VATIS UPDATE

Ozone Layer Protection

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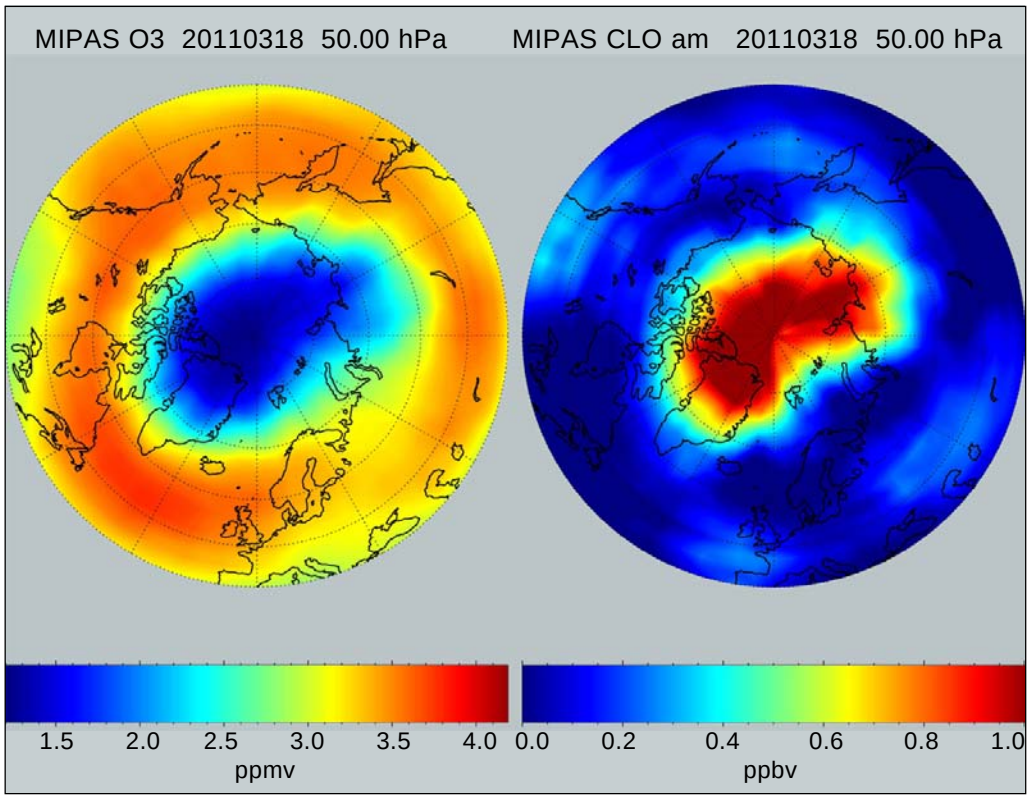
Apprise yourself with the latest technological innovations

Highlights

- Halogenated organic molecules from the sea damage ozone
- Hot water-driven absorption chillers
- Water-based cleaners for electronic parts
- Non-ODS fire suppression system
- Environment-friendly spray foam insulation
- Bio-disinfection with semi-composted manure



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Economic and Social Commission for Asia and the Pacific
ASIAN AND PACIFIC CENTRE FOR TRANSFER OF TECHNOLOGY (APCTT)

OZONE CELL
MINISTRY OF ENVIRONMENT AND FORESTS
GOVERNMENT OF INDIA

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

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

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

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

Cover Photo

March 2011: Strongly reduced ozone values (left, dark blue) and significantly increased concentration of chlorine monoxide (right, red) that is directly involved in ozone degradation

(Credit: IMK-ASF, Karlsruhe Institute of Technology, Germany)

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

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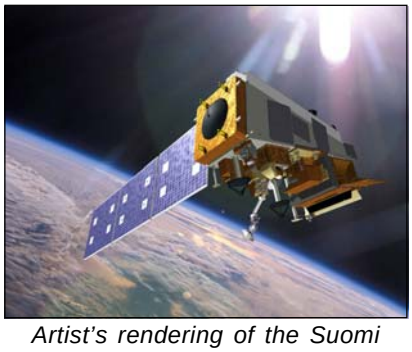
New satellite tool to monitor recovery of ozone layer

In the United States, scientists at the National Oceanic and Atmospheric Administration (NOAA) will begin using data from the Ozone Mapper Profiler Suite (OMPS), an advanced instrument to monitor the health of the stratospheric ozone layer. OMPS is one of five new instruments flying aboard the Suomi National Polar-Orbiting Partnership satellite (Suomi NPP) that the National Aeronautics and Space Administration (NASA) launched on 28 October 2011. It measures stratospheric ozone that has eroded because of human-produced ozone-depleting substances (ODSs) such as chlorofluorocarbons (CFCs) and halons. The limb profiler, part of the OMPS on board the Suomi NPP satellite, measures a cross-section of the ozone layer. OMPS is designed to look at the upper parts of the atmosphere and tell where ozone is distributed. It will help verify the beginning of the recovery of the ozone layer during the coming few decades, a crucial period when the layer is expected to recover from the effects of the ODSs.



Artist's rendering of the Suomi National Polar-orbiting Partnership satellite

The OMPS continues a long partnership between NASA and NOAA and consists of three instruments – nadir mapper, nadir profiler and limb profiler. The limb profiler looks at the atmosphere from the side and very accurately estimates how ozone is distributed. Nadir mapper and nadir profiler look down at the atmosphere and monitor the total column ozone amounts with full global coverage. The Suomi NPP team will continue initial checkouts as part of the commissioning activities and then hand over the operations to NOAA. NOAA will continue calibration and validation activities, to process and distribute data to users around the world. The Goddard Space Flight Centre of NASA manages the Suomi NPP mission for the Earth Science Division of NASA's Science Mission Directorate.

Source: www.noaanews.noaa.gov

Low temperatures enhance Arctic ozone degradation

Extraordinarily cold temperatures in the winter of 2010-2011 have caused the most massive destruction of the ozone layer above the Arctic thus far. About a year ago, scientists at the Institute of Meteorology and Climate Research (IMK) of the Karlsruher Institute of Technology (KIT), Germany, along with scientists at Oxford University, the United Kingdom, detected that the Arctic ozone degradation for the first time reached an extent comparable to that of the ozone hole above the South Pole. Then the IMK researchers studied the mechanisms that cause the ozone loss. According to their studies, occurrence of the Arctic ozone hole was mainly due to the unusually cold temperatures in the ozone layer. There, chlorine compounds originating from chlorofluorocarbons (CFCs) and other pollutants are converted chemically at temperatures below -78°C. These chemical conversion products attack the ozone layer and partly destroy it. One of the main finding of the study is that if the trend to colder temperatures in the stratosphere seen in the past decades continue, repeated occurrence of an Arctic ozone hole has to be expected.

The IMK research team analysed the atmospheric chemical composition measured by the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS) satellite instrument developed by KIT. In addition, model calculations were made to determine the effects of further cooling of the ozone layer. According to Dr. Bjorn-Martin Sinnhuber, a further drop of just 1°C in temperature "would be sufficient to cause a nearly complete destruction of the Arctic ozone layer in certain areas". He said that further development of the ozone layer would consequently be influenced also by climate change. The increase in carbon dioxide and other greenhouse gases will warm up the bottom air layers near the ground, but will also result in a cooling of the air layers of the stratosphere above, where the ozone layer is located. *Contact: Ms. Margarete Lehne, Presse, Kommunikation und Marketing, Karlsruhe Institute of Technology, P.O. Box 3640, 76021 Karlsruhe, Germany. Tel: +49 (721) 6084 8121; Fax: +49 (721) 6084 5681; E-mail: margarete.lehne@kit.edu.*

Source: www.kit.edu

Halogenated organic molecules from the sea damage ozone

Natural halogenated organic molecules produced by coastal waters of the tropical Western Pacific may be harming the stratospheric ozone layer. This conclusion was drawn from the initial findings of a field

measurement campaign conducted in the South China Sea under the framework of the international and interdisciplinary project – Stratospheric Ozone: Halogen Impacts in a Varying Atmosphere (SHIVA). Towards the end of 2011, scientists involved in the project – coordinated by physicists from the Institute of Environmental Physics at Heidelberg University, Germany – investigated the oceanic sources and atmospheric transport pathways of these trace gases in the waters and air of Malaysia, Brunei and the Philippines.

