VATIS UPDATE

Ozone Layer Protection

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Highlights

- Researchers find rise in the ozone-depleting chemical
- R290 gas sales reached 100,000 units in India
- India and US agree to make progress on HFCs
- Lower global warming potential refrigerants
- High-pressure water mist
- New foam expansion agent approved by EPA
- Electrical device for disinfestation of food grains

APCTT
Asian and Pacific Centre for Transfer of Technology

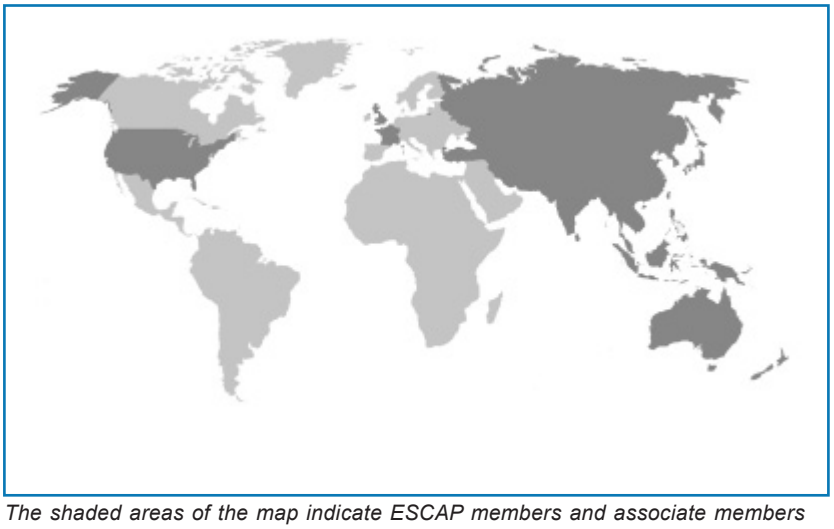
UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

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

West Development Group, a Subsidiary of Henry that specializes in roofing, is now using Honeywell's Solstice blowing agent in its 3012-EB-3 Spray Polyurethane Foam.

(Credit: West Development Group, USA)

VATIS* Update
Ozone Layer Protection
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Montreal Protocol averts threat of increase in skin cancer

According to the newly published report "*Environmental Effects of Ozone Depletion and its Interactions with Climate Change: 2014 Assessment*", produced by the Environmental Effects Assessment Panel (EEAP) of the Montreal Protocol, the threat of large increases in skin cancers has been avoided due to the success of the Montreal Protocol on substances that deplete the ozone layer in controlling ozone depletion. The report explains that, according to some estimates, up to 2 million cases of skin cancer will be prevented each year by 2030.The EEAP assessment report, written by over 40 scientists from across the world, provides key findings on the environment and health since the last full assessment conducted by the EEAP in 2010. The report highlights the changes in ultraviolet (UV) radiation that have occurred as a result of ozone depletion and other environmental changes.

The ozone layer is critical to life on the planet. The interactions between ozone-depleting substances, stratospheric ozone (the ozone layer), ground-level ozone, climate change, and UV radiation from the sun are very important to all organisms on earth, including humans. UV radiation has direct effects on human health and also affects everyone indirectly through effects on crops, livestock, air pollution, and the natural environment. The report details the various effects of UV radiation on human health (including skin cancers and cataracts), ecosystems, biogeochemical cycles, air quality and materials. It also examines how ozone depletion may interact with climate change, both through changes in UV radiation and its environmental effects.

The report notes that without the Montreal Protocol, runaway ozone depletion would have led to large increases in UV radiation around the world, with major consequences for the risk of skin cancer. The success of the Protocol in controlling ozone depletion has confined increases in UV radiation to the extreme south of the southern Hemisphere, and a few short-term episodes over the Arctic. The report also observes that with continued effective implementation of the Montreal Protocol, future changes in UV radiation outside the polar regions will likely be dominated by changes in factors other than ozone, including changes in climate and air pollution.

Source: http://www.unep.org

Researchers find rise in ozone-depleting chemical

According to international researchers including three from the University of Wollongong, Australia, atmospheric levels of a key ozone-depleting chemical are on the increase but the rise appears to be a symptom of climate change rather than additional sources of the destructive substance. Investigations were prompted when scientists identified levels of hydrogen chloride had began rising in 2007 – but only in the northern hemisphere – when they should have been falling because of curbs agreed under the Montreal Protocol to protect the ozone layer.Hydrogen chloride releases chlorine in the stratosphere, depleting ozone and allowing more ultraviolet radiation to reach the Earth, increasing skin cancer and damaging crops and other species.

Findings based on that satellite observations and model simulations and published in Nature rule out any "rogue" source of emissions from undisclosed sources because the abundance of the chemical is falling at other layers of the atmosphere and in the southern hemisphere."The overall burden of chlorine is still decreasing. It's a good news story about ozone."said David Griffith, at University of Wollongong's Centre for Atmospheric Chemistry.It's not so positive news on the climate change front, however, since the increased abundance of chlorine in the northern hemisphere's stratosphere is attributed to a slowdown in atmospheric circulation leading to slower mixing at some levels.

Although it was beyond the scope of the paper to examine how long the circulation slowdown will last, or other possible consequences, Professor Griffith said the study showed the recovery of the ozone layer wouldbe a slow process, taking decades."Our results show that atmospheric variability and perhaps climate change can significantly modify the path towards full recovery," he said. The work has also underscored the general success in tackling ozone depletion and a range of chemicals that were phased out in a matter of years in contact to dealing with global warming.For ozone, it was a "problem created by man, problem recognized, solution proposed, solution implemented. For climate change, the culprits have been recognized, but no-one's prepared to stop producing carbon dioxide (CO_2)."

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

Thunderstorms helping bring ozone down to Earth

Ozone is a bit of a shape-shifting chemical. High in the stratosphere,

ozone acts as an ultraviolet-blocking shield around Earth (which is why the ozone hole is creating scare). At ground level, it's a pollutant that can cause serious respiratory problems. In the past, scientists have attributed the trickle between the atmosphere's different layers to large-scale patterns, such as shifts in the jet stream or air moving from the tropics toward the poles. But for the first time, a research scientist Laura Pan at National Center for Atmospheric Research, the United States,has definitively shown that it's not just these large-scale movements that lure ozone down from the stratosphere, it's also smaller-scale events like thunderstorms.The research has been published in *Geophysical Research Letters*.

"The convective-scale events like thunderstorms are smaller. They're not explained well in global climate models but we know they're important,"said Pan. Pan's findings could be important to climate modelers looking to get a better handle on just how greenhouse gases end up in the troposphere and where they go once they get there.Some research has projected that severe storms – or at least the conditions favorable for their formation– could increase by 40 percent over the U.S. by 2100 during the height of severe storm season if our carbon dioxide emissions continue unabated. The new research could be a warning about a potentially unexplored feedback loop that could further warm the planet, with more storms bringing more warming ozone to the lower levels of the atmosphere.

