VATIS Update Ozone Layer Protection . Jul-Aug 2005

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THE SCIENCE OF OZONE LAYER

Ozone hole repair could take decades

A report published by the Institute of Physics, the United Kingdom, reveals that though there are indications that the hole in the ozone layer is being repaired, the recovery process is likely to stretch over a couple of decades. The Rise of Ozone Research by Dr. Peter Hodgson states that despite legislation it will be decades before the ozone layer is restored to pre-1970s levels. The report, which aims to renew action on ozone, looks at the progress made in preventing the loss of good ozone that protects us from harmful ultraviolet radiation. It also highlights the fact that levels of bad ozone near the ground are rising, which it says will cause significant impact on humans such as respiratory and cardiovascular disease by as early as 2030.

Dr. Hodgson, a specialist working with independent consultants Sci-Fact, warns that the ozone layer is still under threat from many ozone depleting substances, especially rising levels of chlorofluorocarbon (CFC) replacement compounds, which could undermine the progress made in controlling damaging emissions. Dr. Hodgson cautions against complacency and has called for further international efforts to strengthen and extend the Montreal Protocol, which sought to restrict the production and use of ozone depleting chemicals like CFCs. Evidence suggests that while the level of ozone depleting chlorine is at or near its peak, levels of other ozone depleting substances, e.g. bromine, is continuing to rise, the report says. There is uncertainty about the effects of some compounds designed to replace CFCs and for some damaging compounds, like methyl bromide, there is currently no suitable replacement. Also, subtle interactions between global warming, ozone depletion and exposure to ultraviolet radiation are poorly understood and further research is essential.

Meanwhile, the European Environment Agency (EEA) has published its analysis of ground level ozone monitored throughout the continent last summer. While the figures look much better than those for the previous summer, EEA warns that there is nothing to suggest there will be continued improvement as 2003 was an exceptional year and the most recent results are roughly in line with others recorded over the past decade. The EC has set a threshold of 180 g/m3 and believes exceeding this level is harmful to humans. There is a long-term target to keep the level below an average of 120 g/m3 for any eight hour period.

Website: www.iop.org and www.edie.net

Arctic ozone replenished after near-record depletion

The ozone layer over the Arctic, which suffered near-record chemical destruction this winter, was restored to

average levels by unusual weather patterns, reports the National Aeronautics and Space Administration (NASA). While the coldest winter on record in the Arctic stratosphere pushed chemical devastation of the ozone layer to the second highest ever, wind conditions tempered ozone loss, preventing harmful radiation from reaching Earth. This was one of the most unusual Arctic winters ever, expressed Ms. Gloria Manney, a scientist at NASAs Jet Propulsion Laboratory. Arctic lower-stratospheric temperatures were the lowest on record. However, other conditions such as wind patterns and air motions were less conducive to ozone loss.

NASA used instruments on its Aura Earth-observing spacecraft to measure levels of chemical breakdown of ozone and of ozone presence. A separate NASA experiment, carried out in a laboratory aboard an aircraft that passed under the Aura craft, was used to confirm the results. This year, Arctic ozone depletion peaked at almost 50 per cent in some areas, second only to the winter of 1999-2000, when about 60 per cent ozone was destroyed. Ozone this year was brought back to the Arctic by winds from the south, where more of the gas is present, resulting in little net change in the total amount of the protective gas in the Arctic. Owing to warmer temperatures, seasonal ozone depletion in the Arctic is always lower and short-lived than in Antarctica, NASA said. Ozone layer over the southern continent has steadily weakened since the early 1980s, according to UNEP.

Website: www.bloomberg.com

Antactic ozone situation

As of 20 June 2005, the atmospheric circulation over the Antarctic continent is in its early winter state. The ozone layer over much of the Southern Hemisphere south of 50 is 10-15 per cent below the long-term normal. Ozone values are below 230 DU over parts of Antarctica. Stratospheric temperatures are now cold enough for stratospheric clouds to begin forming.