The halogens – chlorine, bromine and iodine – are known to damage the ozone layer. Micro-organisms such as macro-algae and phytoplankton form natural halogenated organic molecules and they get released into the air, from where they eventually make their way into the stratosphere. The SHIVA project is testing conjectures based on earlier findings by scientists from Heidelberg University's Institute of Environmental Physics that the ozone layer may be harmed not only by industrial "ozone killers", like chlorofluorocarbons (CFCs), but also by these natural halogenated organic molecules. Dr. Klaus Pfeilsticker of Heidelberg University, overall coordinator of the project, said: "Our measurements off the coast of Borneo, in the South China Sea and in the Sulu Sea indicate that the biologically productive coastal waters are particularly abundant sources of these trace gases." He added that the laboratory analyses indicated the red algae or rhodophyta to be one of the prime producers of halogenated organic molecules, due to a stress reaction caused by oxygen.

The German Aerospace Centre's research plane Falcon was used to investigate the atmospheric transport pathways of the halogenated organic molecules and their decay products closely. The atmospheric transport of the targeted species to the mid-troposphere is quite fast in the tropics, due to the shallow atmospheric boundary layer. In addition, in the rainy season, convective systems like thunderstorms lift the air masses into the upper troposphere in a matter of hours. The scientists found vertical transport due to intermittent convective systems to be the most important factor for the transport of ozone relevant and other trace gases into the upper tropical troposphere. "From there these gases are transported to the lower stratosphere by radiative heating in the tropical tropopause layer," explained Dr. Pfeilsticker. Next, the scientists will evaluate and interpret the new data with the help of large-scale chemical, transport and global climate models to predict "the future development of the ozone layer under the influence of anthropogenic climate change in the tropical oceans, atmospheric circulation and photochemistry".

Source: www.sciencedaily.com

Thinning ozone layer over Chile causes concern

The ozone layer above central Chile might be thinning this summer, according to new studies carried out by the National Environmental Centre (Cenma) of the University of Chile. This finding has elicited warnings from scientists and even the Chilean Minister of Environment Ms. Maria Ignacia Benítez. High levels of ultraviolet (UV) rays and a thinner ozone layer have been detected from the central Valparaiso Region to the southern Bío-Bío Region. Cenma carried out the study by releasing a balloon probe to record measurement of ozone in the atmosphere, and the measurements recorded revealed a frightening forecast. The measurements in the Metropolitan Region showed that the ozone level during the summer was less than 220 DU, which is risky, said the Minister. Chile's average measurement of ozone is 260 DU while 300 DU is considered the normal. The ozone levels may be reduced by as much as 30 per cent during the summer months across central Chile compared with the rest of the year, Ms. Benítez said. The decrease in the ozone layer has contributed to a "hole" in the ozone layer across central Chile, estimated to be the size of Australia.

Source: www.santiagotimes.cl

Regional Enforcement Network Project to combat Illegal trade in harmful chemicals and hazardous waste in Asia

The United Nations Environment Programme (UNEP) in cooperation with the Swedish International Development Cooperation Agency (SIDA) launched the Regional Enforcement Network for Chemicals and Waste (Project REN) to detect and prevent illegal cross-border trade of ozone depleting substances (ODS), harmful chemicals and hazardous waste in 25 countries of the Asia. Project REN will do this by improving global as well as regional enforcement cooperation and by training customs officers and other key enforcement officers to monitor and control cross border movements of chemicals and waste more efficiently.

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First stage of HPMP gets ExCom's nod

At its 66th meeting in April 2012 at Montreal, Canada, the Executive Committee (ExCom) of the Multilateral Fund (MLF) for Implementation of the Montreal Protocol has approved India's HCFCs Phase-out Management Plan (HPMP) – Stage I for the period 2012-2015 to meet the 2013 and 2015 targets on reduction of hydrochlorofluorocarbon (HCFC) consumption. The HPMP Stage-I will address conversions in foam manufacturing sector from HCFCs to ozone-friendly technologies in enterprises with large consumption of HCFC-141b, as well as systems and activities in the refrigeration air-conditioning (RAC) servicing sector.

The HPMP was prepared in close cooperation with industry associations. The Memorandums of Agreement for preparation of RAC manufacturing and foam manufacturing sectoral strategies were signed between the Ozone Cell, the Ministry of Environment and Forests (MoEF), and the Refrigeration and Air-conditioning Manufacturers Association (RAMA) and the Indian Polyurethane Association (IPUA), respectively. The lead implementing agency, United Nations Development Programme (UNDP), finalized the HPMP along with other implementing agencies – United Nations Environment Programme (UNEP), United Nations Industrial Development Programme (UNIDO) and the German Society for International Cooperation (GIZ) – and in close cooperation with the Ozone Cell and submitted it to the Multilateral Fund for consideration by ExCom. The HPMP Stage-I aims to phase out certain HCFCs to meet the 2013 freeze and 10 per cent reduction in 2015.

Source: www.ozonecell.com

ODS phase-out by small enterprises

The Small Industries Development Organization (SIDO), Government of India, has been entrusted with the responsibility of overseeing the phase-out of ozone depleting substances (ODS) in the small industry sector. Financial and technical assistance to facilitate ODS phase-out by small units is provided by the Multilateral Fund (MLF) of the Montreal Protocol. While the phase-out is mandatory, the opportunity offers potential for switching over from ODS technologies to latest non-ODS technologies commercially adopted in developed countries that have already phased out ODS. *Contact: The Office of the Development Commissioner, Ministry of Micro, Small & Medium Enterprises, Government of India, "A" Wing, 7th Floor, Nirman Bhawan, New Delhi 110108, India. Tel: +91 (11) 2306 3800, 2306 3802; Fax: +91 (11) 2306 2315.*

Source: www.dcmsme.gov.in

New production line for ozone-friendly air-conditioners

Godrej & Boyce Mfg. Co. Ltd. inaugurated a new production line in Khandala, Satara district, Maharashtra, on 31 March 2012 for the manufacture of split and window-type air-conditioners (ACs) with natural, non-ozone depleting and climate-friendly cooling agents. The project is being implemented by GIZ Proklima, Germany, under the International Climate Initiative of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in cooperation with the Government of India, represented by the Ozone Cell, Ministry of Environment and Forests (MoEF). The strategic Indo-German partnership will strengthen India's capacities in adopting environment-friendly technologies for sustainable growth.

The new Godrej & Boyce ACs were designed to European and International safety standards and will have the highest energy efficiency in their class. For example, in the 1.5 tonnes split category, which is the most common AC segment in India, the Godrej 5-star AC using R290 technology will consume at least 23 per cent less energy than current top-of-line 5-star models. Besides efficiency, the technology presents zero ozone depletion and nearly zero global warming. The project will help spread awareness about R290-based AC technology and equipment in India, and will encourage other AC manufacturers to select clean technologies while replacing hydrochlorofluorocarbons (HCFCs). The new line has been launched in various cities in India, backed by the company's service technicians trained in safe installation and maintenance.

Source: www.giz.de

CTC phase-out project in SAIL

Along with the United Nations Development Programme (UNDP), the Steel Authority of India Ltd. (SAIL) had undertaken an umbrella project for the replacement of carbon tetrachloride (CTC), used as a solvent for cleaning at six production units of SAIL – Bhilai Steel Plant, Durgapur Steel Plant, Rourkela Steel Plant, Bokaro Steel Plant, IISCO Steel Plant in Burnpur and Salem Steel Plant. Usage of CTC has been stopped completely in all these six plants. Commissioning activities are in various stages of progress in these plants.