Pan found that as thunderheads rise to heights up to 50,000 feet above the Earth's surface, they cause ripples in the boundary between the troposphere– the lowest layer of the atmosphere– and the stratosphere– the next layer above it. Those ripples can actually tear a gap in the boundary layer on the front of the storm, allowing ozone-rich stratospheric air to pour down to the troposphere. Understanding this new process has implications for our understanding of the current climate as well as future ramifications."If you have a weather pattern change, say your storms get more intense and bigger storms happen more often, our models need to reflect the chemical changes (such as ozone) as well,"said Pan.

Source: http://www.news.discovery.com

Hole in the ozone layer boosts cancer risk

According to Conac, Chile,a nonprofit cancer prevention and treatment organization,a 20 percent increase in the level of ultraviolet radiation in northern Chile is associated with a hole in the atmosphere's ozone layer. "The hole increases risk of skin cancer, particularly during the Southern Hemisphere summer, in the region between the cities of Arica and La Serena", said Dr.Cecilia Orlandi at Conac.Every year around 300 people in Chile die of skin cancer, because of a lack of resources Conac has not been able to update statistics about the disease's incidence.

The last scientific study on skin cancer in Chile dates from 2005. Joined by physicist Ernesto Gramsch, responsible for the National UV Radiation Survey network, Dr.Orlandihas warned about dangers in exposure to sunlight when there is a decrease in the levels of ozone a gas in the atmosphere that filters ultraviolet radiation."It is necessary to dispose of old domestic appliances such as refrigerators that contain CFC, taking them to proper disposal sites where that chemical can be destroyed,"Gramsch said.

Source: http://www.laprensasa.com

New ozone depleting gases threaten recovering ozone layer

Researchers from the University of Leeds, the United Kingdom, have discovered that chemicals historically not linked to ozone damage are now growing to threatening levels, negating any recovery the layer has achieved.

Called "very short-lived substances," the chemicals are produced both naturally and synthetically, but industrial use of VSLS is not sanctioned under the United Nations Montreal Protocol since the chemicals only contribute little to depleting the ozone layer.

One particular kind of VSLS, however, has been growing in level, which when allowed to persist could negate some of the good achieved through the Montreal Protocol.

Researchers created a 3D render of the atmosphere, factoring in damage caused by VSLS on the ozone and the climate. VSLS measurements over the last 20 years were also analyzed and it was from this analysis that researchers found that a man-made chemical called dichloromethane has been rapidly increasing in concentrations in the atmosphere.

The study, published in the journal *Nature Geoscience*, received funding support from the Natural Environment Research Council.

Source: http://www.techtimes.com/

Ozone depleting gas seized

Officials from the Directorate of Revenue Intelligence (DRI), India,has seized 80,000kg of an ozone-depleting refrigerant gas worth more than 1 crore that had been imported from China by a businessman.The importer had brought the substance declaring it as a legally permitted substance. DRI made the seizure at the Madhavaram container freight station. The businessman was importing dichlorodifluoromethane, known as R-22, which is an ozone-depleting substance (ODS). But he declared the substance as R134A (tetrafluoroethane). According to DRI, the businessman who runs his factory on the outskirts of Chennai, India, had been filling smaller cans with R-22 gas and selling it as R134 A.

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

R290 gas sales reached 100,000 units in India

Godrej & Boyce Manufacturing Co. Ltd, India, using R290 (propane) as a refrigerant have achieved market sales of 100,000 units for room air conditioners (RACs). The development of the hydrocarbon technology was carried out in collaboration with German development agency GIZ and the governmentof India, under international safety standards. With high energy savings and environmental benefits, R290 RACs will help India to meet its growing energy demands in an environmentally sustainable way.

R290 RAC sales figures for India have been published in the study "Energy Efficiency Gains with Lower Global Warming Impact – A Profile of Air Conditioners Using R-290" conducted by The Natural Resources Defense Council (NRDC), the United States, The Council on Energy, Environment and Water(CEEW), India, and The Institute for Governance & Sustainable Development(IGSD), the United States,highlighting the large market potential of R290 in RACs. In China, local manufacturers are also adopting R290 technology in RACs with the support of the government.

The NRDC, CEEW, and IGSD study points out that there is a strong case for other RACs companies to use R290, since patents do not protect R290. In addition, hydrocarbons are already popular in domestic refrigerators with at least a 55% market penetration in industrialised countries.Besides it environmental benefits, RACs using R290 have a significant energy savings advantage over conventional refrigerants. RACs using R290 are estimated to save more than five times as much energy as those using HFC-410A. Godrej's R290 RACs received the highest available rating awarded by India's Bureau of Energy Efficiency without using inverter technology.

Source:
http://www.hydrocarbons21.com

Certificate course in air-conditioning

The Indian Society of Heating, Refrigeration and Air Conditioning Engineers (ISHRAE), India, in association with American Society of Heating has launched a training programme to tackle shortage of trained manpower in the air-condition industry."Certificates will be issued to students after they appear for an examination. This will be a part of the National Skill Development Corporation of the Government of India. After the Centre approves this mechanism, all private companies will hire certified professionals," said D Nirmal Ram, ISHRAE National President. ISHRAE has submitted a proposal to the Union Ministry of Environment and Forest seeking a standard refrigeration mechanism to ensure that the manufacturers and consumers are not put into confusion."Presently, there are different types of refrigerant mechanisms and there are no experts to maintain them. This is also affecting the ozone layer," said Ram.

Source:
http://www.deccanherald.com

CBEC proposes instructions for disposing of CFC refrigerant

The Central Board of Excise and Customs (CBEC), India,has informed that although there is in existence a Circular no. 20/2009-Cus dated 19.06.2009 on the disposal of seized/confiscated cylinders filled with refrigerant gases, yet the field formations are facing difficulties in disposal of refrigerant gases and, therefore, a fresh circular is proposed to be issued.Accordingly, CBEC has issued a Draft Circular soliciting feedback/suggestions from the stakeholders for improvement/amendment in the same to make the Circular effective for speedy disposal of hazardous refrigerant gases.

Source:
http://www.taxindiaonline.com

A report on eliminating ozone-depleting substances

The United Nations Development Programme (UNDP) has released a report showcasing how 120 countries eliminated more than 67,000 tonnes of ozone-depleting substances (ODS) and over 5 billion tonnes of CO2-equivalent greenhouse gas emissions, helping to improve air quality and technological practices in such sectors as refrigeration and air conditioning, solvents, and foams. The report, "Protecting the Ozone Layer and Reducing Global Warming", features nine case studies, including of technology transfer across different continents, and summarizes the results and lessons learned over a period of 20 years.

Examples covered in the report include transfer of low-carbon and ODS-free technologies in the foam sector,refrigeration and air conditioning, and solvents, across different countries such as Bangladesh, Brazil, China, Georgia, India, Jamaica, Mexico, Swaziland and Trinidad & Tobago, as well as the Portuguese-speaking Africa and the Countries with Economies in Transition (Belarus, Tajikistan and Uzbekistan). In addition, of the 2,331 completed projects, over 1,000 were with private sector entities, including hundreds of small and medium-sized enterprises.UNDP assisted these countries to access expertise and access $690.6 million in funding from the Multilateral Fund for the Implementation of the Montreal Protocol (for developing countries) and $42.5 million from the Global Environment Facility (for countries with economies in transition) to eliminate ozone depleting chemicals.

