VATIS UPDATE

Ozone Layer Protection

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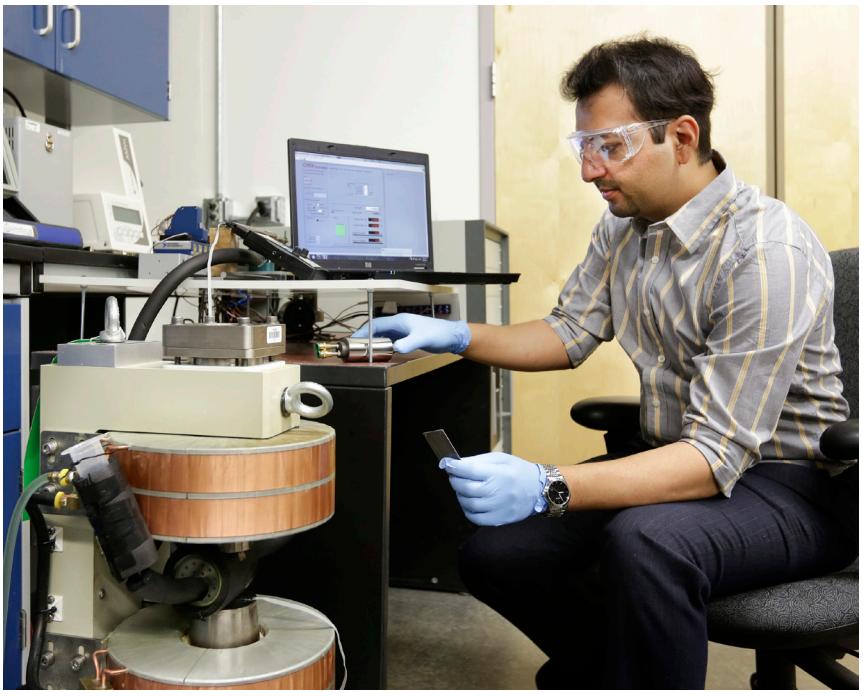
Apprise yourself with the latest technological innovations

Highlights

- Simulation of polar ozone depletion
- New fire-fighting technology launched
- Next-generation centrifugal chillers
- Odourless hydrocarbon based solvent cleaner
- Halon-replacement fire extinguisher
- Sustainable alternative to polystyrene
- Scientists study organic fruit and food safety



APCTT
Asian and Pacific Centre for Transfer of Technology

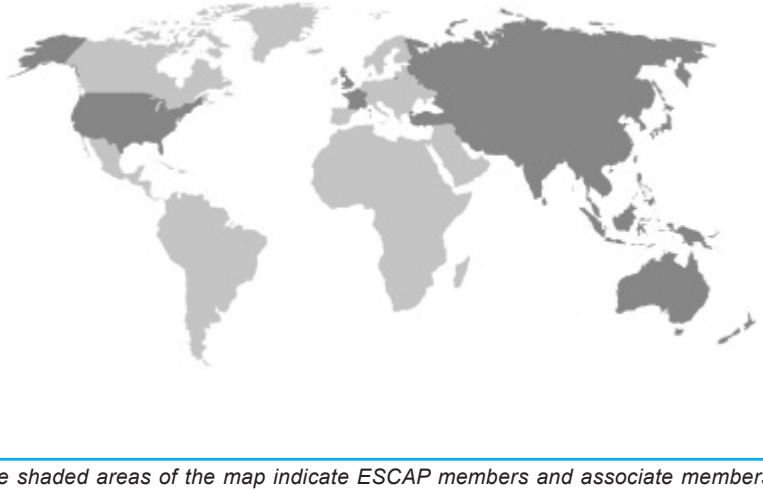
UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

Ozone Cell
Ministry of Environment, Forest & 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

Researchers with Oak Ridge National Laboratory, the United States, have partnered with General Electric (GE) Appliances to apply the concept of the magnetocaloric effect (MCE) to residential refrigerators, replacing conventional vapor compression technology.

(Credit: Oak Ridge National Laboratory, USA)

VATIS* Update
Ozone Layer Protection
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Efficient air conditioning could reduce global warming

According to new research from the Institute for Governance and Sustainable Development (IGSD), the United States, improving the energy efficiency of air conditioners could save up to 100 billion tonnes of carbon oxide (CO_2) by 2050. In this report, IGSD highlighted the benefits of improving the efficiency of air conditioning units will slash future carbon emissions. The findings from the Lawrence Berkeley National Laboratory, the United States, also call for the parallel phase-out of hydroflourocarbon (HFC) refrigerants under the ongoing Montreal Protocol.

"Improving energy efficiency of air conditioners can at least double the mitigation from phasing down the refrigerant known as HFCs, as most Parties to the Montreal Protocol are eager to do through an amendment this year. Past phase-outs of refrigerants under the Montreal Protocol have catalyzed improvements in appliance energy efficiency on the order of 30 to 60%. Parallel efforts to set efficiency standards and to ban imports of inferior air conditioners could ensure that efficiency was improved even faster," said Durwood Zaelke at IGSD.

The research calculates a potential 1,200GW of electricity production could be avoided by improving global air conditioner efficiency, preventing up to 0.5 degrees of global warming alone. The group estimates by reducing the demand on energy intensive air conditioners countries could potentially prevent thousands of power plants being constructed worldwide. Industry experts have repeatedly claimed the UK and other nations will miss carbon emissions targets without sustained investment in cold energy. In 2014, the Carbon Trust called on the Government to seize the opportunity to become a world leader in developing low-carbon cooling technologies and lead the emerging global 'cold economy'.

Source: http://www.edie.net

Simulation of polar ozone depletion

In a recent study, researchers from Massachusetts Institute of Technology, the United States, and National Center for Atmospheric Research, the United States, evaluated polar ozone depletion chemistry using the specified dynamics version of the Whole Atmosphere Community Climate Model for the year 2011. Researchers found that total ozone depletion in both hemispheres is dependent on cold temperatures (below 192 K) and associated heterogeneous chemistry on polar stratospheric cloud particles. Reactions limited to warmer temperatures above 192 K, or on binary liquid aerosols, yield little modeled polar ozone depletion in either hemisphere.

An imposed factor of three enhancement in stratospheric sulfate increases ozone loss by up to 20 Dobson unit (DU) in the Antarctic and 15 DU in the Arctic in this model. Such enhanced sulfate loads are similar to those observed following recent relatively small volcanic eruptions since 2005 and imply impacts on the search for polar ozone recovery. Ozone losses are strongly sensitive to temperature, with a test case cooler by 2 K producing as much as 30 DU additional ozone loss in the Antarctic and 40 DU in the Arctic.

A new finding of this paper is the use of the temporal behavior and variability of $ClONO_2$ and HCl as indicators of the efficacy of heterogeneous chemistry. Transport of $ClONO_2$ from the southern sub-polar regions near 55-65°S to higher latitudes near 65-75°S provides a flux of NO_x from more sunlit latitudes to the edge of the vortex and is important for ozone loss in this model. Comparisons between modeled and observed total column and profile ozone perturbations, $ClONO_2$ abundances, and the rate of change of HCl bolster confidence in these conclusions.

Source: http://www.onlinelibrary.wiley.com

Oceanic bromine emissions weighted by their ODP

Researchers from GEOMAR Helmholtz Centre for Ocean Research, Germany, Norwegian Institute for Air Research (NILU), Norway, National Institute for Public Health and the Environment, the Netherlands, British Antarctic Survey, the United Kingdom, University of Oslo, Norway, weighted oceanic bromine emissions weighted by their ozone-depletion potential (ODP). At present, anthropogenic halogens and oceanic emissions of Very Short-Lived Substances (VSLS) are responsible for stratospheric ozone destruction. Emissions of the, mostly long-lived, anthropogenic halogens have been reduced, and as a consequence, their atmospheric abundance has started to decline since the beginning of the 21st century.

