell spray foam insulation, and does not include any ozone-depleting blowing agent. Therefore, it offers environmentally sound alternative to chemical-based insulation products. Product has been tested in ASTM E119-approved wall assemblies enabling use in wide range of commercial applications. With optimal R-Value and adhesion performance, Icynene ProSeal Eco™ is suitable for any climate zone across North America.

"The architectural and construction communities have been demanding a product like this, and as the pioneers of modern spray foam insulation, Icynene is evolving the insulation industry unlike anyone else. This environmentally responsible product has been thoroughly tested and evaluated by the industry's key organizations ensuring that we continue to deliver high-quality spray foam products that deliver to the highest standard," said President and CEO, Howard Deck.

Icynene ProSeal Eco™ has been comprehensively tested in a range of ASTM E119 approved wall assemblies with cost effective materials resulting in a wider range of commercial application possibilities. With an excellent R-Value and superior adhesion performance, Icynene ProSeal Eco™ is suitable for projects in any climate zone across North America. *Contact: Icynene Marketing Communications, Icynene, 6747 Campobello Rd., Mississauga, ON, L5N2L7, USA. Tel: +1-800-758-7325; E-mail: media@icynene.com.*

Source: http://news.thomasnet.com

Patent issued for blowing agents formed from nanoparticles

A patent by the inventor Lapierre, Renee M. (Plantsville, CT), USA, filed on April 21, 2010, was published online on October 22, 2013, according to news originating from Alexandria, Virginia, USA, by NewsRx correspondents.

The following quote was obtained by the news editors from the background information supplied by the inventors: "The present disclosure relates to a blowing agent in the form of a solid mixture of an inorganic powder, more particularly nanoparticles of an inorganic carbonate, and an acid. The acid is capable of being liquefied by heating to be reactive with the carbonate to release carbon dioxide that is useful as a blowing agent in all types of organic foams. The solid mixture, optionally pelletized in a suitable polymer carrier, is useful as a heat-activated blowing agent additive in polymer compositions."

"Lower cost bicarbonates which generate CO_2 are employed as blowing agents, but the results achieved during their thermal decomposition are relatively unpredictable, and therefore they are not usually employed to produce high quality polymer foam parts having evenly distributed porosity and aesthetic appeal."

Source: http://www.hispanicbusiness.com

Injection molding using nitrogen and carbon dioxide

Researchers from the mechanical engineering department of University of Wisconsin Madison, the United States, have developed a novel microcellular injection molding approach using nitrogen and carbon dioxide which significantly improves the morphology and mechanical properties of melts.

Microcellular injection molding (MIM) is a very special injection molding process. It injects a gas such as nitrogen (N_2) or carbon dioxide (CO_2) in the so-called supercritical state — i.e., simultaneously liquid and solid — into the polymer melt as a blowing agent to produce lightweight, foamed plastic parts. MIM continues to attract attention because it saves on material costs and energy while improving dimensional stability and production efficiency compared with conventional solid injection molding. With its unique properties, MIM has encouraged a range of innovative applications, such as packaging materials, insulation, filtration membranes, sports equipment, automotive components, and aircraft parts. Recently, Lee et al. proposed a method of producing microcellular injection-molded parts known as supercritical fluid-laden pellet injection molding foaming technology (SIFT).

This method generates gas-laden pellets from an extruder equipped with a gas-injection device. Whereas conventional MIM requires modification and additional equipment for every injection-molding machine used to make microcellular parts, only one extruder needs modification with an add-on gas pump when using SIFT technology. The gas-laden pellets produced can be used by several conventional injection-molding machines without having to modify them.

Source: http://www.4spepro.org

Grapefruit gives insect pests the boot

"A new product based on nootkatone would have multiple advantages over existing mosquito repellants based on DEET," said Richard Burlingame, who presented the report. "Nootkatone is a broad-spectrum ingredient that has been shown to be effective as a control agent for mosquitoes, ticks and bedbugs. Nootkatone has been used for years to give beverages a grapefruit flavor. It is safe to eat, has a pleasant citrus flavor, is not greasy, both repels and kills insects, and should not have the toxicity concerns that exist for DEET."

Burlingame, who is with Allylix, Inc., a renewable-chemical firm in Lexington in the United States, spoke at a symposium entitled "Biopesticides: State of the Art and Future Opportunities." It includes presentations (abstracts appear below) on progress in developing new pesticides isolated from natural sources, or patterned closely after natural products that are effective in pest control.

Burlingame cited nootkatone as an excellent example of the potential for developing new pesticides based on natural sources. Nootkatone is a component of the oil in grapefruit, and has been on the U.S. Food and Drug Administration's list of substances generally recognized as safe for use in food. It has been in commercial use for years as a flavoring for foods and beverages and as a fragrance ingredient in perfumes. Those applications require only tiny amounts of nootkatone, and price — $25 per ounce when extracted from grapefruit — was not a major concern. It was slightly less expensive when produced from a substance called valencene, extracted from oranges.