"As UNDP supports the HCFC (potent greenhouse gases) phase-out currently underway, it will maintain its focus on the needs of small and medium-sized enterprises and as such, there is no doubt that the Montreal Protocol will continue to be one of UNDP's flagship programmes," said Nik Sekhran, Director of UNDP's Sustainable Development Cluster. The report was launched on the margins of the 26th Meeting of the Parties to the Montreal Protocol, in Paris, France. *Contact: Jacques Van Engel, Director, UNDP Montreal Protocol Unit/Chemicals. E-mail: jacques.van.engel@undp.org.*

Source: http://www.undp.org

India and US agree to make progress on HFCs

In a meeting held on 25-26 January 2015, the US President and Indian Prime Minister, have reaffirmed their commitment to work on phasing down hydrofluorocarbons (HFCs) under the Montreal Protocol and to make progress in negotiations this year. While China has relaxed its opposition already in previous meetings, India's changing stance is instrumental in opening up the negotiations on the HFC amendment under the Montreal Protocol.Despite the lack of clear commitments on climate change in the Indo-US joint announcement following a meeting of US President Obama and Indian Prime Minister Modi, the agreement to make progress on the reduction of HFCs in the Montreal Protocol has been generally applauded as a breakthrough.

The US-India joint statement explicitly stated: "The President and Prime Minister reaffirmed their prior understanding from September 2014 concerning the phase down of HFCs and agreed to cooperate on making concrete progress in the Montreal Protocol this year."The two countries have recognised the need to use the institutions and expertise of the Montreal Protocol to reduce consumption and production of HFCs. They also pledged to initiate bilateral meetings to discuss issues related to safety, cost and commercial access to new or alternative technologies to replace HFCs. The US will develop an Advanced Cooling Challenge to catalyse the development of super-efficient, climate-friendly, and cost-effective cooling solutions for India.

Weakening Chinese and Indian opposition increases hopes for global HFC phase down. India and China have been the major economies blocking the discussions on HFCs in the Montreal Protocol meetings over the last few years, putting the brakes on any progress. However, China's stance started to change in the last year when it showed openness to discussing different aspects relevant to the management of HFCs. In a November 2014 bilateral meeting President Barack Obama and President Xi Jinping of China agreed to work together to accelerate action to cut HFCs.Given the recent changes in positions of these countries and the broad support from a majority of developed and developing countries, there are high expectations that official negotiations on a global HFC phase down will be initiated this year.

Source: http://www.hydrocarbons21.com

Thematic meeting of South Asia network of ozone officers

In a meeting organized by UNEP ROAP OzonAction at the United Nations Conference Centre in Thailand, the National Ozone Officers (NOOs) and Customs Officers gathered for the "Thematic Meeting of the South Asia Network of Ozone Officers". Apart from the South Asia NOOs as the key participants, representatives from Customs Administration or ministries (e.g. Ministry of Commerce) that are implementing national ODS licensing/quota systems were also invited. Among the agencies that took part in the meeting in presence or via virtual platforms were: the European Commission, the Multilateral Fund Secretariat, UNDP, UNIDO, World Bank, World Customs Organisation's Regional Office for Capacity Building – Asia Pacific (WCO ROCB A/P), and Environmental Investigation Agency (EIA).

The meeting focused on policy and enforcement as the key tools for achieving HCFC phase-out. For the first time during the HCFC phase-out, both ozone and customs officers of South Asia countries came together to strengthen their cooperation to remain in compliance with the control measures under the Montreal Protocol on Substances that Deplete the Ozone Layer. This multilateral environmental agreement includes time-bound and measurable deadlines to phase-out ozone depleting substances (ODS). The main objective was to carry out an in-depth, trans-boundary analysis of the control policies and enforcement issues for HCFCs as identified by the South Asian ozone officers at the last Regional Network meeting in Colombo in May 2014.

The meeting also generated a set of concrete actions to be implemented in 2015 by each participating country based on the discussions and information exchanged. During the meeting, some key policy issues were discussed such as enforcing quota systems for HCFC control, transboundary dialogues, combatting ozone-depleting substances (ODS) smuggling, trade data and reporting of imports and exports. The agenda also covered updates on the key decisions from the last Meeting of the Parties to the Montreal Protocol and the Executive Committee Meeting (both held in November 2014); the reviews of the progress made within the South Asia Network, as well as the work plan for 2015. The meeting resulted in customs officers agreeing to have an informal network amongst them for more effective cross-border enforcement.

Source: http://www.unep.org

Philippines set plan for HCFC phase-out

The Department of Environment and Natural Resources-Environmental Management Bureau (DENR-EMB), Philippines, has set a target to reduce by 10% of Hydrochlorofluorocarbons(HCFC) importation by January. The government sees lower emission of harmful ozone-depleting substances (ODS) as it starts by January 1, 2015, the phase-out of HCFC in compliance with the Montreal Protocol.The Philippines started freezing HCFC importation level since January 2013.Succeeding targets for importation reduction are 35 percent by January 2020; 67.5 percent by 2025; 97.5 percent by 2030, and zero import by 2040.Base importation level in 2013 was placed at 2,644 metric tons (MT).

According to the DENR, HCFCs are considered only temporary alternative to CFCs.HCFCs have lower ozone-depleting potential (ODP).At a global warming potential (GWP) of 600 to 2,200 carbon dioxide (CO2)-equivalent, this is lower compared to CFC's ODP of 6,000 to 10,000 CO2 equivalent.CFCs, popularized by the name "freon" by multinational Du Pont, was totally phased out in the country in 2010.EMB has been conducting technical consultation on the targeted importation reduction for HCFC through the Philippine Ozone Desk (POD). Industry consultations were also held with supportfrom the government of Japan and the United Nations Industrial Development Organization (UNIDO.)

"Both groups of CFC and HCFC chemicals are greenhouse gases which contribute to climate change," said DENR.The World Bank's Global Environment Coordination and its Ozone Operations Resource Group have been studying alternatives for CFCs and HCFCs including those used as halons, solvents, aerosols, refrigerants, mobile air-conditioning, foam blowing and chemical production.According to the International Finance Corp. (IFC), alternatives should be compatible with existing equipment and have good health and safety properties.

Source: https://www.ph.news.yahoo.com

Pakistan holds training workshop on HCFC

Pakistan's National Ozone Unit arranged a training workshop on

HCFC Phase-out Management in which senior government officials attended the workshop. National Programme Manager, Ozone Cell Zaigham Abbas, briefed about Pakistan's obligations to comply with the Montreal Protocol. Dr.Waqar Ahmed gave presentation on the ozone layer and its depletion that affects the life on earth. Issues such as implementation of 2012 HS Codes for HCFCs and data feeding in Web Based One Customs (WeBOC) system in customs to automatically control the imports of HCFC were discussed. Detail discussions were held on the HCFCs control and role of customs to curb illegal trade was also discussed.

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

Training on good RAC service practices in Bangladesh

A "Technicians Training Workshop on Good Service Practices in Refrigeration and Air-conditioning" was held during 12-15 January 2015 at Bangladesh, under "HCFC Phase-out Management Plan (Stage-I)-UNEP Component" project of the Department of Environment with the guidance of Md. RaisulAlamMondal, Director General, Department of Environment. The workshop was divided into two groups. First group consisting of 52 technicians were trained during 12-13 January 2015. Second group consisting of 52 technicians were trained during 14-15 January 2015. Mr. Quazi SarwarImtiaz Hashmi, Additional Director General, Department of Environment and Project Director HCFC Phase-out Management Plan (Stage-I) - UNEP Component Project was the Chairperson of the workshop.