Source: steel.nic.in

Regional project to combat illegal ODS trade in Asia

The United Nations Environment Programme (UNEP), together with the Swedish International Development Cooperation Agency (SIDA), has launched the Regional Enforcement Network for Chemicals and Waste (Project REN), a US$1.56 million project that aims at detecting and preventing illegal cross-border trade of ozone-depleting substances (ODSs), other harmful chemicals and hazardous waste in 25 countries of the Asia-Pacific region. As the most populous region, Asia is the largest producer and consumer of ODS in the world, and production and consumption of a wide range of other chemicals is growing rapidly. Asia is also the major destination for dumping of hazardous waste. Less strict environmental regulations as well as low awareness on chemicals and waste in many countries of the region have caused poor people to suffer more from environmental pollution and health damage.

Project REN is built on an earlier project known as the Multilateral Environmental Agreements Regional Enforcement Network (MEA REN), implemented in Asia-Pacific from 2007 to 2011. The MEA-REN project, also funded by SIDA and implemented by UNEP, was the only inter-governmental forum in the world where national environmental authorities and Customs administrations were networked to address illegal trade in harmful substances and hazardous waste jointly and constantly. Apart from major partner agencies, national Customs administrations of the 25 countries, Border Liaison Offices in the Greater Sub-Mekong Region, UNEP, and Secretariats of Basel Convention, Rotterdam Convention and Stockholm Convention will be involved in project implementation. The duration of the project is three years. Dr. Young-Woo Park, UNEP Regional Director and Representative for Asia and the Pacific and Ms. Anna Maria Oltorp, Head of Development Cooperation Section, Embassy of Sweden to Thailand, jointly launched the project on 8 February 2012 at the Foreign Correspondents' Club of Thailand in Bangkok. *Contact: Mr. Atul Bagai, Senior Regional Coordinator, OzonAction Programme, Compliance Assistance Programme, UNEP Regional Office for Asia & Pacific, United Nations Bldg., Rajdamnern Nok Avenue, Bangkok 10200, Thailand. Tel: +66 (2) 288 1662; Fax: +66 (2) 288 3041; E-mail: atul.bagai@unep.org.*

Source: www.unep.org

New GIZ guideline on conversion of fridge production plants to hydrocarbons

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the German Society for International Cooperation, has published on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) a new guideline document that intends to provide a general idea of the segments and key considerations involved when planning to convert an existing production system of domestic refrigerators to one that uses hydrocarbons such as isobutane (R600a) or propane (R290). The guidelines take a holistic approach to the conversion process, discussing five key areas involved in the conversion, namely:

- Production equipment that involves installation, maintenance and safety;
- Product that involves refrigerator redesign and testing;
- Process, in terms of operator training and safety;
- Product support and technician training; and
- Marketing and customer education.

After discussing the marketing of hydrocarbon appliances as well as the barriers to converting production plants to hydrocarbons, the guidelines go on to over the considerations for conversion such as: unit design; foam production; production line; changes in the product components; and training and post-sales servicing. The document focuses on the important aspects that small- and medium-sized manufacturers need to consider, and provides a case study example of a manufacturer who converted a production line to hydrocarbons, detailing practical issues, problems and setbacks, and eventual benefits associated with the successful implementation of the conversion.

Source: www.hydrocarbons21.com

Stakeholders meet for ozone depletion control in Fiji

Fiji will commence the implementation of its Hydrochlorofluorocarbons (HCFCs) Phase-out Management Plan (HPMP) project in 2012. In the HPMP preparation stage, a survey conducted in 2010 had shown that the domestic air-conditioning sector had the second highest consumption of HCFCs compared with tourism, fishery and food processing sectors and re-exports to other Pacific Island Countries. The strategy document passed by the Cabinet in August 2011 has a subcomponent of Retrofit Incentive Programme, to demonstrate any technically feasible option that can

be adopted by other stakeholders in the industry. The underlying objects of forming the Air-conditioning/Importation/Wholesaling/Retailing Technical Working Group are:

- Addressing the needs of refrigeration and air-conditioning (RAC) associations – fixing standards for RAC equipment coming into Fiji;
- Ease of HPMP implementation – limiting the number of importers to within the RAC industry, as they are the proper technical people to handle RAC equipment and for enforcing the limit of HPMP baseline as endorsed by Cabinet in August 2011; and
- Retrofit Incentive Programme – conduct retrofit trials in residential air-conditioning as per the selection criteria/guidelines developed by the Technical Working Group.

Source: www.fiji.gov.fj

Viet Nam to phase out HCFCs by 2030

Viet Nam's Ministry of Industry and Trade (MIT) has set annual import quotas for ozone-depleting hydrochlorofluorocarbons (HCFCs) from 2012 to 2019. This move is to fulfil Viet Nam's obligations for the eventual phase out of HCFCs by 2030 under the Montreal Protocol, to which the country is a signatory.

For HCFC-141b, which has the highest ozone-depleting potential (ODP) among HCFCs, the 2012 quota has been set at 500 tonnes, dropping to 300 tonnes by 2013 and 150 tonnes by 2014, with the phase-out targeted for 2015. For other HCFCs, by 2019 annual imports will be no more than 3,600 tonnes. Under the new restrictions, trade in HCFCs will be permitted only with partners in countries that have ratified the Montreal Protocol. The Ministry of Natural Resources and Environment (MNRE) reports that Viet Nam used up 3,700 tonnes of HCFCs in 2010.

Source: www.asean-cn.org

Refrigeration industry turns ozone-friendly

By 2013, five refrigerator manufacturers in Pakistan hope to replace chlorofluorocarbons (CFCs) with cyclopentane as the refrigerant because of its lower ozone-depleting potential. This was stated by the representative of a refrigerator manufacturing company at a one-day workshop on Hydrochlorofluorocarbons (HCFC) Phase-out Management Plan (HPMP) on 27 February 2012, organized by the Ministry of National Disaster Management (Ozone Cell). The workshop was attended by representatives of the five companies (Haier, Dawlance, United Refrigerators, Shadman and Varioline Intercool), United Nations Development Programme (UNDP), United Nations Industrial Development Organization (UNIDO), United Nations Environment Programme (UNEP), German Society for International Cooperation (GIZ) and environmental sciences students.

The phase-out is being carried out with the help of UNIDO and is expected to be completed by 2012. The workshop participants discussed several issues, including how the use of HCFC-based products is affecting the ozone and the alternatives adopted by India, China, South Africa, Swaziland and Brazil.

Source: tribune.com.pk

Indonesia reduces 8,989 MT of CFCs

Indonesia has managed to reduce 8,989 metric tonnes of chlorofluorocarbons (CFCs) that destroy the ozone layer two years ahead of the target. According to Mr. Arief Yuwono, Deputy Minister of Environmental Damage Control & Climate Change of the Environment Ministry, Indonesia has never been a producer of CFCs, though there are still illegal CFC supplies.

In appreciation of the reduction of ozone depleting substances (ODS), Indonesia has received a grant of US$12 million for the 2011-2018 period, to be provided to industries or businesses committed to reduce ODS. The companies that have switched over to more environment-friendly, non-ODS options include government-controlled entities such as Garuda Indonesia, Pertamina and the logistics board (Bulog). The 4,000 warehouses of Bulog no longer use methyl bromide for pest fumigation, Mr. Arief said.

Source: www.kompas.com

Islamic Republic of Iran phases out all CFC inhalers

The Islamic Republic of Iran will no longer allow epinephrine inhalers that use as propellant chlorofluorocarbons (CFCs), which damage the ozone layer. Inhaler manufacturers use CFCs to move the medicine out of the inhaler so that asthma patients can breathe the medicine into their lungs. The Islamic Republic of Iran, along with most developed countries, is eliminating CFCs following the Montreal Protocol. Many manufacturers in the country have reformulated their inhalers so that they do not contain CFCs. The Food and Drug Organization of the Islamic Republic of Iran said that the country has phased out all metered dose inhalers (MDIs) that contain CFCs. It is the first developing country in the Asia-Pacific region to do so.