Nookatone also works in a new way, so it can be used against insects that develop resistance and shrug off conventional pesticides, and yet would be very unlikely to harm people or pets. Allylix currently sells nootkatone only for use in flavor and fragrance applications. The next step involves getting approval from the U.S. Environmental Protection Agency to sell nootkatone for insect control. "They haven't approved it yet, so no products currently on the market in the U.S. include nootkatone as an active ingredient to control pests," noted Burlingame. "But in the future, it could be a key ingredient in repellents for use on clothing or on skin as a spray, or even as a soap or shampoo." *Contact: Jon Schmid (Cook + Schmid), Tel: +1-619-814-2370; E-mail: jschmid@cookandschmid.com*

Source: http://www.newswise.com

Researchers study organic alternatives to soil fumigants

The Agriculture magazine of the University of California, the United States, reports on field research into alternatives to Methyl Bromide and other dangerous soil fumigants. Soil fumigation is needed in large scale agriculture for production of strawberries, nut crops and nursery stock. The fumigants commonly used include Methyl Bromide, a soil sterilant tied to ozone layer depletion and chloropicrin, a chemical linked to cancer. These and other sterilants are volatile and drift away from the fields, often into adjacent housing.

The University of California report examined everything from reducing exposure to eliminating MB use entirely. They examined films covering the fields to retain the vapors released. These films reduced the chemicals needed and reduced, but did not eliminate, emissions.

One promising, but expansive, method is steam-sterilization. Heating the soil to 150 degrees for a short period seems to work as well as fumigation, but is 5 times as expensive as chemical treatments.

Research has shown a promising and organic method of soil sterilization that rivals the nastiest of ag chemicals but is 100% organic and toxin free. This is called 'anaerobic soil disinfestation'. The method has had varying success in wide-spread trials but is somewhat dependent on technique, soil and weather. The ground to be cleaned is charged with a high-carbon diet. In trials conducted in Modesto, rice chaff was available and it was used. In the Oxnard area, onion processing waste could be used as well as other agricultural waste products.

These materials were incorporated into the soil which is then saturated with water. Once it is saturated, the soil is covered with a clear poly cover. The carbon material quickly consumes the available oxygen and the soil goes into an anaerobic state. The anaerobic bacteria devour many the common targets of soil sterilization — nematodes, root diseases and many weed seeds — and seems as effective as chemical applications.

Source: http://www.newswire.net

Grains fumigated ecologically

A substance present in nature turned out to be just as effective as other chemical compounds to eradicate harmful organisms in stored grains, without negative effects. Agro, a Mexican enterprise that operates silos and warehouses, located in Sinaloa (Northwest

Mexico), created a new technology of effective fumigation that solely uses ozone.

Famous weevils, moths and borer beetles live in a very comfortable environment when in the middle of a silo or warehouse fill with grains. There, they perforate the external layer of the stored products, feed freely, have good temperature and enough oxygen to grow and breed. These insects, alongside some fungi, bacteria and viruses, cause annual losses of between four and ten per cent of all the stored grains worldwide, mainly corn, wheat, sorghum, rice and beans.

Until five years ago, the main fumigation technique and pest control inside warehouses and silos was the use of chemical substances such as aluminum phosphide and methyl bromide, which were effective but left toxic residues for human consumption. However, this can be substituted by an ozone system that ventilates the grains for 48 hours.

The ozone removes the comfort zone of the insects making them unable to breathe and modifying the internal atmosphere of the room, using this technique pest free grains are obtained during the whole purchase, sale and storage cycle. The effectiveness of this technology meets the Official Mexican Standard (NOM).

Source: http://www.sciencedaily.com

Evaluation of an automatic steam applicator

Researchers from the University of California, Davis, the United States, have evaluated an automatic steam applicator as an effective non-fumigant tool for soil disinfestation. Steam injected into the soil in sufficient quantities to raise the temperature to 70°C for 20 minutes kills most soil pathogens and weed propagules. Physically blending steam with soil increases the speed and efficiency of steam application. Combining steam with exothermic compounds or with biofumigants such as mustard meal may be a method to improve the performance of steam at lower energy cost. Steam application in field buffer zones where fumigants cannot be applied and fumigant use in less restricted areas is a strategy to allow more complete land utilization especially near urban areas. Steam may also be used to disinfest field soil prior to blending with substrates such as peat or coir, as well as, to treat recycled substrates used in two or more production cycles.

Steam kills soil pests as effectively as soil fumigants and is likely the most effective non-fumigant treatments for killing soil pests. Steam for soil disinfestation is compatible with conventional and organic strawberry production systems and does not require retooling of the industry as would other practices such as soilless strawberry production.

Steam soil disinfestation is needed most where fumigants cannot be used such as in buffer zones, near sensitive sites and in organic fields. In a location with buffer zones that cannot be fumigated, a "hybrid system" can be used. For example the buffer zones can be treated with steam and the remainder of the field treated with fumigants.

The often cited limits to steam use (such as high fuel costs and slow speed) can be partially overcome now with technology already available. The ability to use this technology in both conventional and organic production systems is an added benefit.