During the technical session, refrigerant management, good service practices in installation, maintenance and servicing on RAC equipment was discussed by the trainers. The media of the technical session was interactive based on multimedia and audio visual presentation. Some hands on training on good service practices were also demonstrated.On the last day of the training session, Mr. QuaziSarwarImtiaz Hashmi, delivered his speech and assured the RAC technicians that technicians all around Bangladesh will be trained subsequently. And he will also explore the opportunities, if there are any possibilities to distribute some essential tools to the technicians. Afterwards, the "Certificate of Participation" among the participants of the workshop were distributed.

Source: http://www.doe.gov.bd

Low global-warming propellant for tire inflators

Honeywell, the United States, has announced that its low-global-warming propellant, Solstice Propellant, will be used in Fix-A-Flat and Slime consumer and commercial tire inflators.Accessories Marketing, the world's largest seller of aerosol tire inflators, has chosen Solstice Propellant to power new ultra-low-global-warming-potential (GWP) versions of its flagship tire inflator products, which are used to fix flat tires.According to Honeywell, with a GWP of less than 1, Solstice Propellant will help Accessories Marketing meet global environmental regulations for high-GWP propellants while offering the same reliable performance as prior-generation products.

"Companies like Accessories Marketing are turning to Solstice Propellant so they can maintain the performance benefits of today's propellants while meeting current and pending regulations. With a GWP lower than carbon dioxide, Solstice Propellant enables Accessories Marketing to sell its products around the world," said David Cooper, at Honeywell Fluorine Products. According to the Consumer Specialty Products Association, more than 24 million cans of tire inflators and sealants were produced in 2013. Solstice Propellant is being adopted by a variety of companies, including those in the personal care, electronics and industrial manufacturing industries, for use in applications ranging from dusters to personal care sprays.

Solstice Propellant has a GWP of less than 1, is nonflammable per ASTM E681 and ISO 10156:2010 testing, and is non-ozone depleting. It is considered a replacement for HFC-134a propellant, which has a GWP of 1,300. It is also not a volatile organic compound (VOC), as determined by the U.S. Environmental Protection Agency (EPA) and the California Air Resource Board (CARB). Honeywell earlier announced that it is now supplying Solstice Propellant to global aerosol manufacturers from its world-scale manufacturing facility in the United States.

Source: http://www.aftermarketnews.com

New energy efficient range of compressors

Developed by Huayi Compressor, Spain,the new U Range of R290 compressors are designed for minimising energy consumption while providing high cooling capacity. With its more compact and rounded shell, the U Range features exceptionally low noise levels.Huayi Compressor has introduced its most efficient compressor range so far. It's U Range, under Cubigel Compressors brand, which includes the NUT55CA, NUT60CA and NUT70CA for LBP (low back pressure) applications such as ice cream freezers, boast a more compact and lighter design, lower noise levels and reduced energy consumption despite a high cooling capacity.

Compared to Cubigel Compressors's L Range, the U Range is 12mm shorter, 2,5 kg lighter and 10dB(A) quieter. It also offers an impressive 27% energy efficiency increase. The motto "Made for U. Thinking of U" sums up the motivations behind the development of the U Range, which address industry and customer needs for reduced energy consumption and environmental sustainability, without compromising cooling capacity.U Range basic specifications includes:

- Models: NUT55CA, NUT60CA, NUT70CA;
- R290;
- Weight range from 9.2kg to 9.4kg; and
- Displacement from 5.5 to 7.0 cc.

Source: http://www.hydrocarbons21.com

R290 based chillers for refrigeration and air conditioning

EUROKLIMAT, Italy, manufacturer of industrial cooling technologies, has joined hydrocarbons21.com as a Bronze Partner, launching its R290 (propane) chillers for refrigeration and air conditioning. Due to excellent thermodynamic properties of natural refrigerant propane,the EKO.E chiller series delivers significant technical and energy savings results.EUROKLIMAT operates predominantly in four areas: comfort cooling, process cooling, precision air conditioning and specialty, high-tech products. In 2006 the company developed a line of chillers using natural refrigerant propane (R290), which do not have harmful effects on the climate or ozone layer. The EKO.E air cooled water chillers optimised for propane have a cooling capacities between 10 and 430 kW. The chillers' main features includes:

- Base and panels of housing made of galvanised steel, mounted on aluminum profiles to ensure total weathering resistance;
- ATEX certified reciprocating semi-hermetic compressor, fixed on anti-vibration system and complete with pressure lubrication system;
- Low speed, axial-flow fans fitted with accident-prevention protective grill;
- Additional safety devices including a special gas detector for flammable gases, including two alarm levels and microprocessor control with LED status indicator;
- Evaporator water IN/OUT 20/15°C for process cooling applications; and
- Brine temperature -4/-8°C for cold storage application.

Source: http://www.hydrocarbons21.com

Lower global warming potential refrigerants

Honeywell, the United States,has announced the launch of four new lower-global-warming-potential (GWP) products for applications ranging from supermarket refrigeration to industrial cooling. The new products further expand Honeywell's Solstice® line of hydrofluoroolefin (HFO) refrigerants, blowing agents, aerosol propellants and solvents. Solstice products offer lower global warmingpotentials (GWP) with similar or better cooling performance when compared to previous-generation products.

"Each year, the world uses more than 200 millionpounds of refrigerant, enough to keep food fresh in 240,000 supermarkets and to cool more than 300,000 commercial buildings. Honeywell is committed to continuing to invest in the development and introduction of new offerings, to make it easier for industry to adopt and use alternatives to higher global warming potential refrigerants,"said George Koutsaftes, global business director for Honeywell's Fluorine Products business. Honeywell's new offerings include:

- Solstice zd: a nonflammable HFO refrigerant with a GWP equal to 1;
- Solstice N13: an HFO blend for chillers, as well as medium-temperature applications; and

- Solstice N40: an HFO blend for low- and medium-temperature refrigeration equipment.

In addition to its industry-leading Solstice line, Honeywell's Fluorine Products business manufactures and supplies non-ozone-depleting Genetron® refrigerants used by top air-conditioning, automotive and refrigeration equipment manufacturers worldwide, blowing agents for energy-efficient rigid foam insulation, and hydrofluoric acid and precursors for nuclear fuel.

Source: http://www.news.gnom.es

Refrigerant-bearing products for lower environmental impact

Ingersoll Rand, the United States, a world leader in creating comfortable, sustainable and efficient environments, has announced another milestone in achieving its climate commitment, a roadmap to significantly reduce the environmental impact from its operations and product portfolio by 2030.Ingersoll Rand has created the EcoWise™ portfolio of products for its climate and industrial refrigerant-bearing products that are designed to lower environmental impact with next generation, low global warming potential (GWP) refrigerants (e.g. R-513A, R-1233zd(E) and R-452A) and high efficiency operation. These products are compatible with and can use next generation low GWP refrigerants, reduce environmental impact by lowering greenhouse gas (GHG) emissions, and maintain or improve safety and energy efficiency through innovative design.