Source: presstv.com

HFO1234ze prototype compressors

Danfoss, Denmark, has announced the availability to OEMs of prototype versions of its revolutionary oil-less Turbocor compressor to run on the hydrofluoroolefin (HFO) refrigerant HFO1234ze. The prototype, named TG310, is suitable for outdoor, air-cooled chiller applications. "The decision to fully commercialize the TG310 as a standard production model will be made at a later date in concert with our OEM customers," said Mr. Doug Bishop, Danfoss Turbocor's Vice President of Sales and Marketing.

The announcement comes a year after Klima-Therm and Cool-Therm, both from the United Kingdom, first announced that they were making available a chiller with a Turbocor, HFO1234ze compressor. The announcement was later retracted by the companies after Danfoss said that its Turbocor compressor had not been verified for use with any HFO. Klima-Therm later developed an HFO1234ze chiller using semi-hermetic compressor from Frascold, Italy.

Source: www.acr-news.com

Patent awarded for R441A HC blend

A.S. Trust & Holdings, the United States, has been awarded a patent for the formula of a blend of pure hydrocarbons, which was designated as R441A by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

R441A has been certified by independent testing laboratory Intertek as having a very low global warming potential (GWP) and zero ozone depletion potential (ODP). "R441A is a ground-breaking multi-blend of hydrocarbons and is the only refrigerant formula in the world to achieve these ratings," said Mr. Richard Maruya, President of A.S. Trust & Holdings and inventor of R441A. "Single-component hydrocarbon refrigerants cannot function at the same efficiency level as a multi-blend."

R441A is one of the first hydrocarbon refrigerants approved for sale in the United States by the United States Environmental Protection Agency (EPA) under the Significant New Alternative Policy (SNAP) for use in household refrigerators and freezers. It operates with mineral oil and can be used as a direct replacement in residential appliances, commercial refrigeration units and automotive cooling systems designed for R12, R134a and R22. While R441A is inflammable, the very small amount of this environment-friendly refrigerant required makes the risk assessment a non-factor. ComStar International, the United States, has been working with A.S. Trust & Holding Co. and has the production and distribution rights to R441A.

Source: www.hydrocarbons21.com

Multi-refrigerant compressor range

Emerson Climate Technologies, based in the United States, has started the production of a family of semi-hermetic reciprocating compressors. The range called Stream includes 4- and 6-cylinder compressors designed for hydrofluorocarbon (HFC) refrigerants, digital semi-hermetic compressors for simple continuous capacity modulation and compressors designed for carbon dioxide (CO_2) transcritical applications. This range covers cooling capacities from 33-80 kW medium temperature, 11-28 kW low temperature with R404A and can also be used with R134a as well as R407A/C. Emerson says the ability to use several different types of refrigerant is due to the Discus valve plate technology. Compared with other semi-hermetic reciprocating compressors, this technology allows 10 per cent better performance with R404A. All Stream compressors feature CoreSense Diagnostics, an electronic module that provides advanced compressor protection and diagnostics benefits for improved system reliability, low service costs and increased equipment uptime.

Two different modulation technologies are available: inverter technology or digital modulation. Stream is reported to be one of the quietest reciprocating compressors on the market with a sound reduction of up to 7 dBA compared with previous generation of compressors. Additional 15 dBA attenuation can be obtained by fitting a new sound shell on Stream compressors.

The three models for R744 (CO_2) transcritical applications cover cooling capacities from 20 kW to 37 kW. This is the ideal solution for medium-temperature cascade and booster systems when combined with Emerson's ZO scroll range for CO_2 subcritical. The CO_2 Stream models are characterized by a design pressure of 135 bar and are released for operation with frequency inverters. Refrigerant flow and heat transfer have been optimized for best performance.

Source: www.racplus.com

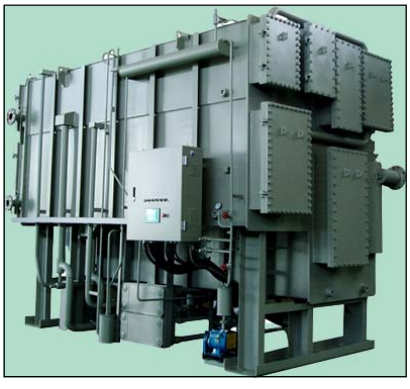
Complete automotive A/C refrigerant product line-up

Empack Spraytech Inc., Canada, has announced the release of its complete line of Emzone automotive air-conditioning (A/C) refrig-

erant products and accessories. The Emzone A/C 12a Cool Refrigerant is a replacement alternative for the ozone-depleting R12 and global warming R134a refrigerants. The full line-up includes A/C Stop Leak, A/C Oil Charge, OdorStop and an innovative system tune-up product A/C All-in-One. Emzone A/C refrigerant products are available in individual cans, cylinders and as complete kits for servicing air-conditioning systems. They are ideal for cars with R12 systems as well as R134a systems. *Contact: Empack Spraytech Inc., 98 Walker Drive, Brampton, Ontario, L6T 4H6 Canada. Tel: +1 (905) 792 6571; E-mail: info@empack.ca; Website: www.emzone.ca.*

Source: www.autoserviceworld.com

Hot water-driven absorption chillers



Hot water-driven absorption chiller

Advanced Ergonomic Technologies (AET), the United Kingdom, has launched a range of absorption chillers developed to produce cooling using either heat from a solar thermal installation or waste heat from an industrial process or a combined heat and power (CHP) plant. The SAB-HW Series of hot water-driven absorption chillers are an environment-friendly solution for commercial cooling applications. Conventional vapour compression chillers use mechanical energy to produce cooling. Hot water-driven absorption chillers use waste heat or solar-generated heat to produce cooling. They not only make use of heat that might otherwise have been wasted but can significantly reduce the amount of electricity needed for cooling.

An additional environmental benefit of AET's SAB-HW Series is that they use water as a refrigerant instead of ozone-depleting substances (ODS). The chillers operate on the principle that under a vacuum water boils at a low temperature. In the absorption cycle, the vacuum is created by a lithium bromide solution's high affinity for water. In the case of SAB-HW chillers, the pressure created is low enough to enable water to boil at 5.5°C. The single-effect absorption cooling cycle uses the latent heat of evaporation of boiling water to generate cooling. Water is sprayed over the surface of evaporator tubes. Because these chillers operate at low pressure, water evaporates from the warm tubes. Evaporation removes heat from the chilled water circuit passing through the evaporator tubes, cooling the water from 13°C to 8°C.

SAB-HW Series is available with cooling capacities ranging from 52 kW to 3,516 kW, making them suitable for the majority of comfort cooling and manufacturing applications. The chillers have a continuous operating range from 100 per cent to 10 per cent of the rated capacity. These high-quality units have exceptionally low noise and vibration levels. *Contact: Mr. Glan Blake Thomas, Managing Director, Advanced Ergonomic Technologies, The Centre, 201-203 London Road, East Grinstead, West Sussex RH19 1HAM, United Kingdom. Tel: +44 (1342) 310 400; Fax: +44 (1342) 310 401.*

Source: www.cisionwire.com

2.5 kW demonstration electrochemical compressor

Xergy Inc., the United States, has unveiled its first full-scale 2.5 kW demonstration "Kuel-Cell" electrochemical compressor unit. This device uses water as a refrigerant – using eight cells (8.5 cm × 8.5 cm) configured in series electrically and in parallel for fluid flow. The demonstration unit features glass domes featuring the hot and cold sides of the refrigeration system as well as two pressure gauges on either side of the expansion valve that can provide pressure differential data during operation of the unit.