Emissions of VSLS are, on the other hand, expected to increase in the future. VSLS are known to have large natural sources; however increasing evidence arises that their oceanic production and emission is enhanced by anthropogenic activities. However, researchers introduced a new approach of assessing the overall impact of all oceanic halogen emissions on stratospheric ozone. Seasonally and spatially dependent, global distributions are derived exemplary for $CHBr_3$ for the period 1999-2006. At present, ODP-weighted emissions of $CHBr_3$ amount up to 50% of ODP-weighted anthropogenic emissions of CFC-11 and to 9% of all long-lived ozone depleting substances.

The ODP-weighted emissions are large where strong oceanic emissions coincide with high-reaching convective activity and show pronounced peaks at the equator and the coasts with largest contributions from the Maritime Continent and West Pacific. Variations of tropical convective activity lead to seasonal shifts in the spatial distribution of the ODP with the up draught mass flux explaining 71% of the variance of the ODP distribution. Future climate projections based on RCP8.5 scenario suggest a 31% increase of the ODP-weighted $CHBr_3$ emissions until 2100 compared to present values. The comparison of the ODP-weighted emissions of short and long-lived halocarbons provides a new concept for assessing the overall impact of oceanic bromine emissions on stratospheric ozone depletion for current conditions and future projections.

Source: http://www.atmos-chem-phys-discuss.net

Ozone sensor launched by the University of North Florida (UNF), the United States.

Ozone sensor launched

A physics professor and his student team from University of North Florida, the United States, have launched an ozone sensing device to the edge of space. According to the professor, it flew to the edge of space to a record-breaking height of 102,200 ft. It was launched this February, from Arizona into the earth's stratosphere to detect the ozone, with the help of a commercial balloon space flight company and United Parachute, it was launched from Arizona into the earth's stratosphere to detect the ozone. Student Ken Emanuel said detecting the ozone layer is important. "The depletion of the ozone layer is a phenomenon related to different gases that come from us as humans. So keeping an eye on the ozone layer is an important entity," said Emanuel. Physics professor Dr. Nirmal Patel said the payload took about a six hour flight, and then landed in the New Mexico desert. The data from the sensors were collected and then downloaded for the team to study. Patel said depletion of the ozone layer would mean there would be more possibilities of harmful ultraviolet light passing through the stratosphere and hitting the earth. The team said they will continue to study the data over time and send more payloads to the edge of space. They hope to send another payload up in September 2015.

Source: http://www.actionnewsjax.com

International Standards in Refrigeration and Air-Conditioning

This guide provides an introduction and overview of the issues related to international standards in the refrigeration and air-conditioning sector.

For more information, access:

http://www.unep.org/ozonaction/

Stakeholders meet to phase-out HCFC and phase down of HFC

The Ozone Cell of the Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India, recently organized two stakeholder consultations meetings to deliberate on the HCFC phase out and phase down of HFCs efforts. The meetings included: Stakeholders Consultation Meeting on India's Amendment Proposal for Phase-down of HFCs was organized on 10 July, 2015, New Delhi, India; and Stakeholders Workshop on HCFC Phase-out Management Plan (HPMP): Stage - II, 13 August, 2015, New Delhi, India.

India became Party to the Montreal Protocol on substances that deplete the ozone layer on 19th June, 1992. Since then, India has been implementing phase-out of production and consumption of ozone-depleting substances (ODSs) as per the Montreal Protocol schedule. The production and consumption of major ODSs like chlorofluorocarbons (CFCs), carbontetrachloride (CTC) and halons have already been phased out globally with effect from 1st January, 2010.

India has been making all round efforts to understand the issues relating to this subject since the beginning of the discussion on phase-down of HFCs under the ambit of the Montreal Protocol. Recently, India has submitted an amendment proposal for phase-down of production and consumption of HFCs using expertise and institutions of the Montreal Protocol and continue to include HFCs within the scope of UNFCCC and its Kyoto Protocol for accounting and reporting of emissions.

Source: http://www.ozonecell.com

New fire-fighting technology launched

Intimate Machines, India, has developed a new fire-fighting technology with incorporating water mist and CAFS (Compressed Air Foam System) technologies. The makers claims that the system is very cost- effective and efficient to fight all common classes of fires without causing collateral damage to property or human beings due to its non-toxic nature.

The Karnataka Government fire service was the first in the country to try these systems to contain different types of fires successfully. Improvisations were carried out in the design to make it more compact, particularly to suit the roads in Kerala, where bigger vehicles cannot ply. The system is provided with high safety pressure non-return valves, radiant heat blocks, which give it an edge over the conventional firefighting systems.

Source: http://www.newindianexpress.com

Long term HFC emissions

The Council on Energy, Environment and Water (CEEW), India, along with the International Institute for Applied Systems Analysis (IIASA), Austria, has recently published a joint report on 'India's Long Term Hydrofluorocarbon Emissions'. The report finds that with economic growth and increasing per-capita incomes, more and more people will buy air-conditioners, refrigerators, as well as personal vehicles. Higher penetration of all these technologies in the residential and commercial sectors forms the key driver of higher consumption and emission of HFCs. If HFC's consumption is not phased down, total HFC emissions will increase to 500 $MtCO_2$-eq in 2050.

This is based on the assumption that HFCs used as alternatives in developed countries will replace HCFCs in India as well. The biggest share of HFC emissions will be taken up by the residential and commercial cooling sectors (~35 % and ~28% respectively in 2050), followed by mobile air-conditioning in cars (~15%), and then commercial refrigeration (14%). All other sectors put together will have a low share in India's total HFC emissions. The HFC debate is part of a wider climate policy debate, and hence it becomes important to place India's potential future HFC emissions in the context of India's long term carbon dioxide (CO_2) emissions.

The report finds that the share of global warming impact of HFC emissions compared to CO_2 emissions in 2050 is highest for the commercial refrigeration sector, at 50%, which is mainly due to the high leakage rates experienced in this sector. This is followed by the commercial cooling sector and then residential cooling sector, and the share of HFC's global warming impact is over one-third for both these sectors in 2050. For mobile air-conditioning in cars, this figure stands at 22%. For all other sectors this share is fairly low, which is consistent with findings from other international assessments. In terms of HFC's contribution to India's overall greenhouse gas emissions, HFCs contribute 5.4% of India's combined CO_2 and HFC emission related global warming impact in 2050.

Source: http://www.ceew.in

Japan excludes HFOs from new emissions law

The Japanese Ministry of the Economy, Trade and Industry (METI), have placed the Hydrofluoroolefins (HFOs) 1234yf, 1234e and 1233zd outside Japan's strict new fluorocarbon emissions control laws. The decision by METI to exclude the HFOs from the new regulation, which took effect on April 1, 2015, means that they are not regulated in terms of curbing emissions or leakages, recovery and destruction for disposal, etc.

The decision was welcomed by HFO manufacturer Honeywell, the United States, which sells the new gases under its Solstice brand for use as refrigerants, propellants and solvents. It means that HFOs now join hydrocarbons and carbon dioxide in Japan's non-flon category. "Honeywell is proud to help Japan drive actions that will prevent global warming. The environmental superiority of our Solstice products has enabled this non-flon designation, which will help drive their adoption in Japan," said Katsuyuki Takise, at Honeywell.