"The Ingersoll Rand EcoWise portfolio is a demonstration of our commitment to reducing the impact on the environment, and providing more sustainable product choices for our customers – particularly as they make the transition to products using next generation, low GWP refrigerants. In addition to the series of products we are announcing today, the company will continue to introduce commercial, residential and transport HVAC, and transport refrigeration products that achieve the criteria for the EcoWise endorsement," said Didier Teirlinck, at Ingersoll Rand. *Contact: Perri Richman, Ingersoll Rand.Tel: +1-732-652-6943; E-mail: prichman@irco.com.*

Source: http://www.businesswire.com

Next-Gen refrigeration technology

At the International Consumer Electronics Show (CES) 2015 in Las Vegas, BASF, Germany, along with Haier, the United States, a global manufacturer of household appliances, and Astronautics Corporation of America (ACA), presented a proof of concept wine cooler refrigerated by a magnetocaloric heat pump.A magnetocaloric heat pump is a cooling device based on magnetocaloric materials, which heat up when put into a magnetic field and cool down when removed, is a more efficient and environmentally friendly alternative to traditional compressor-based refrigeration technology. In the magnetocaloric heat pump, heat is transferred from the cold interior of the wine cooler to the warm surrounding air by shuttling a water based coolant through the magnetocaloric materials as they go in and out of the magnetic field.

Theoretical studies demonstrate that refrigeration systems based on the magnetocaloric effect can be up to 35 percent more energy-efficient than vapor compression systems. They are also less noisy due to the absence of a compressor, and use water-based coolants rather than gaseous refrigerants.The cooler is based on a class of functional magnetocaloric materials based on manganese and iron developed by BASF and its partner, Delft University of Technology, Netherlands. "Together with our research colleagues who are well-experienced in functional materials as well as in systems solutions and modelling, we developed this innovative class of materials," said Andreas Riehemann, Managing Director at BASF.

The magnetocaloric materials, which BASF will sell under the Quice® brand, consist of abundant and affordable raw materials. They feature high performance across the whole range of temperatures relevant to refrigeration as well as high volume stability under operating conditions. Using BASF's magnetocaloric materials, Astronautics developed the magnetocaloric heat pump and, along with Haier, integrated it into the prototype wine cooler. The magnetocaloric wine cooler prototype shows great promise to help our customers save energy, cut utility bills, and reduce operating noise. The partnership plans to continue developing the technology, with the goal of having Haier bring the compressor-free cooling alternative to market within the next couple of years.

Source: http://www.sustainablebrands.com

'Green' cleaning innovations in electronic cleaners

At the IPC APEX EXPO held in San Diego, the United States on 24-26 February 2015, MicroCare Corporation, the United States, a leading manufacturer of critical cleaning, coating and lubrication products, introduced its newest range of electronics cleaners and cost-saving SMT production aids. MicroCare introduced the newly-improved VOC-free TidyPen® '60-second sticky stuff remover', a time-saving tool for electronics manufacturing, repair shops, medical facilities, and any place where sticky labels are used. The new TidyPen® speeds the removal of almost anything sticky, including many conformal coatings, flux residues, glues, tapes, labels and some inks. The formulation has been designed to be VOC and REACH compliant, and is also safe to use on plastics, gaskets and other materials of construction found on PCBs.

Another important introduction at the show was the unique VOC-Free Flux Remover–UltraClean™, which meets the market's need for high performance PCB cleaners. It is particularly effective at removing lead-free no-clean fluxes and pastes, and also is successful in removing silicone-based coatings and adhesives. UltraClean™ is a non-chlorinated, halogen-free cleaning fluid formulated specifically for rework and repair tasks and other airborne contamination. The product is VOC-exempt, complies with California CARB (California Resources Board) rules and SCAQMD (South Coast Air Quality Management District) VOC regulations. It is has also been labelled to comply with Canadian WHMIS and European REACH requirements, plus the new Globally Harmonized Safety system for shipping hazardous chemicals.

"With these two introductions, using new chemistries not found in cleaners from other companies, MicroCare has attracted significant interest from electronics' manufacturers world-wide because they are wishing to use cleaners that are completely free of halogens and ozone-depleting substances. Together with our other "green" products within the portfolio, MicroCare clearly is the industry leader in environmentally enlightened cleaning," said Tom Tattersall, MicroCare CEO. Unique in the industry, the cleaner can be dispensed using the MicroCareTriggerGrip™ cleaning system which improves cleaning results and lowers operating costs.

Source: http://www.emsnow.com

Non-ozone depleting solvent cleaner and degreaser

Developed by Cantol Corp., Canada, the J-88 is a ready to use, nonflammable, noncombustible, nonozone-depleting, solvent cleaner and degreaser and doesn't contain 1,1,1-Trichloroethane. 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. *Contact: Cantol Corp., 199 Steelcase Road West, Markham, ON L3R 2M4, Canada. Tel: +1-905-475-6141; E-mail: ivnfo@cantol.com.*

Source: http://www.cantol.com

Odourless hydrocarbon based solvent cleaner

The new 'Accepta 3548'developed by Accepta, the United Kingdom, is a very highly refined odourless hydrocarbon based solvent cleaner that is free from aromatic species.It is scientifically formulated for use where odour, toxicology and taint are unacceptable and as a replacement for 1,1,1 Trichloroethane and other chlorinated and fluoro-chlorinated solvents.This specialised formulation has been developed to replace such common place materials as kerosene, white spirit and ozone-depleting solvents for use in working environments where odour, toxicology and taint are unacceptable.Technically advanced, Accepta 3548 is also intended as a specialised replacement for 1,1,1 Trichloroethane and other chlorinated and fluoro-chlorinated solvents, scheduled for discontinuation under the Montreal Protocol.

The totally odour-free character of Accepta 3548, coupled with its low evaporation rate and vapour losses, are ideal for manual degreasing, spot cleaning and bench cleaning work using spraying and wiping techniques.

Accepta 3548 achieves superior results without softening or dulling plastics or painted surfaces.Safer and more economical, this is an ideal formula for degreasing electrical and electronic components either in situ or in dip tanks where vapour phase cleaning is impractical.*Contact: Accepta, Statham House, Talbot Road, Manchester M32 0FP, U.K. Tel: +44-161-877-2334; Fax: +44-870-135-6389; E-mail: info@accepta.com.*

Source:http://www.accepta.com

Latest advancement in solvent technology

Baron Blakeslee, the United States, one of the world's leading designers and manufacturers of industrial cleaning equipment, has announced the addition of Equinox, a Benchtop Degreaser, to their lineup of powerful degreasing equipment. Equinox was developed specifically for Honeywell's Solstice® Performance Fluid (PF), which is their latest advancement in solvent technology. Boasting an impressive low-global-warming potential (GWP) of 1, Solstice® also has negligible ozone depletion, does not contribute to ground-level smog and is not a volatile organic compound (VOC) as determined by the U.S. Environmental Protection Agency(EPA). This powerful, highly effective cleaning solution is the perfect pairing for Equinox.