Temperatures in the Arctic stratosphere were cold enough for stratospheric clouds to form until mid-March. A rapid spring warming then took place and it is now too warm for such clouds to exist in the Arctic stratosphere. Ozone amounts over parts of the Northern Hemisphere are over 15 per cent below the normal, but all areas have ozone levels above 300 DU. Although values over the United Kingdom are around 300 DU, this is 10 per cent below the normal for this time of the year, hence there is a high risk of sun-burn. Values are expected to remain below normal for the next few days. Very low ozone levels (230 DU) were recorded over the United Kingdom from March 18 to 21.

Website: www.antarctica.ac.uk

New observatory measures ozone layer

An observatory to measure the thinning of the ozone layer, the first of its kind in Latin America, has begun to operate in southern Argentina. Mr. Eduardo Quel, the director of Argentinas Laser and Applications Research Centre (CEILAP) and head of the project, explained that the observatory would provide readings that are more precise than those of a moving satellite.

The laboratory was set up in late June at the military air base located 15 km from Ro Gallegos, the capital of the province of Santa Cruz, in the southern region of Patagonia. During the Southern Hemisphere springtime, which begins in September, Patagonia is especially exposed to the harmful ultraviolet rays that are normally blocked by the ozone layer, which is thin in that region. The air base provides housing and other support to the members of the scientific team.

The observatory project in Argentina began as a simple laboratory since 1998 in CEILAP. The success of the laboratory made it possible to obtain aid from Japans International Cooperation Agency to develop even more precise equipment and transfer it to southern Argentina, where visibility is better. The observatory will measure the thickness of the ozone layer every day from now to 2007, when the financing from Japan runs out. After that, the project could continue with backing from government offices that support scientific and technological research and development.

The project employs laser to measure ozone particles, and the information is captured on earth through mirrors connected to fibre optic cables that transfer it to a computer. The data collected is more precise than the readings taken by the Aura satellite launched by the United States space agency NASA last year, although the information obtained through the two channels will be complementary. The data will go to the international Network for the Detection of Stratospheric Change, which gathers ozone measurements from similar stations operating in Antarctica and in Northern Hemisphere countries.

The laboratory will also collect data that sheds more light on the greenhouse effect, a phenomenon that has worsened over the past 200 years due to industrial pollution. It will also measure the composition of air pollutants, natural aerosols like sand, dust or sea salt, and other substances emitted because of human activity.

Website: www.ipsnews.net

ODS PHASE-OUT IN INDIA

End of ozone depleting chemicals: Indian Chapte

For the first time ever, factories manufacturing chemicals that damage the Earths protective ozone layer are being closed under a Multilateral Environmental Agreement. Future generations would be inspired by this extraordinary action. A unique new global initiative called Remembering Our Future to mark such sites worldwide where ODS production facilities have been permanently closed has been launched by the United Nations Environment Programme, Division of Technology, Industry and Economics (UNEP-DTIE) OzonAction Programme.

The first launch of Remembering Our Future was held in a special ceremony on 7 March in New Delhi, India, where UNEP, the Indian Ministry of Environment and Forests (MoEF) and a private company, SRF Limited, gathered to mark the closure of a plant that used to produce halons. The marker was unveiled by Mr. A. Raja, Union Minister, MoEF, Dr. Pradipto Ghosh, Secretary, MoEF, Mr. Arun Bharat Ram, Chairman, SRF Limited, and Mr. Rajendra Shende, Head of UNEP DTIE Ozonaction Branch. The marker would be displayed at the former plant site in Rajasthan. This marker initiative is part of UNEPs awareness-raising activities under the Communication Strategy for Global Compliance with the Montreal Protocol. Once upon a time, there was a plant on this site that produced halons. For the benefit of future generations, this manufacturing facility was shut down the plaque reads. The closure of this plant was supported by the World Bank with funds from the Multilateral Fund and demonstrates Indias continued commitment to complete ODS phase-out under the Montreal Protocol.