Source: http://www.coolingpost.com

R452A as R404A alternative

Compressor manufacturer Tecumseh, the United States, has backed refrigerant R452A as a mid-term alternative to R404A in medium and low temperature commercial refrigeration. Tecumseh says it sees the low discharge temperatures exhibited by refrigerant R452A as extremely important mainly due to its experience with hermetic compressor reliability. OEM customers interested in obtaining R452A compatible compressors for performance and/or field test samples are advised to contact their Tecumseh sales representative.

In parallel, Tecumseh is evaluating the availability of R452A compatible compressors and condensing units via its network of authorised wholesaler distributors with a tentative launch date of early 2016. Tecumseh says it is continuing to devote resources to the evaluation of its products for use with low GWP refrigerants including, the determination of a sustainable long-term solution. R452A, being sold by DuPont, the United States, as XP44, has a GWP of 2140 – a little over half that of R404A. Comprising R32, R125 and R1234yf, it has already been adopted by a number of transport refrigeration companies as a replacement for R404A.

Tecumseh is backing the refrigerant as an interim solution for medium and low temperature applications ranging in capacity from ½ hp to 30hp. A non-flammable A1 refrigerant, it uses the same POE oil as R404A. Testing has confirmed that refrigerant R452A provides nearly the same capacity and efficiency as R404A across an evaporating temperature range of -25°C to -10°C. However, for evaporating temperatures below -25°C, R452A exhibits a slight reduction in capacity (up to 9% capacity drop at -35°C). For self-contained commercial refrigeration equipment with capacities less than ½hp, Tecumseh continues to support propane (R290) as the preferred choice.

Source: http://www.coolingpost.com

China promotes natural refrigerants against HCFCs

China has given 'its clearest indication yet' that it is planning to promote natural refrigerants as a substitute for HCFCs after publishing a list of recommended substitutes for Hydrochlorofluorocarbons (HCFCs) which feature nearly all natural refrigerants, rather than other low global-warming-potential (GWP) alternatives. According to market intelligence firm CCM, China, the publication of the list is likely to be followed by more substantial policies promoting natural refrigerants and foam-blowing agents over the coming years. The *First Catalogue of Recommended Substitutes for HCFCs* has been published by China's Foreign Economic Cooperation Office, Ministry of Environmental Protection (FECO).

FECO officials announced that the *Catalogue* was the product of extensive research into policies to transition away from HCFCs and to fulfil China's obligations under the Montreal Protocol. Of the twelve substitutes included in the *Catalogue*, ten are natural chemicals and only one is an HFC – R32 – which CCN contends is a clear indication of the government's mindset as China begins the move towards eliminating HCFCs. The *Catalogue* is intended to be a general indication of the Chinese government's intentions and will not include any practical policies to support natural substitutes for HCFCs. However, recent history suggests that more practical measures are likely to follow in the near future.

When China announced that it intended to promote R290 as a replacement for R22 in domestic air conditioners in 2012, several supportive policies were introduced soon after, including an agreement to help air conditioner manufacturers overhaul their production lines in 2013, new subsidies for the production and marketing of

air conditioners using R290 from 2014, and the introduction of a new 'Environmental Protection and Low Carbon Label' in 2015 to encourage consumers to choose green air conditioners. According to CCM's research, severe overcapacity has made life increasingly difficult for HFC producers in China.

Source: http://www.racplus.com

Workshop on HFC 32 as alternative with low GWP

The National Ozone Unit (NOU) of Sri Lanka in collaboration with UNDP and with technical support of DAIKIN Air Conditioning India Pvt. Ltd., organized German Technical Training Institute (CGTTI) Introductory Workshop on "HFC 32 as efficient alternative with zero Ozone Depleting Potential (ODP) and Low Global Warming Potential (GWP)". Senior Assistant Secretary/Director of NOU, Mr. G.M.J.K. Gunawardana delivered the welcome address and the opening statement. In the opening statement, he highlighted in converting in to zero ODP and low GWP refrigerants.

Mr. Shantha Karunarathne, Director/Principal of CGTTI elaborated the corporation CGTTI maintain with NOU in hosting this kind of workshops. Presentation on "World trend in promoting Low GWP HFC for Air Conditioning" was delivered by Mr. Hitoshi Tanaka Deputy Managing Director DAIKIN Air Conditioning India. Mr. G.M.J.K. Gunawardana, Director of NOU, Mr. S.P.K. Amarasinghe, Senior Training Engineer of CGTTI and Mr. K.D. Virmani, Senior V.P. of DAIKIN Air Conditioning India were the resource persons.

Mr. K.D. Virmani made very impressive presentation on "HFC 32 as prospective replacement for higher GWP HFC refrigerants". He gave detailed scenario on research and Development of HFC 32 applying to the air conditioning. In his presentation he made a link between refrigerants that are used at present and future innovations. Nearly 75 participants enthusiastically participated and gathered information on this new technology.

Source: http://www.unep.org

Bhutan controls illegal ozone depleting chemicals

On February 2015, the Customs officials of Bhutan confiscated 4 cylinders of HCFC-22 gas (also known as R-22) that were imported from India, without permit from the government. Permit to import the R-22 gas was found missing upon physical verification by the customs officials. The customs officials confiscated the consignment and forwarded the case to the Department of Revenue & Customs (HQ) and the National Environment Commission (NEC) for formal instruction and advice. Hydrochlorofluorocarbon (HCFC) is a controlled substance under the Montreal Protocol on substances that deplete the ozone layer. Its production as well as trade are restricted world-wide and only allowed with prior license and permit

After a careful review of the case, the authorities jointly decided to request the importer to re-export the cylinders with the ozone-depleting substances (ODS) to the original supplier in India. In line with the Sales Tax, Customs and Excise Act of the Kingdom of Bhutan, 2000, the Bhutanese importer was made responsible for covering the cost of the re-export including travel expenses of a designated Customs officer to oversee and confirm the return of the goods. Further, under the Offences and Penalties of the Rules and Regulation of ODS 2008, the importer was charged with a penalty of Bhutanese Ngultrum (BTN) 5,000 as the first-time offence.

Source: http://www.unep.org

New program targets earth-friendly refrigerants

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) and the United Nations Environmental Programme (UNEP), have agreed to work together on the development of a global qualifications program for refrigerant supply chain networks in response to the depleting ozone layer. An exchange of letters was completed between the two organizations during the Montreal Protocol Open Ended Working Group meeting in France on July 23. Known as "refrigerant driving license" (RDL), the program will target the sound and safe management of refrigerants and accelerate the transition to greener types.

"Working with UNEP and developing the RDL is one very important aspect of the industry's focus on ensuring the proper, safe, and environmentally sound management of refrigerants. AHRI's relationship with UNEP will provide an excellent platform for working with other associations and institutes, creating a global network to support the safe handling of refrigerants," said Stephen Yurek at AHRI. In addition to reaching targets instigated by the Montreal Protocol – an international treaty to protect the ozone layer –the agreement will also advance the skills of field specialists as new technologies surface.

Source: https://www.reminetwork.com

HVAC equipment globally to reach $155.1 billion

According to a new report published by Transparency Market Research, India, the market for HVAC equipment globally is forecast to reach $155.1 billion by 2022. The demand for all types of HVAC equipment is expected to increase through 2022; however, sales of heat pumps and room air conditioners are expected to dominate the market through the forecast period. Demand for unitary air conditioners is also expected to exhibit above average gains globally. The global HVAC equipment market was valued at $91.3 billion in 2013 and is forecast to grow at a compound annual growth rate (CAGR) of 6.2 percent from 2014 to 2022.

The HVAC equipment market is driven by factors such as increasing population, rise in new home sales, increasing construction expenditures, and growing industrialization, among others. The HVAC industry is aiming to provide cost-effective equipment to meet the energy efficiency needs of customers and also meet green technology requirements. HVAC players are introducing eco-friendly equipment and phasing out chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). By geographic region, HVAC equipment is seeing a sharp rise in demand across the North American region, followed closely by Asia Pacific.