Equinox is a fully featured benchtop vapor degreasing system with a unique design made specifically for efficient and effective use of PF. It provides a solvent-efficient benchtop equipment solution for former AK-225 users. AK-225 is anhydrochloroflurocarbon (HCFC) degreasing solvent that has been prohibited for most uses by the Clean Air Act under the Montreal Protocol as of January 1st. In many cases, PF is an ideal replacement for AK-225, and Equinox provides an affordable, efficient means to use this new, more environmentally-friendly solvent. *Contact: Baron-Blakeslee, Manufacturing Facility, 200 Armstrong Avenue, Williamstown, WV, USA 26187.*

Source: http://www.blog.baronblakeslee.net

New environmental friendly cleaning agent

DuPont, the United States, under its brand name DuPont™ Vertrel®, has launched a new range of fluids which are based on new fluorinated chemistry and allows users with special applications, including precision cleaning, heat transfer (cooling) and carrier fluid (lubricants, oils, greases, etc.) to exceed stringent environmental standards, while maintaining high levels of performance. DuPont has started the introduction of these next-generation fluids as cost-effective replacements for PFCs and PFPEs, HFCs and HFEs.

Vertrel® Sion™ azeotrope is a binary azeotropic mixture based on this new fluorinated chemistry. It offers a higher solvency precision cleaning agent developed in response to worldwide market demand for safe, non-flammable and low environmental impact products for high-end industrial cleaning applications such as vapour phase degreasing, manual cleaning and open top, closed or hermetic equipment. The solvent is based on new extremely low (<1) Global Warming Potential (GWP), HFO-fluorinated chemistry. As well as providing powerful cleaning performance (Kb > 100) with reduced cycle times, Vertrel® Sion™ also has a very favourable toxicity profile, is recyclable and reusable, non-flammable and has a low boiling point (47°C), making it fast drying and immediately ready for handling and use.

Two further products based on the new chemistry are also being launched in the Vertrel® range. Vertrel® Sinera™ specialty fluid is for heat transfer and test fluid applications and has a GWP of less than 10, making it an ideal replacement product for Semicon fab (semiconductor fabrication plant) and display makers (e.g. flat panel displays, fibre optics and lens manufacturers) looking for the best environmental profile by moving away from PFCs and PFPEs with high GWP. *Contact: DuPont Chemicals & Fluoroproducts, Horst Ulrich Reimer, Germany. Tel: +49-6102-18-1297, E-mail: horst-ulrich.reimer@dupont.com.*

Source: http://www.us.vocuspr.com

OzonAction Education Pack

The OzonAction Education Pack contains an entire teaching and learning programme, based on basic knowledge, practical skills and participation, for students to learn about concrete and simple solutions to protect the ozone layer and safely enjoy the sun. This Pack has been developed by UNEP's Division of Technology, Industry and Economics OzonAction Programme to provide primary school teachers with practical, hands-on and entertaining curricula material to educate their students about the protective role of the ozone layer and the causes and consequences of its depletion.

For more information, contact:

OzonAction Programme
E-mail: ozonaction@unep.fr
Web: http://www.unep.fr/ozonaction/

Advanced fire suppression solutions

DuPont, the United States, a leading innovation and market-driven science company, presented its leading range of clean agent fire suppressants at the 17th edition of Intersec 2015, the leading trade fair for Safety & Security in the Middle East on January 18-20, 2015 at the Dubai International Convention and Exhibition Centre.Since the 1950s DuPont has provided the technology to safely protect the world's most important assets. "Intersecwas an excellent platform for showcasing DuPont's state-of-the-art solutions and promoting greater regional awareness on fire protection. When it comes to the protection of sensitive, expensive and mission-critical assets from the ravages of fire, FM-200® waterless fire protection systems are the most widely specified clean agent systems worldwide," said Bashar Abu Sitta, Sales Manager - Middle East & Africa, DuPont.

FM-200® systems offer the most cost-effective, safe and sustainable protection offering the best combination of the properties desired in a waterless agent characterized by extremely low toxicity. FM-200® is being treated differently than HFCs in other more emissive applications due to its negligible emission, as evidenced by the recent regulatory decisions of the US EPA and the revised F-Gas II Regulation, which recognize the value, importance and sustainability of FM-200® and impose no restrictions on its use.In the Middle East, DuPont offers the FM-200® Falcon Customer Protection Program (CPP). Falcon CPP gives customers in the region the assurance that they have chosen the best fire protection for their critical applications. The Falcon CPP provides a 20 year warranty for DuPont customers.

Source: http://www.albawaba.com

High-pressure water mist

Developed by DanfossSemco A/S, Denmark, the SEM-SAFE® water mist system is a unique fire fighting system. By forcing water at a high pressure through nozzles, an extremely fine mist is created andthe water is supplied via a pump unit. The SEM-SAFE® pump unit can supply all water mist applications. In addition, servicing of only one unit is easier and less costly.The benefits of SEM-SAFE® high-pressure water mist systemincludes:

- As water mist both cools the fire and removes the oxygen, it results in quicker fire fighting;
- Due to the cooling effect of water mist, re-ignition is avoided;
- The SEM-SAFE® water mist system is ready for re-use immediately after a fire;
- The SEM-SAFE® system can be deployed instantly, resulting in less damage;
- The reduced amount of damage often means less down time, resulting in much lower costs;
- There is no need to fill up cylinders, thus saving expensive refilling time and overall costs; and
- The pump unit takes up little space and needs no special room or safe storage.

Contact: DanfossSemco A/S, Middelfartvej 9, DK-5000 Odense C, Denmark. Tel: +45-7488-7800; Fax: +45-7488-7801; E-mail: fire-protection@danfoss-semco.com.

Source: http://www.danfoss-semco.com

Water mist fire suppression system

Developed by Watermist Ltd., the United Kingdom, the Hydramist® high-pressure water-mist fire suppression system is capable of producing fine water droplets within the range of 60-100 micron size. The Hydramist®system is based on a high pressure pump unit discharging through the specially developed and engineered Hydramist®spray heads and micro nozzles.The water being used is atomised into a very fine mist and 100% of the water is used to absorb the heat energy, extinguishing and controlling the fire. This is because the fine mist droplet converts to steam at a very fast rate and it is this conversion which absorbs the energy (heat) and extinguishes the fire.

Once the fire has been extinguished the droplets being discharged continue to remove heat from the fuel source i.e. generator fuel, oil, plastics, fabrics, wood, cable, paper etc. and as a result of the lowered temperature re-ignition is prevented. Additionally as the water absorbs the heat it converts to steam, this leads to a reduction in oxygen from the flame front creating a local inert atmosphere in which fire cannot be sustained. By utilising these methods Hydramist®is able to control the fire rapidly and requires minimal amounts of water reducing storage and water supply requirements.

Source: http://www.fireworks-ltd.com

New foam expansion agent approved by EPA

DuPont Fluorochemicals (DuPont), the United States, has announced that its Formacel® 1100 has received approval from the U.S. Environmental Protection Agency (EPA) under the Significant New Alternatives Policy (SNAP) Program for use as a foam expansion agent or blowing agent.The purpose of the SNAP Program is to allow a safe, smooth transition away from ozone-depleting compounds by identifying substitutes that offer lower overall risks to human health and the environment.Formacel® 1100 will meet the growing demand for a low global warming potential (GWP) solution with zero Ozone Depletion Potential (ODP) that improves energy efficiency in polyurethane foam insulation.