Source: http://www.mbao.org

Fumigation for control of light brown apple moth

Light brown apple moth (LBAM), *Epiphyas postvittana* (Walker), is potentially an important pest affecting production of fruits and vegetables and their export. LBAM egg is the most tolerant life stage to phosphine. In a study carried out by a team of researchers from the United States Department of Agriculture (USDA), LBAM eggs were subjected to regular and oxygenated phosphine fumigations at different temperatures to compare their susceptibilities to the two different fumigation methods and determine effective treatments in laboratory tests. Regular fumigations with 250 to 3000 ppm phosphine under the normal oxygen level were conducted at 5, 10°C, and with 500 to 1500 ppm phosphine at 15°C. All oxygenated phosphine fumigations were conducted under 60% oxygen. LBAM eggs were very tolerant of phosphine fumigation and 96 h fumigation treatments at 5, 10, and 15°C failed to achieve complete control of eggs regardless of phosphine concentrations.

Furthermore, egg survivorship decreased with increased phosphine concentrations when phosphine concentrations were low. Fumigations with high concentration (3000 ppm) of phosphine resulted in increased egg survivorship in specific treatments. Oxygenated phosphine fumigation was significantly more effective than regular phosphine fumigation. Complete control of LBAM eggs was found in ≤72 h at 5 and 10°C. The results from the study suggest that it is feasible to control LBAM eggs with oxygenated phosphine fumigation.

Source: http://www.mbao.org

Hydrocarbon refrigerants: A study guide for service technicians

A new training manual available from the ESCO Institute, "Hydrocarbon Refrigerants: A Study Guide for Service Technicians," looks at hydrocarbon refrigerants, which have recently started gaining momentum in the United States market.

The manual will help everyone better understand the regulations, safety issues, and service procedures surrounding hydrocarbon refrigerants, said ESCO, while also covering EPA regulations and Underwriters Laboratories (UL) standards.

Contact: ESCO Institute, P.O. Box 521, Mount Prospect, IL-60056, USA. Tel: +1-847-253-2220; Fax: +1-800-546-3726

Good practices in installation and servicing of room air conditioners

The handbook for RAC technicians is prepared by GIZ Proklima for the technicians to be trained under HPMP project in India. The handbook provides preliminary and practical information to the technicians that can be applied on day-to-day basis during installation and servicing of air conditioners. This handbook explains in a simple and easy to understand manner, the principles of air-conditioning, how the refrigerants if vented into the atmosphere have an impact on the environment.

Contact: Dag-Hammarskjold, GIZ, Proklima International, Weg 1-5, Postfach 5180, 65726 Eschborn, Germany. Tel: +49-619-679-0; Fax: +49-619-679-11-15; E-mail: bernhard.siegele@giz.de

A guide to reporting data on ozone depleting substances

This new handbook will assist all Parties with fulfilling their data reporting obligations under the Montreal Protocol. It helps ozone officers understand and follow the correct data reporting procedures, including those related to Article 7 and Multilateral Fund requirements. Although specifically written for National Ozone Units in Article 5 countries, the handbook will also be useful for Article 7 data reporting by non-Article 5 countries. Published jointly with UNEP Ozone Secretariat, and Multilateral Fund Secretariat.

Contact: UNEP DTIE (OzonAction Branch), 15, rue de Milan, 75441 Paris, CEDEX 09, France. Tel: +33-144-371-450; Fax: +33-144-371-474; E-mail: ozonactio@unep.org

2014

27 Feb-1 Mar
New Delhi, India
ACREX India 2014
Contact: Mr. Dinesh Rawat
ASHRAE India Chapter
K-43 (Basement), Kailash Colony,
New Delhi-110048, India
Tel: +91-11-41635655
E-mail: ashraeic@airtelmail.in
Website: http://www.acrex.in

9-11 Apr
Beijing, China
China Refrigeration Expo
Contact: Mr. Jeff Malley
E-mail: eiusa@optonline.net,
Website: http://www.cr-expo.com

18-21 May
Jeju Island, Republic of Korea
The 7th Asian Conference on Refrigeration and Air Conditioning
Contact:
E-mail: acra2014@nate.com
Website: http://www.acra2014.org

10-12 Jun
Kuala Lumpur, Malaysia
REVAC Expo & Forum 2014
Contact: United Business Media (M) Sdn Bhd,
A-8-1, Level 8,
Hampshire Place Office
157 Hampshire 1, Jalan Mayang Sari
50450 Kuala Lumpur, Malaysia
Tel: +603-217-687-88
Fax: +603-216-487-86
E-mail: revac@ubm.com
Website: http://www.revac.org

14-17 Jul
West Lafayette, USA
The 22nd International Compressor Engineering Conference, The 15th International Refrigeration and Air Conditioning Conference
Contact: Kim Stockment
Conference Coordinator
Purdue University,
140, S. Martin Jischke Drive,
West Lafayette, IN 47907-2031, USA
Tel: +1-765-494-6078
Fax: +1765-494-0787
E-mail: herlconf@purdue.edu
Website: https://www.engineering.purdue.edu

31 Aug-2 Sep
Hangzhou, China
IIR Gustav Lorentzen Conference on Natural Refrigerants
Contact:
Tel: +86-10-684-346-83
E-mail: gl2014@car.org.cn
Website: http://www.car.org.cn