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Website: www.webwire.com

Steady growth in gas business

Despite revenue loss of US$11.35 million in the gas business over the past three years owing to CFC phase-out as per the Montreal Protocol, Navin Fluorine has now stabilized its business with the introduction of HCFC-22 and trading of HFC-134a. Revenues that stood at US$27.24 million in the financial year 2004 touched US$31.55 million in 2005 a growth of 12.5 per cent after factoring 10 per cent decline in the CFC business. Going ahead with new-generation gas HFC-134a in offering by July 2006, the company expects this segment to play a crucial role. HFC-134a will decide the fate of the companys gas business, as the critical factors listed below show.

The company is putting up a plant for producing HFC-134a at its existing location in the coming fiscal with an initial investment of US$9.08 million for 3,000 t capacity and plans to commission it by July 2006.
HFC-134a has become a critical product from 1 January 2004, as all cars and refrigerators have been mandated to switch to this gas, instead of CFC-12 for its low ozone depleting potential.
The company is leveraging on its in-house R&D and technological skills to develop this product as the price of buying technology from multinationals like Solvay, Honeywell, Dupont, etc. is very expensive (US$20 million for hard copy). The technology, if successful, is likely to open a huge window of opportunity for Navin, especially for exports as between Turkey to China there is not even a single HFC-134a plant that exists. Thus, revenues can go up significantly in 2008 with incremental capacity additions.
The demand for this product is expected to grow considerably once CFCs are phased out in developing nations by 2009. Current demand-supply situation is equal at 180,000 t.
Once this small capacity of 3,000 t is stabilized by December 2006, the company plans to increase its capacity to 15,000 t with an additional investment of US$19.29-US$20.43 million.
On the risk front, failure of this technology could slow down growth momentum and strain the balance sheet, given the huge investments involved in this project.

Website: www.financialexpress.com

IN THE NEWS

MLF plans activities valued at US$244.5 million

For the Multilateral Fund (MLF), 2005 is a crucial year. The developing countries that MLF supports are at the halfway mark in terms of elimination of CFCs and halons, ozone depleting substances (ODS) that harm the ozone layer. In addition, MLF aims to eliminate the largest amount of ODS ever (96,734 t). US$244.5 million worth of projects and activities have been outlined in the business plans of MLFs implementing agencies.

MLFs strategy includes helping not only countries that are large consumers and producers of ODS to eliminate these substances, but also countries with low levels of consumption. The needs of these low-volume consuming countries were high on the agenda of the 45th Executive Committee Meeting, which took place in Montreal from 4-8 April 2005. In addition, phase-out of CFCs in the refrigeration servicing sector has long been one of the Committees priorities. A complete phase-out is to be achieved by 2010. Further, in 2005, 10 years before the first control measure for hydrochlorofluorocarbons (HCFCs), the Executive Committee is beginning to address the elimination of HCFCs. The first step is to study HCFC consumption patterns in

developing nations through surveys. Thus, the Committee agreed on US$1.2 million for carrying out surveys in 12 nations Argentina, Brazil, Colombia, India, Indonesia, Iran, Lebanon, Malaysia, Mexico, Sri Lanka, Syria and Venezuela.

The Committee has also worked out procedures for funding solvent technical assistance projects in countries with very low consumption of CTC and methyl chloroform. Countries must meet an 85 per cent reduction target by the end of 2005. The Committee agreed to provide grants of up to US$40,000 for these projects.

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Website: www.multilateralfund.org

Website: www.uneptie.org

Media partnership to help sustain ODS phase-out efforts

The process of reducing chemical onslaughts on the ozone layer has been guided by well-defined scientific and management interventions, the world over. The management interventions includes financial mechanisms to support switching to relatively safer alternatives in developing nations. However, a major barrier in the path of recovery is the illegal ODS trade, which has the potential to fully undo all the good work achieved thus far. Several nations have initiated joint action against illegal trade.