DuPont previously announced that it expects to make small scale commercial volumes of Formacel® 1100 available in late 2014 and that full-scale commercial capacity will be available from its world-class facility in the second half of 2016. DuPont™ Formacel® 1100 foam expansion agent will meet the long-term needs of polyurethane foam customers for non-flammable, high efficiency, low GWP solutions. Formacel® 1100 foam expansion agent can help significantly reduce the environmental footprint of rigid polyurethane foam insulation around the world. In addition to its extremely low global warming potential and zero ozone depletion potential, Formacel® 1100 also offers excellent thermal insulation performance allowing for reduced energy consumption, which further reduces greenhouse gas emissions.

Source: http://www.sprayfoam.com

Closed cell spray polyurethane foam insulation

Developed by BASF Corporation, the United States, the SPRAYTITE® closed-cell, spray-applied polyurethane foam insulation and air barrier material helps improve the energy efficiency, comfort and durability of homes and buildings. As both an effective insulation and air barrier material, SPRAYTITE technology substantially improves thermal comfort, and reduces air leakage and the passage of moisture through the building envelope. Combining air impermeability with a superior R-value (6.0 per inch) translates into a highly energy efficient building that is both affordable and comfortable.

SPRAYTITE® technology uses ZONE3® zero-ozone-depleting blowing-agent technology, emits no volatile organic compounds (VOCs) and is one of the most environmentally responsible and lowest lifecycle cost systems available. By eliminating condensing surfaces and offering no food source, it also resists mold, mildew and pest infestations, contributing to a safer, healthier indoor environment. SPRAYTITE technology allows design professionals and builders to specify a material that meets and exceeds the required performance criteria for every Code and climate.

Source: http://www.polyurethanes.basf.us

High pressure metering machine

The “A-System Penta Twin” developed by Cannon Afros, Italy, is a high pressure metering machine designed for the safe use of flammable blowing agents, such as Cyclopentane, Isobutane, etc. Submitted to a complete and accurate risk analysis, hydrocarbons-blown systems can be considered safe and pose no danger to the operators involved in the process or to the environment.The fully open structure of the machine allows ease of access from any side, simplifying and facilitating any required maintenance works. The “A-System Penta Twin” series is the ideal solution for the replacement of existing foaming production unit based on CFC’s with hydrocarbons.

The strong international focus that has been placed on greenhouse gases and gases which are hostile to the ozone layer, has led Cannon, to deep and strong efforts in R&D projects for the development of efficient and environmentally friendly foaming processes. Since the beginning of Nineties, Cannon have started to evaluate the possibility to substitute the traditional blowing agents used to produce foams for other alternatives such as hydrocarbons.Today, Cannon can be rightly considered the largest supplier of foaming equipment for hydrocarbons-blown foams all over the world, with a wide range of available metering systems dedicated to this particular process. *Contact: Afros S.p.A, Via G. Ferraris, 65 21042 - CaronnoPertusella - (Va) Italy. Tel: +39-02-9653-1; Fax: +39-02-9656897.*

Source: http://www.afros.it

Thermal remediation for managing insect pests

In a research Dr. Bhadriraju Subramanyam, at Kansas State University, the United States, studied heat treatment and other tactics for managing insect pests in grain, food, and feed manufacturing facilities. His research showed that heating food processing facilities between 122°F and 140°F will kill insects at all life stages, without introducing harmful chemicals. The treatment must be maintained over a period of 24 hours so the heat can penetrate cracks, crevices, and equipment, ensuring 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°F and 90°F. Lower and upper temperature limits, in general, for stored-product insect existence are between 55°F and 105°F. Temperatures 122°F 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. To eliminate this risk, it is important to thoroughly clean the facility and equipment, and maintain high temperatures (target 135°F) for at least 24 hours. According to the research, a typical heat treatment from setup to cool down lasts about 30 to 48 hours. Insects may also seek refuge in product spillage. Removing any food products and packaging materials is critical to mitigating this risk.

Source: http://www.bannerengineering.com

Electrical device for disinfestation of food grains

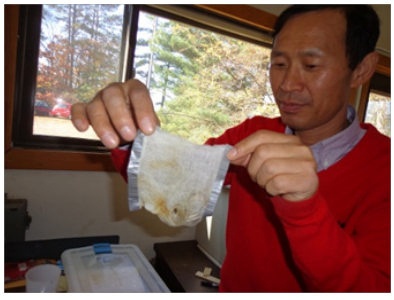
Fumigation as a means of grain disinfestations has its serious limitations. It can leave residues in the food grains that are toxic to humans. Also it is not eco-friendly as fumigants mostly used are ozone depleting substances and are going to be phased out. Now, the Bhabha Atomic Research Centre (BARC), India, has developed "Vibro-thermal disinfestor (VTD)", a simple electricity operated device for disinfestations of food grains. Insect infestation i.e. proliferation of insects on stored grains and pulses is a major cause of concern. It causes enormous losses in quantity and degrades the quality of food grains. There is kernel damage, webbing, adding off odours etc. due to infestation. Further, nutritive value of infested grain is adversely affected. The consumption of infested foods has adverse effects on health such as digestive and pulmonary disorders.

Insect infestation jeopardizes export and countries may suffer huge economic losses. Insects in all their development stage are susceptible to killing by heat when exposed to temperatures of 55°C to 600°C for 30 mins. BARC has also designed, fabricated and tested a VTD for insect disinfestation of food grains to achieve a shelf-life extension upto one year. The system is amenable for scale up and is mobile. The treatment has no effect on germination of seeds as well. The system is simple, can be fabricated without much capital investment and useful for farmers, merchants and exporters of food grains. *Contact: Head, Technology Transfer & Collaboration Division, Bhabha Atomic Research Centre, Trombay, Mumbai - 400 085, India. Fax: +91-22-25505151; E-mail: akruti@barc.gov.in.*

Source: http://www.barc.gov.in

Vacuum-steam treatment for invasive snails

Researchers at Virginia Tech's College of Natural Resources and Environment, the United States,recently demonstrated their treatment technology which can kill snails, using a load of Italian tile inoculated with the invasive Mediterranean snail Cernuella cisalpine. "The snails crawl onto pallets stored at weedy locations adjacent to Mediterranean tile facilities," said Ron Mack, at commodity treatment specialist with the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA-APHIS).Once the pallets are loaded with 1,500 pounds of packaged tile or marble, the snails crawl under the wrapping



Zhangjing Chen holds a small cheese cloth bag containing snails

material. After shipment to the U.S., the snails escape from pallets that have been unloaded at ports and at various other locations in the distribution chain.

"They eat all kinds of stuff," said Zhangjing Chen, a research scientist at the Brooks Forest Products Center, the United States, and one of the inventors of the vacuum-steam treatment. Chen harvested snails that were hanging under a railroad track in Baltimore, secured them in containers, and stored them at a quarantine lab at Virginia Tech to use in testing the treatment process. In an effort to approximate a natural infestation but also keep the snails from escaping, he put them in cheesecloth bags and placed them underneath the wrapping on a pallet full of Italian tile that was being held in the treatment chamber.