The "Kuel-Cell" compressor system works by pumping protons across an ion exchange membrane between two gas diffusion electrodes. These protons draw water (refrigerant) with them across the membrane. When the refrigerant reaches the other side of the membrane electrode assembly, it is released at higher pressure and fed into a refrigeration cycle. The "Kuel-Cell" compressor technology is claimed to be much more efficient and reliable. It is motorless, noiseless, modular, scalable and employs a refrigerant that does not deteriorate the environment. There are many other benefits to the "Kuel-Cell" technology that can be realized depending on the specific application – such as in refrigerators, heat pumps, electronic cooling systems and automotive cooling systems. *Contact: Mr. Bamdad Bahar, Xergy Inc., 310 N Race Street, Georgetown, Delaware, DE 19947, United States of America. Tel: +1 (302) 856 3500; Fax: +1 (302) 856 4505; Website: www.xergyinc.com.*

Source: www.prweb.com

Low-VOC cleaner to remove heavy greases

Techspray's Pine-Shower degreaser

Techspray, the United States, offers Renew Pine-Shower degreaser and surface cleaner for removing heavy grease and other soils while leaving a non-oily finish. The degreaser and surface cleaner is considered ready-to-use but can be diluted for light surface and equipment cleaning. The cleaner has zero volatile organic compounds (VOCs) as per the California Air Resource Board guidelines, and has less than 3 per cent VOCs under the United States Environmental Protection Agency (EPA) guidelines. It also is compliant with European Registration, Evaluation, Authorization and Restriction of Chemical substances (REACH) and Waste Electrical and Electronic Equipment (WEEE) Directive. It does not contain butyl cellosolve, halides or other restricted substances.

Techspray's Precision-V vapour degreasing solvents remove oils, greases, silicones and other common industrial contaminants without leaving a residue, eliminating the need for further rinsing. They can be used as cold cleaners in vapour degreasing systems. They evaporate quickly and are non-inflammable with no flashpoint. The vapour degreasers are non-ozone depleting, making them suitable as replacements for cleaners containing Freon, HFC-141b and AK225. The parts cleaner and flux removers have azeotropic properties that enable them to maintain stability as they are cycled in a vapour degreasing system. They are not reactive with or corrosive to any metal. The solvents have a low boiling point, thereby reducing heat stress on the components being cleaned as well as energy consumption from the boil sump and chiller coils.

Source: www.pfonline.com

Water-based cleaners for electronic parts

While many solvent cleaners allow a convenient single-stage process, water-based cleaners have several advantages such as low/no volatile organic compound (VOC) content, non-inflammability, low odour and very low toxicity. Electrolube Ltd., the United Kingdom, offers Safewash Total (SWAT), an advanced water-based cleaning technology that is versatile in use, removes multiple contaminants and is non-ozone depleting. Key benefits of SWAT water-based cleaners are:

- Suitable for a wide range of different equipment and processing types;
- Removes a vast array of contaminants;
- Suitable for lead-free and no-clean flux, paste and adhesive residues as well as removal of general contaminants such as grease and dust;
- Supplied in a concentrate form for use at a range of concentrations depending on the application method; and
- Contains a corrosion inhibitor enabling safe application on sensitive metals such as copper, silver and aluminium.

SWAT is claimed to ensure superior cleaning performance and process flexibility while meeting the environmental goals of modern electronics manufacturers.

Source: www.ferret.com.au

Micro-refinery parts washer

The SystemOne® filterless, non-aqueous and solvent-based micro-distillation parts washer from Exium LLC, the United States, uses what is claimed as the most powerful parts washing technology available today. Unlike water-based systems that promote corrosion of metal parts and require additional lubrication, the patented SystemOne parts washer eliminates corrosion. The micro-distillation parts washer has applications in many industries including automotive, marine, aviation, heavy equipment, fleet management and weapons. By reclaiming and recycling the dirty solvent, each unit eliminates about 1,363 litres of hazardous material per year. *Contact: Exium LLC, 2265 SW 25th, Terracem, Miami, Florida, FL 33133, United States of America. Tel: +1 (305) 859 7379; Fax: +1 (305) 859 7325.*

Source: www.eximllc.com

Environment-friendly adhesive remover

3M, based in the United States, has introduced a new liquid cleaner/degreaser largely made from environmentally friendly, bio-based raw materials. Made with 60 per cent renewable materials, 3M™ Adhesive Remover-Renew provides a new option for effective adhesive removal. 3M Adhesive Remover-

Renew is made with citrus, soya and corn-based materials, and it can be used to dissolve and remove dirt, grease, tar and many non-curing type adhesives. It can also be used in place of many chlorinated or petroleum-based solvents to degrease substrates prior to adhesive bonding. The product is compliant with the guidelines of the United States Food and Drug Administration (FDA) for indirect food contact and is packaged in an aerosol can.

The new product complements the existing line of 3M adhesive removers, such as 3M Adhesive Remover (a citrus-based product) and 3M Adhesive Remover-Low VOC <20 per cent (a petroleum-based solvent with less than 20 per cent volatile organic compounds). *Contact: Ms. Connie Thompson, 3M Public Relations, 3M Corporate Headquarters, 3M Centre, St. Paul, MN 55144-1000, Minnesota, United States of America. Tel: +1 (651) 733 8914; E-mail: cthompson1@mmm.com*.

Source: www.marketwatch.com

Azeotrope-like solvent and mixed solvent compositions

Asahi Glass Co. Ltd., Japan, has obtained a United States patent for an azeotrope-like solvent composition and a mixed solvent composition. The azeotrope-like solvent composition comprises from 38 to 41 mass per cent of (2,2,2-trifluoroethoxy)-1,1,2,2-tetrafluoroethane and from 59 to 62 mass per cent of perfluorohexane. It has a boiling point of 47°-48°C at a pressure of 1.011×10^5 Pa.

The mixed solvent composition comprises from 30 to 60 mass per cent of (2,2,2-trifluoroethoxy)-1,1,2,2-tetrafluoroethane and from 40 to 70 mass per cent of perfluorohexane (containing, preferably, at least 90 mass per cent of n-perfluorohexane and/or perfluoroisohexane as the main component). The compositions are capable of removing soils such as oils that stick to the surface of an article made of acrylic resin or an article coated with acrylic resin, without damaging it.

Source: www.freepatentsonline.com

Production process for chlorinated rubber without CTC

Mr. Bo-lin Tong, a Chinese inventor, is patenting a new process that he developed for cleaner production of chlorinated rubber without using carbon tetrachloride (CTC) and water. The process uses 1,1,2-trichloroethane as solvent, wherein natural rubber is reacted with excess amount of chlorine gas at 60°C-100°C for 3-8 hours in the presence of iodine as a catalyst and then dried. The molar ratio of the natural rubber, chlorine and iodine ranges from 150000:150000 to 200000:0.5-5. The process is said to meet the requirements of the standard specification relevant to marine coatings. The process is simple, convenient and suitable for industrial production.

Source: www.wipo.int

Industrial cleaner and coating system

Baron Blakeslee from the United States is offering Terpenator, an industrial cleaner, and Lab-Koat coating system. The two tabletop machines are small in size and carbon footprint. The Terpenator's ability to utilize bio-based hydrocarbon cleaning solutions is green enough for the Earth but powerful

Baron Blakeslee's Terpenator industrial cleaner

enough to strip flux off printed circuit boards. It can also be used for dip cleaning, batch cleaning and organic solvent cleaning. The Terpenator features no direct sources of ignition, an essential feature when using hydrocarbons. The machine packs the power, cleaning strength and efficiency of a much larger unit into its tabletop format. The machine, fabricated using 12-gauge type 304 stainless steel for durability. The machine has overall dimensions of 30 in (L) × 24 in (W) × 18 in (H), and working size of 18 in (L) × 18 in (W) × 12 in (H).