It is, however, crucial to sustain these interventions and prioritize investment of resources through a comprehensive understanding of the barriers to be overcome. A well-structured mechanism of information support for all the concerned stakeholders is important to guide appropriate action, especially during the present compliance phase. Media support is expected to periodically deliver appropriate information. The proposed Media Partnership is aimed at:

Collecting relevant information on the stated aspects; and
Write periodically (once a month) in local news media and disseminate through the Internet too, about the realities of phase-out.

This initiative by UNEP Regional Office of the Asia-Pacific Compliance Assistance Programme (ROAP-CAP) is intended to provide appropriate information in a timely manner to enable well guided environmental action.

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E-mail: r.gopichandran@ceeindia.org

Website: www.webwire.com

Developed countries to lower levels of MB in 2006

The 189 member governments of the Montreal Protocol on Substances that Deplete the Ozone Layer have finalized an agreement under which developed countries would reduce their use of methyl bromide (MB) in 2006 compared with 2005. Developed countries would receive exemptions amounting to 13,014 t for 2006; in addition, a recommendation for approving another 269 t has been forwarded to a December meeting for final decision. This compares with a total of 16,050 t of exemptions received for 2005, representing close to a 20 per cent decline. Meanwhile, the consumption of MB by developing countries has declined from a peak of 18,140 t in 1998 to 11,858 t in 2003. These countries have a 2015 deadline for total phase-out.

The next meeting of the parties to the Protocol will be held in Dakar from 12-16 December. In addition to the supplementary tonnes for 2006 cited above, this meeting would consider requests for MB exemptions for the year 2007, as well as the level of funding that should be made available in 2006-08 to enable developing nations to continue complying with their numerous reduction obligations.

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Website: www.i-newswire.com

Regional cooperation sealed to address illegal ODS trade

In January 2005, the government of Fiji won its first indictment against illegal ODS possession, proving that vigilance in detection eventually results in conviction. Other countries in the Asia-Pacific region have likewise reported uncovering prohibited shipments by unscrupulous traders hoping to cash in on the ban on CFCs, thereby undermining the success of the Montreal Protocol on Substances that Deplete the Ozone Layer. To sustain these efforts, Regional Intelligence Liaison Office for the Asia-Pacific region (located in Beijing, China) of the World Customs Organization and UNEPs Regional Office for the Asia-Pacific signed a Letter of Intent, at the meeting of the customs officers and national ozone officers from 24 countries, to collaborate on addressing environmental offences in a coordinated manner at the regional level.

The meeting is expected to recommend specific actions particularly on stronger regional and sub-regional cooperation among countries and between international organizations. Responsibilities and measures to be taken in case of illegal border trade would be a major area to be agreed upon. The meeting would also look at the full implementation of a Green Customs programme intended to harness customs officers for looking at trade issues of related multilateral environmental agreements.

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Website: www.webwire.com

Plant pathologists evaluate eco-friendly MB alternatives

Alternatives to a powerful pesticide, which was found to be an ozone depleter, are now being evaluated in agricultural production areas of Florida, the United States, say plant pathologists with the Agricultural Research Service. As methyl bromide (MB) is considered essential for the production of pepper, strawberry, tomato and floriculture crops, scientists in many disciplines are studying chemical and non-chemical MB replacements.

Soil solarization, a technique that captures radiant heat energy from the sun, is one non-chemical solution. Another such alternative is the use of biological agents, to enhance disease resistance, like plant growth-promoting rhizobacteria (PGPR), a beneficial soil bacteria that colonize plant roots and offer protection from diseases. An integrated approach that utilizes biologically based pest management tactics, such as soil solarization, PGPRs and biological control agents combined with crop rotations and cover crops will be a necessity in the future, stated Mr. Erin Rosskopf, Horticultural Research Laboratory.