The treatment cycle is to draw a vacuum, then inject steam, bring the temperature to 56°C (133°F), and hold it for 30 minutes," said Professor Emeritus Marshall White, co-inventor of the process.

The USDA APHIS has funded Chen and White's vacuum-steam process research for several years and invested in the portable chamber earlier this year and the agency wants to have treatment chambers in port locations to treat both logs being exported and tile being imported. "Next, we are looking at schedules for thousand canker disease on black walnut and oak wilt on oak logs. This is a huge deal because the treatment for oak wilt now is methyl bromide at the single highest rate recommended in the U.S. Department of Agriculture Treatment Manual. Methyl bromide is also being phased out internationally because it is an ozone-depleting chemical," said Mack.

Source: http://www.phys.org

Environmentally friendly alternatives to control insect pests

Researchers from Texas A&M University, the United States, have found that in grain production, bringing in the harvest does not at all end the possibility of crop losses caused by herbivorous insects. Each year, storage insect pests cause significant losses in stored products worldwide. Use of modified atmospheres with depleted O2 (hypoxia) is an environmentally friendly alternative to currently used chemical fumigation for control of storage insect pests. However, many insect species can adapt to O2 deprivation, and recover from hours to days of hypoxia. This poses a difficulty in using the modified atmosphere technique.

Recent results on application of electron beam technology showed that the cowpea bruchid, Callo so bruch us maculatus is an important storage pest of cowpea (*Vignaunguiculata*) and other legumes. Infestation of cowpea by bruchids starts in the field and proliferates in storage. The females lay their eggs on the surface of legume seeds, and larvae feed and develop inside the seeds. Adults start to lay eggs soon after they emerge, initiating another round of infestation. A few months of storage can result in 100% grain loss in unprotected cowpea seeds, particularly devastating for smallholding farmers. Callosobruchusmaculatus, is an important storage pest of cowpea (Vignaunguiculata) and other legumes. Infestation of cowpea by bruchids starts in the field and proliferates in storage. The females lay their eggs on the surface of legume seeds, and larvae feed and develop inside the seeds. Adults start to lay eggs soon after they emerge, initiating another round of infestation. A few months of storage can result in 100% grain loss in unprotected cowpea seeds, particularly devastating for smallholding farmers.

During the examination the impact of hypoxia and hypercapnia (high CO2) on cowpea bruchids was noted. Two O2/CO2 combinations were used; (a) 10% O2 + 10% CO2, (b) 2% O2 + 18% CO2. In both cases, N2 was maintained at 80%, equivalent to normal atmospheric concentration. Results suggested that cowpea bruchids are able to tolerate a certain level of O2 deprivation. Perhaps living in confined grains in storage, the bruchids could encounter hypoxic conditions. Insects that grow in such environments may have evolved an adaptive strategy to handle and survive a range of suboptimal O2 concentrations. Knowledge obtained from cowpea bruchids can be extended to other economically important insect pests and will provide useful information for USDA-APHIS.

Source: http://www.mboa.org

RECENT PUBLICATIONS

Financing the Climate Co-Benefits of the HCFC Phase-out: A Guide for Low Volume Consuming Countries

This document provides guidance for Ozone Officers in low volume HCFCconsuming countries (LVCs) to help them understand how to seek financing outside of the Montreal Protocol's Multilateral Fund to achieve the climate co-benefits indicated in their national HCFC Phase-out Management Plans (HPMPs).

Contact: UNEP DTIE OzonAction branch, 15 rue de Milan, 75441 Paris CEDEX 09, France. Tel: +331-4437-1450; Fax: +331-4437-1474; E-mail: ozonaction@unep.org

GUIDE China 2015: Natural Refrigerants – Market Trends & Potential in China

"GUIDE 2015: Natural Refrigerants – Market Trends and Potential in China" is the ¬first-ever market guide for the refrigerants carbon dioxide (CO2), hydrocarbons (HCs), ammonia (NH3), water (H2O) and air in China. The GUIDE is a bilingual (English, Mandarin) report jointly published by the Chinese Association of Refrigeration (CAR) and shecco. The guide identifies market trends, business opportunities, policy drivers, and outlines suitable applications for natural refrigerants in the country's cooling, heating and refrigeration sectors.

GUIDE Japan 2015: Natural Refrigerants – Sharing Japanese Best Practice

This is an easy-to-access reference guide to the current and future market potential of refrigeration, heating and cooling solutions working with carbon dioxide, ammonia, hydrocarbons, water and air as refrigerants. The guide identifies best-practice technology case studies across Japan, successful business cases in export markets, as well as presents market forecasts per application and refrigerant. It will deliver a unique perspective to a targeted audience of Japanese and foreign policy makers, industry leaders and end-users worldwide.

For the above two publications, contact: shecco SPRL, Rue Royale 15, 1000, Brussels, Belgium. Tel: +32-2-230-3700; Fax: +32-2-280-0436; E-mail: europe@shecco.com

TECH EVENTS

2015

8–10 Feb
Shanghai, China

CRH 2015 - CHINA REFRIGERATION 2015
Contact: Ms. Zhang Ping; Mr. Zhong Weiqin; Mr. Wang Congfei
Chinese Association of Refrigeration (CAR)
Tel: +86-10-6871 9984
Fax: +86-10-6842 0694
E-mail: wqzhong@car.org.cn

14–16 Aug
Bangkok, Thailand

BANGKOK RHVAC '2015
Contact: Thai Trade Fair
44/100 Nonthaburi 1 Road,
Bang Kra Sor, Nonthaburi-11000
Thailand
Tel: +66-2-507-7842
Fax: +66-2-547-5683-4

16–22 Aug
Yokohama, Japan

ICR 2015 – The 24th IIR International Congress of Refrigeration
Contact: Secretariat
C/o ICS Convention Design, Inc
Chiyoda Bldg., 1-5-18 Sarugakucho,
Chiyoda-ku Tokyo 101-8449, Japan
Tel: +81-3-3219-3541
Fax: +81-3-3219-3577
E-mail: icr2015@ics-inc.co.jp
Web: http://www.icr2015.org

10–11 Sep
Kyoto, Japan

13th International Conference on Advances in Foam Materials & Technology (FOAMS® 2015)
Contact: Department of Chemical Engineering Kyoto University, Japan
Tel: +81-75-383-2666
E-mail: foams15@cheme.kyoto-u.ac.jp
Web: http://www.cheme.kyoto-u.ac.jp

28–29 Oct
Amsterdam, Netherlands

15th International Water Mist Conference
Contact: Conference Secretariat
International Water Mist Association
Poststrasse 33 (im HBC), D-20354 Hamburg
Tel: +49-40-35085-215; Fax: +49-40-35085-80
E-mail: mcdowell@iwma.net
Web: http://www.iwma.net

8–11 Nov
Pasay City, Philippines

HVAC/R PHILIPPINES 2014
Contact: Global-Link
(Global-Link Marketing and Management Services Inc.)
Unit 1003 Antel 2000 Corporate Center, 121 Valero, St. Salcedo Village, Makati City, Philippines
Tel: +632-750-8588
Fax: +632-750-8585

16–18 Nov
Shanghai, China

China International Auto Air-conditioning & Refrigeration Exhibition (CIAAR 2015)
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