China is also the largest production base for HVAC systems and a key supplier to the European market. Growth in these regions is driven by local demand as well as demand from lucrative export markets such as Africa and Latin America, which are looking for low-priced solutions. Looking at global growth trends, industry players throughout the globe are adopting different strategies so as to ensure higher market shares. Market development and diversification are the strategies widely adopted across the Asia Pacific region, whereas North America and Europe are seeing product development and market penetration as key strategies adopted by industry players.

Source: http://www.achrnews.com

HFC Management: a Dedicated Webpage from the Ozone Secretariat

The Ozone Secretariat has created a dedicated page on the management of hydrofluorocarbons (HFCs) on its website. The web page contains key documents and information resources on HFC management produced over the past two years and new material is featured under "New!."

Currently, the new material includes updated technical fact sheets that provide background information about the use of HFCs and the low-GWP alternatives that can replace them. These are updates to the technical fact sheets from the Workshop on HFC Management held in April 2015:

- Fact Sheet 1: Index and Fluid Naming Conventions for Refrigerants (October 2015)
- Fact Sheet 2: Overview of HFC Market Sectors (October 2015)
- Fact Sheet 3: Domestic Refrigeration (October 2015)
- Fact Sheet 4: Commercial Refrigeration (October 2015)
- Fact Sheet 5: Industrial Refrigeration (October 2015)
- Fact Sheet 6: Transport Refrigeration (October 2015)
- Fact Sheet 7: Small Self Contained Air-Conditioning (October 2015)
- Fact Sheet 8: Small Split Air-Conditioning (October 2015)
- Fact Sheet 9: Large Air-Conditioning (Air-to-Air) (October 2015)
- Fact Sheet 10: Water Chillers for Building Air-Conditioning (October 2015)
- Fact Sheet 11: Heat Pumps (Heating only) (October 2015)
- Fact Sheet 12: Mobile Air-Conditioning (October 2015)
- Fact Sheet 13: Insulating Foam (October 2015)
- Fact Sheet 14: Aerosols (October 2015)
- Fact Sheet 15: Glossary of Terms and Technical Definitions (October 2015)

Another resource under "New!" is the latest, corrected schematic table that presents some of the key elements of the four amendment proposals submitted by Canada, Mexico and the United States (North American proposal), India (Indian proposal), the European Union and its member States (European Union proposal) and some island States (Island States proposal).

Other resources available include:

- Technical issues
- Financial issues
- Policy issues
- Scientific issues
- Legal issues
- Relevant meetings
- Assessment Panels' Reports

For more information, access:
http://ozone.unep.org/en/hfc-management-documents-2014-onwards

Next-generation centrifugal chillers

Mitsubishi Heavy Industries Ltd. (MHI), Japan, has developed a new series of centrifugal chillers, called the ETI-Z Series, that use a new low-global warming potential (low-GWP) refrigerant, HFO-1233zd(E). The ETI-Z Series are the first small-size centrifugal chillers to adopt the new refrigerant. According to MHI, the ETI-Z Series carries the fundamental product concept of high performance combined with compact size. Models in the new ETI-Z Series have a cooling capacity with a range of 80 to 700 refrigeration tons (RT). High performance is achieved by reducing motor drive-energy loss through the adoption of a compressor with high-speed direct motor drive, the elimination of step-up gear, and use of fewer bearings.

HFO-1233zd(E) has the same low GWP as carbon dioxide (CO_2), i.e., 1, and an ozone depletion potential (ODP) of 0. Owing to this minimal impact in terms of greenhouse gas emissions and no impact with respect to ozone depletion. This means that HFO-1233zd(E) is not regulated in terms of curbing emissions or leakage, recovery and destruction for disposal, etc. Compared to MHI's current refrigerant, however, the volume of refrigerant gas is about five times greater. However, in the ETI-Z Series, a more compact size has been realized by applying the latest blade shape, increasing the motor speed, and by adopting and optimizing the arrangement of the high-performance tubes.

The microcomputerized control panel features a new board that enables more precise control, thanks to increased speed of the central processing unit (CPU), to support energy-saving operation of the chiller. The adoption of a touch panel type liquid-crystal display both enhances operability while also improving functions that support maintenance of the main unit. Going forward, MHI plans to expand its lineup of centrifugal chillers featuring the new refrigerant by progressively developing and launching models up to 1,500 RT, including fixed-speed models.

Source: http://www.achrnews.com

Low GWP R513A chiller launched

Trane, the United States, a subsidiary of Ingersoll Rand, has launched air-cooled chiller named Sintesis which offers low GWP refrigerant R513A as an option. The intention to include an R513A option in addition to traditional R134a on the new chiller range was first revealed in January. Announcing that these new chillers are now available for order in Europe, the Middle East, North and Latin America, Ingersoll Rand president said: "Through the new, expanded Sintesis chiller portfolio, Trane now offers building owners and businesses more choices regarding how and when to reduce greenhouse gas emissions."

In Europe and the Middle East, the new Trane Sintesis chillers are available in sizes of 245 up to 450 (cooling capacities from 300 to 1600 kW). The chillers reach 1.6MW of cooling capacity at Eurovent rated points and supplement the original 090 to 205 sizes introduced by Trane in 2014. In North and Latin America, Sintesis chillers in sizes from 115 to 215 ton are available now, with the 230 to 500 ton models available later this year.

The Sintesis is said to achieve industry leading EERs and ESEERs. It is also said to use up to 40% less refrigerant than traditional tube/fin and flooded heat exchanger technology due to the micro-channel condenser coil and the compact, high-performance, integrated, low charge (CHIL) evaporator design. Already incorporating measures to reduce noise and improve acoustics, a user-selectable noise-reduction mode is also available to help comply with nighttime and weekend neighbourhood noise restrictions.

Source: http://www.coolingpost.com

New generation refrigeration units

Emerson Climate Technologies, the United States, has announced the next generation of Copeland EazyCool ZX refrigeration with significant upgrades. The new EazyCool ZX features a new electronic controller which enables precise adjustment of suction and condensing pressures and shows all relevant parameters on a LED display. Additionally, the hinged front door has a quick check window to view the system status without opening the unit. The new models are claimed to keep the compact dimensions of the established former generation.

The fan blades are sound optimized with controlled rotation speed and the use of highly efficient Copeland Scroll compressors reduces power consumption and saves operation costs. Additionally, multiple refrigerant approvals including R134a, R407A and R407F increase flexibility and ease logistics as one model fits most applications – especially a benefit for wholesalers and installers. All important system settings, such as fan speed, can be adjusted to exactly match the application requirements.

The new universal controller also provides electronic motor protection of the compressor and real time communication via Modbus. Galvanized panels and coated condensers ensure protection against corrosion and reliable operation even under tough conditions. With short installation time, superior efficiency and high reliability, this new generation helps customers to reduce life cycle costs to a minimum.

Source: http://www.racplus.com

Advance low-GWP ammonia refrigeration systems

Danfoss, the Unites States, a leading manufacturer of high-efficiency electronic and mechanical components and controls for air-conditioning, heating, refrigeration, industrial and water systems, showcased advanced, low-GWP direct expansion (DX) ammonia refrigeration systems at ATMOsphere America 2015, held on 25-26 June in Atlanta. During the conference more than 300 industry leaders gathered to discuss current and future natural refrigerant market trends and related technology innovations and regulatory issues in North America. "Ammonia is a proven refrigerant, with some of the best heat transfer characteristics of all refrigerants," said Terry Chapp, at Danfoss.