Website: www.sciencedaily.com

Philippines restricts import of ozone depleting chemicals

In the Philippines, the Bureau of Customs has started to regulate imports of seven chemicals known to damage the ozone layer, in line with the governments environmental protection agenda. Customs Commissioner Mr. Alberto Lina disclosed that importation of ozone depleting substances must have prior clearance or import permit from the Department of Environment and Natural Resources. These chemicals are the subject of strict regulation and cannot be shipped into the country without prior approval, declared Mr. Lina. The controlled substances are tetrafluoroethane, methylene chloride, heptafluoropropane, hexafluoropropane, trifluoromethane, tetrafluoromethane and hydrofluorocarbon blends. Mr. Lina said that users, importers, dealers and producers of these chemicals are required to register with the Environmental Management Bureau of the Department of Environment and secure pre-shipment importation clearance before their entry into the Philippine territory.

Website: www.abs-cbnnews.com

Australia enacts licensing scheme for RAC sector

The Department of Environment and Heritage of the Australian government has announced a new nationwide licensing system for the technicians and businesses in refrigeration and air-conditioning (RAC) industry.

The new licensing system supports regulations under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 and introduces national standards for the RAC industry, including the automotive industry, which will lead to lower emissions of environmentally harmful refrigerant gases. From 1 July 2005, any person who handles refrigerant gases where there is a risk of emission of either ozone depleting substances

or synthetic greenhouse gases will require a Refrigerant Handling Licence. These gases include refrigerants such as R12, R11, R22, R134a and R410a. Buying or selling of such gas will need authorization. The national authorization and licensing system will be administered by Australian Refrigeration Council.

Website: www.deh.gov.au

Food production hit by increasing ozone levels

Increased ozone concentrations at ground level may be causing millions of pounds of damage to food crops in the United Kingdom, according to Dr. Lisa Emberson of the Stockholm Environment Institute, York University. Building on a previous study on ozone concentrations in the environment, which estimated that in 1990 alone the country lost 130 million in crops owing to ozone taken up by plants, Dr Emberson has been developing new methods to calculate the amount of ozone that agricultural crops absorb. Her figures for the United Kingdom show that the loss of production in two staple crops, wheat and potato, translates into economic losses of approximately 70 million and 14 million, respectively. The scale of damage varies by region according to ozone levels, climate, and crop distribution. The figures only take into account the effect on the yield of the crop, and do not include other ozone damage such as leaf injury or poor grain quality.

Website: www.confectionerynews.com

Supermarket chain replaces CFCs with HCFCs

In Thailand, Tesco has almost completed a five-year US$31.40 million programme to replace all CFCs and HCFCs used in its stores. The supermarket chain has been substituting refrigerating equipment with highly energy efficient systems. Energy consumption has dropped 30 per cent, leading to an annual savings of 2,250 t of carbon dioxide per store. Tesco opted for solar refrigeration on a huge scale at its Lotus store in Pathumwan; over half the roof is covered with photovoltaic (PV) solar energy panels producing 460 kW of power. Even if electricity from the PV system is 5-6 times more expensive than simply plugging into the public grid, use of solar energy makes it possible to reduce peak demand on the power grid. An integrated chiller plant incorporating a sophisticated energy management system ensures lower energy usage.

Website: www.iifiir.org

REFRIGRATION/AIR-CONDITIONING

R-134a refrigerant for low GWP, TEWI

Culminating a five year development effort and extensive field trials, Carriers Container Products Group (CPG), the United States has unveiled its EliteLINE container refrigeration unit. Equipped with a unique single scroll compressor designed specifically for rigorous container environments, the premium unit delivers outstanding deep-freeze performance with an innovative design that uses industry standard R-134a refrigerant. EliteLINEs high efficiency operation, combined with the low Global Warming Potential (GWP) and zero Ozone Depletion Potential (ODP) of R-134a, generates the industrys lowest Total Equivalent Warming Impact (TEWI). Providing superior protection of both cargo and the environment, the new reefer complements Carriers robust flagship product, the ThinLINE reciprocating compressor unit, as part of the companys Complete Package offering of products and services.