Lab-Koat is one of the smallest tabletop precision complete coating deposition systems available. This industrial machine creates reliable, cost-efficient, traceable and consistently coated medical devices and instruments. The Lab-Koat provides thorough mixing of the solution in the coating process, allowing for a consistent coating deposition. The on-board refrigeration system and internal cooling coils confine and recover carrier fluid for maximum economy. The Lab-Koat is capable of deposition of both polytetrafluoroethylene dispersions and silicones. *Contact: Blakeslee, 2900 MacArthur Boulevard, Northbrook, IL 6006, United States of America. Tel: +1 (847) 796 0822; Fax: +1 (847) 509 2908; Website: www.baronblakeslee.net.*

Source: www.prweb.com

Non-ODS fire suppression system

Utilizing the industry-recognized FM-200 and 3M Novec 1230 suppression agents, Amerex from the United States has developed an affordable, pre-engineered, clean agent fire suppression system to protect areas with sensitive electrical equipment and valuable data. Amerex has designed the modular and cost-efficient CPS System to incorporate pre-assembled wiring harnesses and keyed locking connectors on all electrical components for a simple and reliable installation.

Suppression agent tanks come in two sizes, having a diameter of 10 inches that makes tank location in confined spaces easier. Tanks are charged in increments of 0.8 kg in a small tank or 1.36 kg in a larger tank. Electrical actuators are used for system actuation and can be reset, reducing the number of components to be replaced after discharge. Nozzles are available in three designs – corner, side wall and centre room – for flexibility in system installation. The CPS System is monitored by an electrical control panel that has a battery back-up for 24 hour protection during power failure. Photoelectric smoke detectors used are cross-zoned to reduce the potential for unwanted system discharge.

The extinguishing agent used, FM-200 or 3M Novec 1230, is HFC-227ea developed as an environmentally safe alternative to Halon 1301. HFC-227ea is on the Significant New Alternatives Policy (SNAP) Programme of the United States Environmental Protection Agency (EPA) as acceptable for use in occupied spaces. The primary extinguishing mechanism of HFC-227ea is heat absorption. It absorbs heat at the molecular level faster than the amount of heat generated by the combustion reaction and essentially ceases the combustion reaction as it cannot sustain itself. Although the physical mechanism of heat removal is the predominant mechanism of flame extinguishment, there is a chemical contribution to flame extinguishment that arises from the thermal decomposition of small amounts of HFC-227ea in the flame. *Contact: Amerex Corp., 7595, Gadsden Highway, Trussville, Alabama, AL 35173, United States of America. Tel: +1 (205) 6553 271; Fax: +1 (800) 6545 980.*

Source: www.amerex-fire.com

Clean agent fire suppression system

ADS FM-200 fire suppression system

Kidde Fire Systems, the United Systems, offers ADS FM-200, an engineered system designed to protect larger, more complex applications or for ultimate performance and "drop-in" efficiency when replacing existing halon installations. The ADS FM-200 system includes detectors, a control unit, agent storage cylinders, piping and discharge nozzles. The system uses clean, fast, people-safe FM-200 gaseous agent. Key features of the system are:

- Active, 24-hour fire protection when coupled with Kidde's detection and control systems;
- Appropriate for larger compartments or designs with long piping networks;
- Increased performance deems it a virtual "drop-in" replacement for installed Halon 1301 systems;
- Enhanced performance and versatility; and
- Three-way directional valves for cost-effective protection of multiple enclosures.

Contact: Kidde Fire Systems, 400 Main Street, Ashland, MA 01721, United States of America. Tel: +1 (508) 8812 000.

Source: www.kiddefiresystems.com

New environment-friendly fire extinguishing system

Sea-Fire, the United Systems, has reported its most recent fire extinguisher that uses 3M™ Novec™ 1230 fire protection fluid. Novec 1230 is a halon and carbon dioxide (CO_2) replacement with virtually no global warming potential (GWP). It has no toxicity and does not harm delicate electronics. Novec 1230 interrupts fire at the molecular level by removing heat to the point where it is extinguished. The fluid is reported to have the highest heat capacity of any commercially available halon alternative. It can be used on combustible material as well as electrical and inflammable liquid fires. Novec 1230 is totally safe and perfect for protecting staff-occupied areas such as engine or pump rooms, and communication or control centres. Non-corrosive and electrically non-conductive, it

vaporizes quickly. Unlike foams and powders, the extinguishing agent is clean, leaving behind no residue to clean up.

Sea-Fire's Novec 1230-based pre-engineered systems are recommended for protecting areas from 0.7 m^3 to 42.5 m^3 as well as custom applications in spaces of up to 495.5 m^3. Requiring smaller and lighter cylinders than CO_2 systems, storage and handling is easy and efficient. Complying with strict global standards, Novec 1230 certifications include RINA, DNV, ABS, USCG and all major international approvals.

Source: www.liveyachting.com

Clean agent fire suppression system

SEVO Systems Inc., the United States, offers a new technology for clean agent systems that work with 3M™ Novec™ 1230 fire protection fluid and its unique ability to be pressurized to 500 psi. The SEVO™ 1230 FORCE500™ clean agent fire suppression system allows for smaller pipe diameters and longer pipe runs in addition to cost-saving benefits of using less clean agent in smaller and/or fewer cylinders per project. The system includes all standard monitoring components such as an integrated pressure switch, pressure gauge and gauge guard.

The low vapour pressure of Novec 1230 fluid permits the use of low-pressure-welded cylinders. SEVO Systems was the first company to design special hazards fire suppression systems with 3M Novec 1230 fire protection fluid, a next-generation halon alternative. Key features of Novec 1230 fire protection fluid include zero ozone depletion potential (ODP), a global warming potential (GWP) of 1 and a 5-day atmospheric lifetime. The new SEVO-2 0.5 inch nozzle covers 16,640 ft^3, allowing for fewer nozzles with higher flow rates and less piping. The FORCE500 features longer pipe lengths between the cylinder and nozzle as well as longer distances between the first and last nozzle. This allows for complex nozzle layouts. *Contact: SEVO Systems Inc., 14335, West 97th Terrace, Lenexa, KS 66215, United States of America. Tel: +1 (913) 6771112; Fax: +1 (913) 3845 935; E-mail: Asia@SEVOSystems.com.*

Source: www.sevosystems.com

Dry water mist extinguishers for multiple types of fire

Fire safety company Safelincs Ltd., the United Kingdom, has added new dry water mist fire extinguishers to its extensive range of appliances. Jewel E-Series fire extinguishers are broad-spectrum fire suppressors that can be used on just about every common fire, including deep fat fryer fires. They work by using a supersonic nozzle to disperse microscopic 'dry' water mist particles that suppress fires and extinguish burning materials by removing the oxygen that fuels them. The clean-up after discharge is quick and easy, as most of the water agent evaporates upon contact with the fire. Jewel E-Series fire extinguishers are also suitable for boats and other confined spaces, and they can safely be used near electrical equipment. *Contact: Safelincs Limited, Unit 1, Farlesthorpe Road, Alford, Lincolnshire LN13 9PS, United Kingdom. Tel: +44 (1507) 462176; Fax: +44 (1507) 463288; E-mail: support@safelincs.co.uk; Website: www.safelincs.co.uk.*

Source: www.prweb.com

FM-200 fire extinguishers

Halon-alternative FM-200® (HFC-227ea) fire extinguishers offer environmentally responsible fire fighting performance. FM-200 attacks fire without leaving a messy residue. It very effectively extinguishes Class B and C fires by cooling and smothering and it will not conduct electricity back to the operator. H3R Aviation Inc. from the United States offers two fire extinguishers that run on FM-200.

The extinguishers have the following common features:

- Rugged all metal valve construction;
- Cylinders that are compliant with the specifications of the United States Department of Transportation (DOT);
- Tested to UL 711 and UL 2129 standards of the American National Standards Institute (ANSI);
- Zero ozone depletion potential;
- Residue-free, will not corrode or contaminate equipment;
- No electrostatic shock to damage avionics; and
- Discharge in a range of 1.8-3 m, within 8-12 seconds.