Ammonia is a natural refrigerant with zero ozone-depletion potential (ODP) and zero global warming potential (GWP). It is also inexpensive and plentiful, making advanced DX ammonia systems an attractive option for industrial refrigeration system designs. At the same time, ammonia is toxic – and, in unusual cases, can be flammable. During the planning stage, the refrigeration subcontractor presented two options for the warehouse: a pumped recirculated liquid (PRL) ammonia system and a DX ammonia system. A conventional PRL design would require about 25,000 pounds of ammonia for phase I and more for phase II, putting the facility over the 10,000-pound threshold that requires a Process Safety Management/Risk Management Plan (PSM/RMP).

However, the DX system would reduce the total ammonia charge for phases I and II to significantly less than 10,000 pounds, the PSM/RMP threshold. Final analysis of the two estimates showed the DX system saved approximately $100,000 for the total refrigeration system first cost. When added to the advantage of lower ongoing cost, it made the DX system an easy choice. The JCS system also features a DX evaporator that provides proper liquid distribution at the coil inlet and enhanced inside tube surfaces, which causes liquid to wet the entire tube surface with refrigerant.

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

New refrigeration system

A refrigeration system using the low global warming potential (GWP) HFO R1234ze in a cascade system with carbon dioxide (CO_2) has been successfully applied for the first time at a bakery in Germany. Mindful of the F-gas regulations and the HFC phase-down in Europe, Bäckerei Maurer of Winnenden, turned to this untried option when looking to provide refrigeration for its latest factory production area. The result is what is claimed to be the first industrial installation that combines Honeywell's Solstice ze brand R1234ze in a cascade system with CO_2. The Maurer Bakery is a family bakery and retail business preparing bread and other products to be sold in the company's network of 42 bakery-cafe outlets in Germany.

The company took advice from its refrigeration partner, IceCool, a specialist in bakery, catering and food refrigeration. IceCool worked in collaboration with Dutch system-builder ECR Nederland and refrigerant supplier Climalife Holland to come up with the low GWP solution. Maurer and IceCool together designed a cascade system that could operate efficiently and accommodate the different pressure profiles of the refrigerants. ECR-Nederland BV has a strong reputation for customised solutions, notably by applying very powerful 3D design modelling wrapped inside a full project package, and this approach was harnessed to ensure that Maurer was able to evaluate system performance and approve the overall design.

Climalife had previously participated in a number of field trials involving Honeywell's Solstice ze and highlighted the innovation as a future-proofed, lowest possible GWP solution. The system design was optimised to the lower pressure of Solstice ze versus the traditional refrigerant R134a. As Solstice ze is mildly flammable, IceCool checked with a notified body about ATEX compliance, who assessed that given the very low risk of Solstice ze in that system design, ATEX extra measures were not needed. The result is a system that combines Solstice ze for both direct expansion in medium temperature in a cascade with CO_2 for low temperature.

Source: http://www.coolingpost.com

New fluorinated solvent to replace n-propyl bromide

Developed by Enviro Tech International, Inc., the United States, the new EnSolv® NEXT is a non-flammable with KB value of >90, which can be used as an alternative to solvents such as HCFC-225, Trichloroethylene, and n-propyl bromide. SNAP-approved product evaporates quickly after cleaning or degreasing, and is thermally stable so it does not require acid acceptance testing or stabilizer additions.

In addition to minimal non-volatile residue and no hazardous air pollutants, EnSolv NEXT has zero ozone-depletion potential (ODP) and low global warming potential (GWP). EnSolv® NEXT evaporates very quickly after cleaning or degreasing, is non-flammable and is very thermally stable. Moreover, EnSolv® NEXT does not require acid acceptance testing or stabilizer additions. *Contact: Enviro Tech International, Inc., 1800 N. 25th Ave., Melrose Park, IL, 60160, USA.*

Source: http://www.news.thomasnet.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

Specialty cleaner for removing stains

TechNova, India, has introduced AniKleen Sol, a specialty cleaner for removing aqueous overprint varnish (OPV) deposits from rollers and blankets with minimal effort. Most printers typically use the conventional method of cleaning by using a mixture of isopropyl alcohol (IPA) and water to scrub the blankets and rollers clean. "Not only does this conventional method result in a lot of wasted energy and time, but it also does not clean the blankets and rollers effectively, resulting in inconsistent print jobs," said Milind Kale, at TechNova.

Kale added, "TechNova has recognised this need and has introduced AniKleen Sol which works on the principle of chemical action, instead of a mechanical action, to clean water-based OPVs from rollers and blankets." AniKleen Sol, when applied to the affected areas, adequately wets and dissolves the dried OPV deposits making the cleaning process easier and faster. This in turn reduces machine downtime and improves productivity. However, this solution is suitable for cleaning aqueous varnish from rollers that use the duct varnish process for coating. When using process colour inks, normal wash is recommended.

Source: http://www.printweek.in

Vapor degreasing cleaning process

KYZEN Corporation, the United States, and cleaning equipment manufacturer Controls System Design, the United States, has jointly developed the DuoSolvent™ cleaning process that works within a vapor degreaser and eliminates the need for a water rinse. DuoSolvent™ technology creates the benefits of a vapor degreasing process without the hazards. The DuoSolvent™ process incorporates an engineered cleaning solvent that matches a wider range of flux residues and is then rinsed with an environmentally friendly rinsing solvent.

A unique feature of the DuoSolvent™ process is a secondary distillation process that removes the solvating agent drag out in combination with soils that

are accumulated in the rinse fluid boil sump. The parts are rinsed with a fluorinated rinsing fluid. The vapor blanket formed from the rinsing fluid is condensed, drained into the final rinse tank and overflowed back into the boil sump. This waterless process provides the beneficial properties that vapor degreasing while overcoming health, cleaning, and material limitations associated with common vapor degreasing solvents used today. *Contact: KYZEN Global Corporate Headquarters, 430 Harding Industrial Dr., Nashville, TN 37211, USA. Tel: +1-615-831-0888*.

Source: http://www.kyzen.com

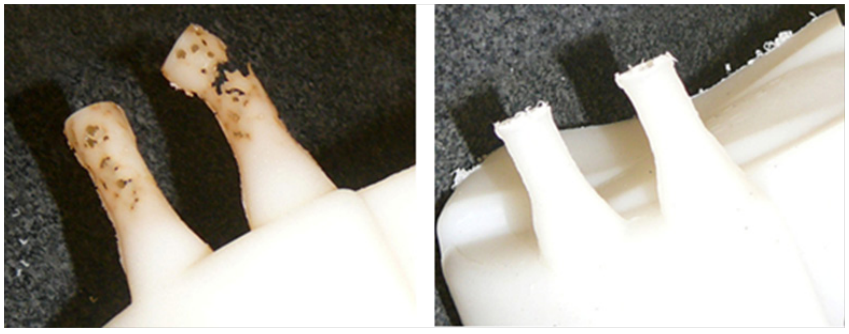
Plasma etching system

Plasma Etch Inc., the United States, a leader in plasma innovation, has released new details about the workings of the Magna plasma etching system. The Magna series utilizes the newest technologies available, eliminating the need for CF4 gas, a harmful contributor to ozone layer depletion. CF4 gas is presently used by PCB manufacturers using plasma etching systems across the globe. Oxygen is introduced from an on-board oxygen generator; meaning no cylinders.

The machine uses a dry vacuum pumping system that is maintenance-free, requiring no oil. Magna promises considerable yearly operating cost savings as compared to conventional large plasma treatment systems. In addition to being green, Magna boasts faster etch rates than conventional systems and better etch uniformity due to a rotating carousel fixture. The device has a large capacity; eight 19" x 28" panels can be processed per load cycle, with both sides processed simultaneously.