EliteLINE targets the needs of the most environmentally conscious shipping operations. The GWP of R-404a refrigerant, used in most competing scroll compressor systems, is 2.5 times greater than that of R-134a, exposing R-404a users to proportionally higher potential tariffs based on environmental impacts. In addition, R-134as atmospheric lifetime and relative leak rate are less than one-third of R-404as. The unique and patented design of the single scroll compressor enables the EliteLINE to deliver exceptional cooling capacity: 3,960 W (13,500 Btuh) at -29C. The scroll compressors efficient operation delivers an outstanding Coefficient of Performance (COP), the cooling capacity generated for every unit of power consumed. EliteLINE excels at holding deep freeze temperatures in high ambient conditions, with the ability to maintain loads at -25C in an ambient temperature of 50C.

Carrier has also extended its scroll compressor to a unit custom-designed for 20 foot containers. Called the StreamLINE, the unit applies the same patented single scroll technology and R-134a refrigerant, to achieve similar performance results. Incorporating a new UltraThin design, StreamLINE measures only 335 mm in depth, decreasing the reefers projection into a 20 foot container by 20 per cent and allowing potential internal volume of 30 m3 for payload. StreamLINE weighs less than Carriers traditional, reciprocating 20 foot unit and incorporates additional features such as full width evaporator airflow with bottom and side air discharge.

Contact: Mr. Chris McHugh, Product Manager-Refrigeration, Carrier, Building TR20, Carrier Parkway, Syracuse, NY 13221, United States of America. Tel: +1 (315) 4327 161; Fax: +1 (315) 4327 698.

Website: www.container.carrier.com

New heat pump

ClimateMaster Inc., the United States, has launched an efficient water source heat pump that integrates advanced technology and design. Tranquillity 27 two-stage (TT) series utilizes EarthPure HFC-410a refrigerant in combination with Copeland UltraTech two-stage compressor and General Electrics ECM variable speed motor to achieve EERs up to 27 Btuh/W for ground loop applications and up to 18.5 Btuh/W for water loop (boiler/tower) applications. The TT series far exceeds ASHRAE 90.1 efficiencies making it eligible for additional Leadership in Energy and Environmental Design points.

Contact: ClimateMaster Inc., 7300, S.W. 44th Street, Oklahoma City, OK 73193, United States of America. Tel: +1 (405) 7456 000; Fax: +1 (405) 7452 006.

Website: www.michiganair.com

Packaged heat pump

Carrier Corp., the United States, offers packaged heat pump based on Puron refrigerant, an environmentally sound, efficient and dependable refrigerant designed for the future. The unit incorporates Envirotuff rustproof base, which is lightweight and will never rust. Key features include:

Galvanized steel cabinet with louvered grill protects the coil against potential hazards often associated with outdoor installation such as rocks, sticks and garden equipment;
The Puron-compatible compressor is available for single- and three-phase operation for reliable, quiet and high-efficiency comfort;
An optional variable speed blower motor allows the system to work at optimal fan speeds for a variety of conditions while improving humidity and air quality; and

An optional Electric Strip Heater adds an electrical resistance heating element for those extreme outdoor conditions.

The system is available in a variety of sizes to suit individual requirements. Contact: Carrier Corp., P.O. 4808, Carrier Parkway, Syracuse, NY 13221 4808, United States of America. Fax: +1 (315) 4326 620.