The 2B:C rated Model FM02T is appropriate for small, 1-4 seat general aviation aircrafts. The model charges 1.25 kg of FM-200. The 5B:C Model FM05T meets the minimum performance standards in report DOT/FAA/AR-01/37 and is ideal for commercial aviation. It holds 2.6 kg of the extinguishing agent. *Contact: H3R Aviation Inc., 483 Magnolia Avenue, Larkspur, CA 94939, United States of America. Tel: +1 (415) 945 0800; Fax: +1 (415) 945 0311; E-mail: h3rinfo@h3raviation.com.*

Source: www.h3raviation.com

Process for expandable polystyrene beads

Expandable polystyrene (EPS) are small polystyrene pellets or beads containing some dissolved liquid – in most cases pentane or butane – which serves in the later processing stages as a foaming agent. EPS is processed in three basic stages – pre-foaming, storage and expansion. The Sulzer process to produce EPS beads is a fully continuous process. Liquid pentane is injected at high pressure into the polymer melt, where it is first dispersed and later dissolved. The melt with the blowing agent undergoes a thermal treatment before it is cooled down with simultaneous mixing and further homogenizing.

The dispersion, dissolving, thermal treatment, cooling and homogenizing stages are all carried out in static mixing equipment of special design. The cooled and highly viscous mixture is pressed through fine holes of the suspension granulator. At the outlet of the holes, the polymer is solidified to beads by cutting with rotating knifes in cooled water environment. The same water that solidified the polymer melt is used to transport the beads to a centrifuging and drying system where the polymer beads and water are separated. The water is cooled and sent back to the pelletizing system and the EPS beads to silos or containers. The whole process is carried out under conditions that suppress any foaming. *Contact: Sulzer Shanghai, No. 1688, Fei Zhou Road, Heavy Equipment Zone, Lingang New 201306 Pudong Shanghai, China. Tel: +86 (21) 3807 1000; Fax: +86 (21) 3807 1010; E-mail: sulzershanghai@sulzer.com.*

Source: www.sulzerchemtech.com

Lecithin-containing composition for rigid polyurethane foams

Evonik Goldschmidt GmbH, Germany, is patenting an invention that provides a composition suitable for producing polyurethane (PU) foams, a process for producing rigid PU foams, the foams themselves and their uses. The composition consists of at least one lecithin, one urethane and/or isocyanurate catalyst, one blowing agent, one isocyanate component and one polyol component. The lecithin-to-polyol component mass ratio is less than 2.5:100. In the production of rigid foams, cell-stabilizing additives – preferably surfactants based on polyether-modified siloxanes – are used to ensure a fine-celled, uniform foam structure that is low in defects and bestow desirable properties, particularly thermal insulation. The composition can have further constituents, such as flame retardants, fillers, emulsifiers, etc.

Source: www.freepatentsonline.com

Environment-friendly spray foam insulation

In the United States, SES Foam and Imperial Sugar Co. have jointly introduced SucraSeal, an environmentally friendly, open cell, Class 1 sucrose-based spray foam insulation. SucraSeal is reported to be one of the greenest spray foam products on the market, with a finished foam green content of 25 per cent. It is fire-resistant and does not require chemical barriers and coatings.

SES Foam uses a patent-pending technology to produce SucraSeal formulations of 0.5 pounds/cubic foot (PCF) and 1.0 PCF. The 0.5 PCF boasts a finished foam green content of 17 per cent and the 1.0 PCF boasts a finished foam green content of 25 per cent. The SucraSeal spray foam line is formulated using water-blown technology, and hence it does not contain chlorofluorocarbons (CFCs) or hydrochlorofluorocarbons (HCFCs), giving it an added degree of green content and renewability. *Contact: Imperial Sugar Co., 8016 Highway 90-A, P.O. Box 9, Sugar Land, Texas, TX 77478, United States of America. Tel. +1 (281) 4919 181; E-mail: news@iscnewsroom.com.*

Source: www.iscnewsroom.com

Open cell rigid PU spray foam with improved fire safety

Dow Global Technologies Inc., the United States, has applied for a patent on an open cell rigid polyurethane (PU) foam, particularly suitable for spray applications. In one aspect, the formulation comprises an A component – a polyisocyanate – and a B component – a Novolac-initiated polyol, a brominated polyol, and water as the blowing agent. Both components may be reacted under conditions suitable to form an open cell rigid PU foam that achieves a Class I inflammability rating, according to ASTM E-84 standard. In another aspect, the invention provides a method of preparing a reduced inflammability construction by preparing a sprayable foam formulation comprising the same components and spraying the formulation on to a substrate under conditions such that an open cell rigid PU foam with a Class I inflammability rating (ASTM E-84), is formed on the substrate. *Contact: Dow Global Technologies Inc., 2040, Dow Centre, Midland, MI 48674, United States of America.*

Source: www.sumobrain.com

Fumigant-free future for strawberries

Researchers in the United States are working towards a fumigant-free way to produce commercial strawberries. The small patch of strawberries planted at Monterey Bay Academy is part of a three-year, US$0.5 million partnership between California's Department of Pesticide Regulation and the California Strawberry Commission to research alternatives to fumigant use for strawberry growers.

Experimental straberry cultivation at Monterey Bay Academy

After the phase-out of methyl bromide, methyl iodide was introduced as a fumigant, but the chemical may be more dangerous than its predecessor and is more expensive too. At Monterey Bay Academy, Mr. Dan Legard, Research Director for the California Strawberry Commission, and a team of scientists are searching for an economically viable and environmentally sustainable method that would help grow strawberries without using a fumigant pesticide.

Some berries are planted in mustard seeds or rice, while one area is steamed to reduce pathogens in the soil. Sterile mediums fill the raised troughs of soil lined with groundcover cloth that keeps the living microbes in the soil separate from the plant roots. A drip-line runs down the middle of the trough to provide moisture to the plants. However, the cost for the alternatives currently hovers around US$ 10,000 an acre, which is two to three times as much as a conventionally farmed strawberry field. Mr. Legard would like to bring that price tag down to US$4,000-US$5,000 to make cultivation reasonable for farmers.

Source: watsonville.patch.com

Alternative to ozone-depleting pesticide

Fresno State University biology professor Dr. Alejandro Calderon-Urrea is searching for an alternative to the ozone-depleting methyl bromide. Dr. Calderon-Urrea has identified a promising alternative, a type of organic compound with significant biological functions. The parasites being targeted are nematode worms, which can badly damage the roots of plants. In collaboration with Dr. Saeed Attar from the Chemistry Department, he developed organic chalcones that seem to have some specific deleterious effects against plant-parasitic nematodes. Chalcones are a type of pesticide that will harm only the targeted nematode worms.

The research focuses on finding the minimum amount of chemical that can be used to eliminate the parasite. After a search through published chemical literature, Dr. Attar found that chalcones had been reported to have a variety of biological – including nematocidal – activities, and the collaboration with Dr. Calderon-Urrea began. Dr. Attar and those collaborating with him ultimately made 63 variations of the new chemical. The more active of these were organic analogs. The eight chalcones most deadly to nematodes are now being studied. Researchers at Fresno State are now testing whether the eight active chemicals can affect the growth of other micro-organisms found in the soil. Dr. Calderon-Urrea and Dr. Attar want to find a chemical that will only affect the parasites, leaving all other organisms intact because the chemical will essentially be used as a pesticide.

Source: collegian.csufresno.edu

Bio-disinfection with semi-composted manure

Researchers at the Basque Institute for Agricultural Research and Development (Neiker-Tecnalia) in Spain, have confirmed that the use of semi-composted manure in combination with plastic mulch is an effective control for *Phytophthora capsici*, a fungus responsible for a disease that seriously affects greenhouse-grown peppers. The research developed in the doctoral thesis of Ms. Mireia Nunez-Zofio evaluates soil bio-disinfectants that not only combat the proliferation of pathogens but are also environmentally friendly and economically viable.