In 1987, Plasma Etch invented a true plasma process temperature control system allowing a consistent temperature to be maintained throughout the plasma cycle. The temperature is controlled completely independently of the plasma process. This temperature control system is an integral part of Magna's ability to etch without CF4 or supplied oxygen gasses. The pattern of innovation at Plasma Etch has allowed implementation of the world's first truly green plasma etching system. *Contact: Plasma Etch, Inc., 3522 Arrowhead Drive, Carson City, Nevada, 89706 USA. Tel: +1-775-883-1336; Fax: +1-775-883-2559; E-mail: sales@plasmaetch.com*.

Source: http://www.iconnect007.com



The image shows parts before (left) and after using Stoner Rotoflow mold coating.

ODS-free rotational molders

Stoner, the United States, with its new RotoFlow high-efficiency mold coating is making the process easier for rotational molders to go with the flow for rotomolded polyolefin and nylon resins. Inserts, tight radii, threads and deep cavities are often hard-to-fill areas in rotationally molded parts and can result in weak or defective molded components, often rendering them unusable. RotoFlow increases the flow of polyolefin and nylon resins into these difficult-to-reach areas, producing a fully molded part and nearly eliminating voids, pinholes, bridging, thinning and static lines on the surface.

According to Stoner, users have reported higher part quality, increased production efficiency and reduced operational waste, allowing them to achieve higher production goals in less time. RotoFlow does not contain ozone-depleting substances (ODS) or chlorinated solvents. It can be sprayed directly onto the internal mold surface and is suitable for use with most metals.

Source: http://www.plasticstoday.com

Flammable Refrigerants Safety Guide

This is an industry guide on managing the health and safety risks associated with the refrigeration and air-conditioning equipment and systems using flammable refrigerants.

For more information, access:

https://www.airah.org.au

Halon-replacement fire extinguisher

Diehl Aerosystems' division AOA has launched its FIREX water-mist fire-suppression system for aircraft cargo compartments, which it says is the only halon replacement system to have passed all US FAA proof-of-concept tests. FIREX comprises a water tank and nitrogen bottles linked to a common pipe and several spray nozzles that distribute water vapour and nitrogen throughout the cargo hold to extinguish fires.

It has been developed as an alternative to existing halon fire suppression systems, which are to be excluded from new European Aviation Safety Agency (EASA) aircraft programme certifications from 2018 due to environmental concerns. "Halon has huge global warming and ozone depletion effects. FIREX is at technology readiness level three and has passed all of the FAA trials.

Source: http://www.flightglobal.com

Innovative watermist technology

Developed by Plumis Ltd, the United Kingdom, the Automist® is a simple, retrofittable, sprinkler-alternative for full room active fire protection. In the event of a fire, the system is triggered automatically by a heat alarm or a fire panel output. Heat detection is recommended for kitchens in Approved Document B, and effectively eliminates nuisance activation. Unlike conventional sprinklers, Automist can be stopped manually by pressing a button on its control panel.

As Automist® uses much less water than a traditional sprinkler system, water damage in the event of activation is minimised. Where desired, manual activation can also be provided through a manual call point. Once triggered, a small pump drives mains water through the unique nozzle unit, quickly filling the room volume with a dense fog. Water mist removes heat and displaces oxygen from the fire zone, resulting in fire control, suppression or extinguishment. *Contact: Plumis Ltd, Unit 1c, Clapham North Arts Centre, 26-32 Voltaire Rd, London, SW4 6DH, U.K. Tel: +44-20-7871-3899; E-mail: press@plumis.co.uk.*

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

New high pressure water mist sprinkler

Marioff Corporation Oy, Finland, has launched the new generation HI-FOG 3000 sprinkler series for marine applications. The new generation HI-FOG 3000 sprinkler series, is designed to protect accommodation, public and service areas on ships.It replaces and provides even greater efficiency and wider coverage than earlier HI-FOG 1000 and HI-FOG 2000 sprinkler series. Marioff has carried out comprehensive testing of the new generation HI-FOG 3000 sprinkler series, which is designed, tested and type approved according to International Maritime Organization (IMO).

"With the launch of this new generation of HI-FOG 3000 sprinklers, we are offering to our marine customers enhanced HI-FOG systems with faster activation, more efficient suppression and improved passenger and crew safety. We take reliability and robustness of sprinkler systems to the next level, leveraging our three decades of field experience in marine fire protection systems," said John Hemgård, at Marioff.

Source: http://www.cruiseindustrynews.com

Clean agent fire suppression system

Kidde Fire Systems, the United States, has launched its new clean agent fire suppression platform, the Advanced Delivery System (ADS™) using 3M™ Novec™1230 Fire Protection Fluid. The new system offers the best coverage, highest nozzle, smallest diameter pipe and longest pipe runs, while leveraging an environmentally sustainable fire protection agent with ozone depletion potential of zero, global warming potential of one, and five days atmospheric lifetime.

The Kidde® Clean Agent ADS system offers increased flexibility, as cylinders can be stored more than 200 feet from the space they are protecting. The system accommodates complex pipe networks to protect multiple hazards from a single cylinder bank location, and piping runs can be reduced by adding directional valves at strategic locations.

Kidde's patented ADS nozzles offer increased agent flow rates for better coverage – up to 42.5 feet by 42.5 feet with a single nozzle. Improved agent vaporization allows nozzles to be mounted 18.5 feet above the floor deck, enabling tall rooms to be protected by a single level of nozzles. The Kidde ADS system using Novec is cULus listed and FM and U.S. Coast Guard approved, and is available and shipping for land- and marine-use applications. Various other U.S., marine and international approvals are in process. The release of the ADS with Novec 1230 continues Kidde's legacy as a single-source provider of fully integrated detection, control and suppression systems.

Source: http://www.securityinfowatch.com

New polyurethane spray foam system

Bayer Pearl, UAE, has recently developed a new spray foam system based on Solstice LBA liquid blowing systems from Honeywell, the United States. The Solstice LBA-containing polyurethane-spray foam system of the Baymer family offers homeowners excellent thermal insulation performance for reduced energy consumption. According to Bayer, The improvement of the environmental footprint and reduction of greenhouse gas emissions enables residential buildings to meet the ever increasing demand of UAE's sustainability regulations and Green Building Standards.

After fulfilling the equipment conditions for handling 3rd and 4th generation of blowing agents in larger scale, Bayer Pearl conducted a series of customer trials. In intensive cooperation, UAE-based spray foam applicator Water-Seal received authority approval for such a Baymer product containing Solstice LBA. In the meantime, for the first time ever in the Middle East, first projects for roof-insulation of residential villas in Al Ain have been realized by Water-Seal, using this modern and eco-friendly Baymer product. The Baymer polyurethane spray foam insulation system meets the needs of spray-foam applicators for non–flammable products with zero ozone depletion potential (ODP) and low global warming potential (GWP) solutions, while achieving excellent insulation values.

Source: http://www.finchannel.com

Sustainable alternative to polystyrene

Biopolymer Network, New Zealand, has received a patent for a new method of producing E-PLA bio-foams from commercially available PLA beads using a novel carbon dioxide (CO_2) foaming technology. This technology can be used to produce both foamed beads and moulded shapes and products such as insulation, packaging and speciality components.

This technology has been used to produce moulded E-PLA product on standard commercial polystyrene moulding equipment and tests on these products have shown similar performance to polystyrene for both impact resistance and insulation. Zealafoam is an environmentally-friendly polylactic acid foam and is considered as a sustainable alternative to petroleum-based polystyrene. Under development for the past nine years, Zealafoam is being tested by a large US global company for an, as yet, undisclosed product.

The bio-based plastic used in Zealafoam is derived from corn starch and the novel patented process involves introducing CO_2 as a blowing agent which expands the small bioplastic beads so they can be moulded into different shapes and products. One of its main benefits is that Zealafoam can be produced on the same machinery used to make polystyrene. *Contact: Biopolymer Network, 49 Sala Street, PO Box 1206, Rotorua 3040, New Zealand. Tel: +64-07-3435-573.*

Source: http://www.plastemart.com

New foam blow molding process

At the recent NPE2015 show in Orlando, W. Müller USA Inc., the United States, the maker of blow molding extrusion heads launched its foam blow molding process, after more than a year in development. "At NPE, we started talking to selected customers about our new blow molded foam technology for packaging. They had a lot of questions about things like physical properties, and I had to tell them that we're still at the very beginning, in terms of application development. But we have proven that the process works very well," said Wolfgang Meyer at W. Müller. The process uses a special head design for three-layer coextrusion with solid inner and outer skins and a foamed center.

The machine's main horizontal extruder provides the middle foamed layer, while two separate vertical extruders provide the skins. (A single extruder would suffice for both skins, but two extruders allow savings by putting color and additives in just the outer layer.). It uses no chemical blowing agent – only talc as a nucleating agent, so it is acceptable for food packaging. Another feature of the head – which is retrofittable to any brand of continuous-extrusion machine – is a "pineapple" dynamic mixer to disperse the gas. Higher mixer speed yields finer cell structure. Cell structure thus can be controlled independently of extruder speed, unlike other processes.

Source: http://www.ptonline.com

iPIC (Informal Prior Informed Consent) online

iPIC contains data on more than 1000 companies licensed to trade ODS and information on equipment or products with trade restrictions.

For more information, access:

http://www.unep.org/ozonaction/ipic

New machines to replace methyl bromide

The Thailand's Ministry of Agriculture and Cooperatives, will be supplied with machines for the disinfestation of weevil's eggs through the dielectric method, under a collaboration between the Agricultural Research Development Agency (ARDA), Thailand, and Eureka Design Public Company Limited, Thailand. Chavalit Chookajorn, Permanent Secretary for Agriculture and Cooperatives, has signed an agreement over technology licensing right between the ARDA and Eureka Design Plc.

The dielectric disinfestation machine would replace the more costly fumigation method via methyl bromide. Methyl bromide is also being banned by several countries starting this year. According to Mr. Chavalit, the dielectric heating machine would destroy all weevils and eggs in rice without leaving behind any contaminants. He said the new technology would create an advantage for Thai rice in the global market, and allow Thai rice to be exported as a chemicals-free product.

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

Scientists study organic fruit and food safety

Scientists at Washington State University (WSU), the United States, have found that ultraviolet C (UVC) light is effective against foodborne pathogens on the surface of certain fruits. The findings are expected to be welcome news for organic fruit processors who seek alternatives to chemical sanitizers and must also comply with the U.S. Food Safety Modernization Act to help prevent food borne illnesses. After learning from organic farmers and food processors about a lack of sanitizing options, WSU food safety specialist Shyam Sablani and his colleagues looked into alternatives and decided to explore UVC light. It has a shorter wavelength than ultraviolet A or B light. The study has been published in the *International Journal of Food Microbiology*.

"UVC radiation is present in sunlight; however, it is completely absorbed by the ozone layer and Earth's atmosphere. It has germicidal properties and can be effective against bacteria, mold and viruses," said Sablani. UVC light, which cannot penetrate opaque, solid objects, can be effective in sanitizing surfaces. The technology, which has been around for several years, has been used to effectively sanitize food contact surfaces as well as drinking water and contaminated air. It works on microorganisms by destroying nucleic acid and disrupting their DNA. But the light didn't affect the chemical or physical quality of the fruit in the study.

Researchers exposed apples, pears, strawberries, raspberries and cantaloupe to different doses of UVC to determine how effective the pathogen-killing light was against a mix of strains of *E. coli* and listeria. They found that the light can inactivate up to 99.9 percent of pathogens on apples and pears. However, listeria was more UVC resistant than *E. coli*. The UVC light inactivated 90 percent of pathogens present on rough-surfaced fruit. Rough surfaces of strawberries, raspberries and cantaloupe offer places where pathogens can literally hide, reducing the effects of UVC light. Adding UVC lamps to a fruit packing line does not require major modification. UVC lamps enclosed behind protective barriers can be easily set up in a tunnel that exposes fruit to the light as it passes on a conveyor belt.

Source: https://www.news.wsu.edu

New novel nematicide approved

ADAMA Agricultural Solutions Ltd. (Adama), Israel, the leading global off-patent provider of crop protection solutions, has announced that it has achieved Israeli regulatory approval to market NIMITZ®, a novel, non-fumigant nematicide with unprecedented user safety and simplified application features. The innovative product controls nematodes, one of the most destructive and problematic pests in agriculture worldwide. NIMITZ®, which is unique and proprietary to Adama, is the culmination of the investment of significant resources over a number of years in advanced R&D in the fields of chemistry and agriculture.

NIMITZ® is expected to be a significant growth driver for Adama in the future. It offers a highly effective and simple-to-use solution to farmers in the control of nematodes, along with a low toxicity and eco-toxicity profile compared to other alternatives currently on the market. The product has unprecedented safety characteristics amongst chemical nematicides, and it does not harm the populations of other organisms in the soil. The product is simple to use, and does not require the use of special protective clothing during application. It also allows for a significantly narrower waiting period between application and planting.

In addition, in field trials conducted around the world, it has been shown that the product is highly efficacious across diverse climatic zones. According to the US Environmental Protection Agency (EPA), which examined the product in the process of granting its US registration, NIMITZ® provides a safer and simpler alternative in comparison with existing solutions. In addition, the Agency determined that NIMITZ® "provides lower-risk chemical control of nematodes than methyl bromide and other restricted use soil fumigants". *Contact: Adama, Wayne Rudolph, Investor and Public Relations, ADAMA Agricultural Solutions Ltd., Tel: +972-73-232-1941; Email: pr@adama.com.*

Source: http://www.prnewswire.com

Alternative methods for disinfesting chestnuts

Recently a team of researchers from Northwest A&F University, China, Xinjiang Academy of Agricultural Sciences, China, San Joaquin Valley Agricultural Sciences Center, the United States, and Washington State University (WSU), the United States, studied the alternative methods for disinfesting chestnuts. They found that chemical fumigation has been widely used to control insects in postharvest chestnuts but is inherently dangerous when using fumigants.

The purpose of this study was to validate application of radio frequency (RF) treatments for disinfesting chestnuts as an alternative to chemical fumigation. A practical process protocol was developed to control insect pests in chestnuts using a 27.12 MHz free-running oscillator RF system. Fifth-instar yellow peach moth, *Conogethes punctiferalis*, more heat tolerant than chestnut weevil, *Curculio elephas*, under three temperature and time combinations using a heating block system, was selected as the targeted insect to validate the RF treatment protocol.

Mortality of fifth-instar *C. punctiferalis* increased with increasing holding time at 55°C using RF heating and reached 100% while holding in hot air for at least 5 min. Furthermore, there was no significant quality difference in color, fat, firmness, moisture content, protein, and soluble sugar content of chestnuts observed between RF treatments and controls. RF treatment methods hold potential to scale up for industrial applications of disinfesting chestnuts. The study has been published in the *Journal of Stored Products Research*.

Source: http://www.sciencedirect.com

Evaluation of methyl bromide alternatives efficacy

In a study, researchers from Chinese Academy of Agricultural Sciences, evaluated methyl bromide (MB) and other alternatives for suppression of Fusarium spp., *Phytophthora*spp., and *Meloidogyne* spp. and their influence on soil microbial communities. Both *Fusarium* spp. and *Phytophthora* spp. were significantly reduced by the MB (30.74 mg kg^{-1}), methyl iodide (MI: 45.58 mg kg^{-1}), metham sodium (MS: 53.92 mg kg^{-1}) treatments.