Ms. Nunez-Zofio's research has confirmed that bio-disinfection is an effective control for root and collar rot in greenhouse-grown peppers caused by *P. capsici*. In this setting, a chemical disinfection has achieved inefficient results. Bio-disinfection is a low-cost, easy-to-apply technique that can be used in integrated pest management and organic agriculture. It also enables agricultural production at competitive prices while providing an outlet for certain agro-industrial and livestock waste that generate environmental problems (manure, poultry droppings and molasses).

The Neiker-Tecnalia researchers have been able to confirm that the degradation of manure added to the soil raises the concentration of ammonia under the plastic cover

and increases the biomass and diversity of the micro-organisms in the soil. Following the continued application of bio-disinfection over three years, an improvement in the physical, chemical and biological properties of the soil was likewise observed. This led to an increase in the soil's buffering capacity that prevented the disease's development. *Contact: Mr. Irati Kortabitarte, Elhuyar Foundation, Zelai Haundi 3, Osinalde Industrialdea, 20170 Usurbil, Spain. Tel: +34 (943) 363 040; Fax: +34 (943) 363 144; E-mail: i.kortabitarte@elhuyar.com.*

Source: cordis.europa.eu

Improving pesticide efficiency studied

In 2007, the United States Food and Drug Administration approved methyl iodide-based pesticide for use on fruit and vegetable crops. The approval of the pesticide was protested by scientists and farm workers because methyl iodide is a known carcinogen. At present, researchers at University of Missouri (MU) are studying the molecular structure of the pesticide to determine if the product could be made more efficient and safer for those living near, and working in, treated fields.

Methyl iodide and chloropicrin – a rat poison – are the ingredient in Midas, a commercial pesticide used primarily on the fields that grow strawberries, tomatoes and bell peppers. A study undertaken by MU researchers revealed that the manufacturers blended the two ingredients to slow the release of methyl iodide and thus increase its effectiveness. MU researchers believe that a different chemical mix could further slow the release of methyl iodide and allow farmers to use less of the pesticide, making the area safer for workers and the public. Farmers use 80-136 kg of Midas per acre, and nearly 80 per cent of the pesticide is not effective in killing pests. According to the researchers, gas lost to the atmosphere could pose risks to farm workers and nearby communities. Even a small improvement in effectiveness achieved through a change in the chemical blend could greatly reduce the amount of pesticide used per acre.

Source: www.sciencecodex.com

Heat treatment: a greener option for pallet protection

In its efforts to strive for a greener environment, the Forest Products Research and Development Institute (FPRDI) of the Department of Scuinec and Technology (DOST), the Philippines, offers an ecologically friendly technology for the wooden pallet industry. FPRDI's furnace-type heat treatment facility (FHTF) can provide the heat needed to kill insects and other pests infesting wood packaging materials (WPMs) such as wooden pallets. WPMs are widely used in transporting commodities around the globe, as they are cheaper than plastic and metal containers. However, WPMs made of untreated wood are vulnerable to pest attack and can introduce pests from one country to another. In 2002, the International Plant Protection Convention (IPPC) adopted the Guidelines for Regulating Wood Packaging Material in International Trade (ISPM 15), requiring all WPMs to undergo heat treatment or methyl bromide (MB) fumigation and, consequently be stamped with the IPPC seal.

"Heat treatment using the FPRDI-designed FHTF is an ecologically safe way to get IPPC marks for WPMs," said Ms. Wency H. Carmelo, Senior Research Specialist at FPRDI. "MB is 60 times more damaging to the ozone layer than chlorine and is blamed for 5-10 per cent of worldwide ozone depletion, thereby increasing the risk of exposure to the harmful ultraviolet rays. MB also makes wood non-recyclable," Ms. Carmelo stated. Heat treatment using FHTF does nothing destructive to the environment. According to Ms. Carmelo, heat treatment requires that the pallet blocks' wood core be treated at 56°C for at least 30 minutes. The average heat treatment time is 5 hours, and will only cost US$ 0.16 per pallet when a 10,000 board foot-capacity FHTF is used. That is 46 per cent cheaper than MB fumigation. *Contact: Mr. Romulo T. Aggangan, Director, FPRDI, Narra Street, College, Laguna 4031, The Philippines. Tel: +63 (49) 5362 360; Fax: +63 (49) 5363 630; E-mail: fprdi@dost.gov.ph.*

Source: fprdi.dost.gov.ph

Online Halon Trader

The Online Halon Trader (OHT) is a "business-to-business" web portal created by UNEP-DTIE OzonAction Programme to contribute towards protecting the stratospheric ozone layer by promoting halon banking and responsible halon management. For more information, contact:

OzonAction Branch
United Nations Environment Programme
Division of Technology, Industry and Economics (UNEP DTIE)
Tel: +33 (1) 4437 1450, 4437 1450; Fax: +33 (1) 4437 1474
Email: ozonaction@unep.fr

Fumigating with phosphine, other fumigants and controlled atmospheres: A Grains Industry Guide

This booklet explains how using phosphine incorrectly contributes to resistance problems and clarifies how to use it most effectively to achieve reliable results.

Contact: Manager Communications, Grains Research and Development Corp., P.O. Box 5367, Kingston, ACT 2604, Australia. Tel: +61 (2) 6166 4500; Fax: +61 (2) 6166 4599; E-mail: grdc@grdc.com.au.

The Montreal Protocol in 2011: Dynamic Action for Ozone and Climate Protection

This report was prepared by the Environmental Investigation Agency (EIA) for presenting to the 31st meeting of the Open-Ended Working Group of parties to the Montreal Protocol, held in Montreal, Canada, during 1-5 August 2011.

Contact: Environmental Investigation Agency, 62/63 Upper Street, London N1 0NY, United Kingdom. Tel: +44 (20) 7354 7960; Fax: +44 (20) 7354 7961; E-mail ukinfo@eia-international.org.

Alternatives to HCFCs in the Refrigeration and Air-Conditioning Sector

Practical Guidelines and Case Studies for Equipment Retrofit and Replacement aims to provide decision makers in Article 5 countries, the end-users and the service technicians a comprehensive source of information on alternative technologies that can be adopted to phase out HCFCs in the RAC. The report contains a section on alternative technologies including technical aspects and information on current market situation in developed countries (Article 2 countries) and Article 5 countries. Another section covers a collection of industry case studies that exemplifies state-of the-art solutions using different technologies for different market segments.

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Website: www.revac.org.

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Guangzhou International Refrigeration and Air-Conditioning, Ventilation & Air-Improving Fair
Contact: Mr. Vic Chan,
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Dong Jun Plaza,
No. 836 Dong Feng Dong Road,
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Tel: +86 (20) 2896 1166;
Fax: +86 (20) 8257 9220;
E-mail: sales10@grandeurhk.com;
Website: www.avaichina.com.

26-28 Aug
Xi'an
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Contact: Mr. Wangyang Hu,
Chinese Association of Refrigeration,
10/F, Yindu Mansion,
No. 67 Fucheng Road,
Beijing, 100142 China.
Tel: +86 (10) 6843 4683;
Fax: +86 (10) 6843 4679;
E-mail: acra2012@car.org.cn;
Website: acra2012.car.org.cn.

15-19 Oct
Antalya
Turkey

9th International Conference on Controlled Atmosphere and Fumigation in Stored Products
Contact: Mr. Ahmet Güray Ferizli,
Faculty of Agriculture,
Department of Plant Protection,
Ankara University,
06110 Ankara, Turkey.
Tel: +90 (312) 596 1136;
Fax: +90 (312) 318 7029;
Website: www.caf2012.org.

06-08 Nov
Orlando
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United States of America.
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