MS exhibited comparable effectiveness to MB in controlling *Meloidogyne* spp. and total nematodes, followed by MI at the tested rate. By contrast, sulfuryl fluoride (SF: 33.04 mg kg^{-1}) and chloroform (CF: 23.68 mg kg^{-1}) showed low efficacy in controlling *Fusarium* spp., *Phytophthora* spp., and *Meloidogyne* spp. MB, MI and MS significantly lowered the abundance of different microbial populations and microbial biomass in soil, whereas SF and CF had limited influence on them compared with the control.

Diversity indices in Biolog studies decreased in response to fumigation, but no significant difference was found among treatments in PLFA studies. Principal component and cluster analyses of Biolog and PLFA data sets revealed that MB and MI treatments greatly influenced the soil microbial community functional and structural diversity compared with SF treatment. These results suggest that fumigants with high effectiveness in suppressing soilborne disease could significantly influence soil microbial community. The study has been published in the journal *PLoS One.*

Source: http://www.ncbi.nlm.nih.gov

2014 Report of the Methyl Bromide Technical Options Committee

The report provides information on advances to replace Methyl Bromide (MB) used under Critical Use by non-Article 5 Parties and continued reduction in methyl bromide use in Article 5 countries to meet the required phase out schedule in 2015. It shows trends in methyl bromide production and consumption in both Article 5 and non-Article 5 Parties, estimated levels of emissions of MB to the atmosphere, and strategies to reduce those emissions..

For more information, access:

http://ozone.unep.org

RECENT PUBLICATIONS

Protecting the Ozone Layer and Reducing Global Warming

The report summarizes the impact of UNDP-implemented activities relating to Montreal Protocol on substances that deplete the ozone layer. It also summarizes the results and lessons learned from 9 case studies covering Bangladesh, China, Georgia, India, Mexico, Swaziland, foam sector technology transfer between Mexico, Jamaica and Trinidad & Tobago.

Contact: United Nations Development Programme, One United Nations Plaza, New York, NY 10017 USA. Tel: +1-212-906-5382; E-mail: publications.queries@undp.org

India's Long Term Hydrofluorocarbon Emissions

The Council on Energy, Environment and Water (CEEW), India, along with the International Institute for Applied Systems Analysis (IIASA), Austria, has recently published a joint report on "India's Long Term Hydrofluorocarbon Emissions". The CEEW-IIASA report contains a detailed sector-by-sector analysis of the global warming impact of long-term HFC emissions from the residential, commercial, transportation and industrial sectors in India.

Contact: Council on Energy, Environment and Water, Thapar House, 124, Janpath, New Delhi 110001, India. Tel: +91-11-4073-3300; Fax: +91-11-4073-3399; Email: info@ceew.in

Low-GWP Alternatives in Commercial Refrigeration: Propane, CO_2 and HFO Case Studies

The booklet presents lessons learned from real cases in commercial refrigeration and aims to stimulate further investigation to enable a smooth transition away from high-GWP refrigerants and assist in the selection of future refrigerants. The case studies offer information for system purchasers and operators to consider when upgrading or replacing existing equipment with newly designed systems that decrease impacts on the ozone layer and climate change.

Contact: UNEP DTIE OzonAction Branch 15, rue de Milan 75441, Paris CEDEX 09, France. Tel: +33-1 44-371-450, Fax: +33-144-371-474, E-mail: ozonaction@unep.org

TECH EVENTS

10–11 Sep
Kyoto, Japan

13th International Conference on Advances in Foam Materials & Technology (FOAMS® 2015)
Contact: Professor Masahiro Ohshima, Conference Chair
Tel: +81-75-383-2646
E-mail: foams15@cheme.kyoto-u.ac.jp
Web: http://www.cheme.kyoto-u.ac.jp/foams15/

17–20 Oct
Tehran, Islamic Republic of Iran

IRAN HVAC&R 2015
Contact:Nama Negar International Co., Unit 28, 5th floor
No. 49 Daman Afshar St
ValiasrAve, Tehran
Islamic Republic of Iran
Tel:+98-21-8820-3020
Fax:+98-21-8820-8423
E-mail: info@nni.ir

20-23 Oct
Dalian, China

8th International Conference on Cold Climate-Heating, Ventilation and Air-Conditioning (Cold Climate HVAC 2015)
Contact: Dalian University of Technology
Tel: +86-411-84709612
Fax: +86-411-84674141
E-mail: hvac@dlut.edu.cn
Web: http://www.coldclimate2015.org

28-29 Oct
Amsterdam, the Netherlands

15th International Water Mist Conference
Contact: International Water Mist Association
Poststraße33(imHBC)
20354 Hamburg, Germany
Tel:+49-40-35085-215
Fax:+49-40-35085-80
E-mail:info@iwma.net
Web: http://www.iwma.net

8–11 Nov
Manila, Philippines

HVAC/R PHILIPPINES 2015
Contact: Global-Link
Unit 1003 Antel 2000 Corporate Center, 121 Valero, St. Salcedo Village, Makati City, Philippines
Tel: +632-750-8588
Fax: +632-750-8585

9–11 Nov
San Diego, USA

Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions
Contact: Methyl Bromide Alternatives Outreach, 6556 N. Dolores Ave., Fresno, CA 93711, USA
Tel: +1-559-449-9035;
Fax: +1-559-449-9037
E-mail: gobenauf@agresearch consulting.com
Web: http://www.mbao.org

25–27 Nov
Jakarta, Indonesia

HVACR INDONESIA 2015
Contact: Informa Exhibitions Pte Ltd
111SomersetRoad#11-08
TripleOneSomerset
Singapore-238164
Tel:+65-6411-7777
Fax:+65-6411-7778
E-mail:singapore@informa.com

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(Free access at www.techmonitor.net)

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- ❑ VATIS Update (4 issues/year)
  - ❍ Biotechnology — (e-version)
  - ❍ New and Renewable Energy — (e-version)
  - ❍ Food Processing — (e-version)
  - ❍ Ozone Layer Protection[#] — (e-version)
  - ❍ Waste Management — (e-version)

BOOKS

	Indian Rupees* (India, Bhutan and Nepal)	US Dollars*
❑ Managing Innovation for the New Economy: Training Manual, 2002 Volume 1: How to Guide & Quick reference materials Volume 2: Articles & Lectures	1,000.00	50.00
❑ Regional Capacity-building for the Adoption of ISO-14000 and Transfer of Environmentally Sound Technology: Training Manual, 2000	600.00	30.00
❑ Small Rural Industries in the Asia Pacific Region: Enhancement of Competitiveness of Small Rural Industries in a Liberalized Economic Environment and the Impact of Poverty Alleviation, 2000	600.00	30.00
❑ Technology Transfer and Technological Capacity-building in Asia and the Pacific		
❍ Volume 1: Big Countries and Developed Economies, 1999	600.00	30.00
❍ Volume 2: ASEAN, NIEs, SAARC and the Islamic Republic of Iran, 1999	600.00	30.00
❍ Volume 3: Least Developed and Pacific Island Countries and Economies in Transition, 1999	600.00	30.00
❍ Volume 4: Emerging Issues in Regional Technological Capability-building and Technology Transfer, 1999	600.00	30.00
❑ Rural Industrialization as a Means of Poverty Alleviation: Report of the Regional Seminar on the Enhancement of Partnerships among Governmental, Non-governmental and Private Sector Entities for the Promotion of Rural Industrialization for Poverty Alleviation, 1999	600.00	30.00
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