Website: www.residential.carrier.com

Reciprocating compressors

M&M Refrigeration Inc., the United States, offers Sabroe heavy-duty reciprocating compressors, designed for the toughest industrial and marine applications. Suitable for a variety of refrigerants, including HCFC, HFC, hydrocarbons, ammonia and carbon dioxide, these systems are well-proven, safe and reliable. The basic design concept was introduced in 1954. All subsequent design improvements are compatible with early compressor units a feature that ensures that older compressors can be upgraded to the latest design with improved efficiency. This process of continuous research and development has resulted in a product line that is superior to most competitors in the market with regard to:

Compressor range;
Flexibility;
Reliability;
Operating efficiency;
Environmental safety;
Operating safety; and
Maintenance.

Contact: M&M Refrigeration Inc., 412, Railroad Avenue, P.O. Box 449, Federalsburg, Maryland 21632, United States of America. Tel: +1 (410) 7548 005; Fax: +1 (410) 7545 813

E-mail: sales@mmrefrigeration.com

Website: www.mmrefrigeration.com

Absorption chiller-heater

In the United States, Yazaki Energy Systems Inc. is offering an absorption chiller-heater that uses water as the refrigerant. This unit is being mooted as the ideal choice in air-conditioning to protect the environment and lower energy costs. Double-effect cycles and advanced technology ensure high performance and long-term reliability. Capacities of 30 through 100 RT are available to either cool or heat installations such as schools, offices, hospitals, industrial facilities and hotels.

Yazaki water-fired single-effect chillers or chiller-heaters have cooling capacities of 10, 20 and 30 t of refrigeration. They produce chilled water for cooling or hot water for heating in comfort air-conditioning applications. The absorption cycle is energized by a heat medium (hot water) at 70-95C from an industrial process, cogeneration system, solar energy or other heat source and the condenser is water cooled through a cooling tower. Contact: Yazaki Energy Systems, Inc., 13740 Omega Road, Dallas, Texas 75244 4516, United States of America. Tel: +1 (972) 3858 725; Fax: +1 (972) 3851 324.

Website: www.yazakienergy.com

New cooler

Coolerado, the United States, has developed a new cooling technology that delivers the comfort of an air-conditioner with the efficiency of an evaporative cooler. Unlike conventional AC units, Coolerado does not use ozone depleting chemicals and has only one energy consuming component, the fan. Coolerado is significantly different from traditional indirect evaporative coolers, as it uses a unique wetting system a heat and mass exchanger made of unusual material and the way air flows through the modular HMX. The HMX is fabricated using plastic-coated, cellulose blend fibre in a geometric design that cools the product and working air streams.

Website: www.wapa.gov

SOLVENTS

New ultrasonic film cleaner

The novel solvent reclamation design of CF9200 ultrasonic film cleaning system, from RTI in the United States, provides drastically reduced operating costs and many additional benefits. A new chiller replaces the older compressor-type refrigeration system and provides enhanced solvent recovery over previous models, helping to save money spent on costs of cleaning fluid, repair and maintenance.

The CF9200 incorporates the latest generation of powerful ultrasonic generator which is user-adjustable. It operates at a higher frequency of 40 KHz and produces more cleaning power with 50 per cent more ultrasonic transducers. It comes with a multi-cartridge solvent filtering system, stainless steel solvent and vapour lines, and refined cabinet and door sealing to reduce vapour loss and decrease running costs. The CF-9200 is designed to allow use of one of the worlds most advanced cleaning liquids, the 3M Novec Engineered Fluid HFE-8200, which is reported to be ideal for use with motion picture film. Contact: RTI Corporate Headquarters, 4700 Chase, Lincolnwood, IL 60712-1689, United States of America. Tel: +1 (847) 677 3000; Fax: +1 (847) 677 1311

E-mail: sales@rtico.com

Website: www.rtico.com

Multifrequency actuators for ultrasonic cleaning

In Switzerland, the collaboration between ECO2 SA and MPI resulted in an industrial plant for the precision cleaning of electronic, microelectronic mechanical and micro-mechanical industry parts, based on the solvent power of supercritical CO2 and cleaning ability of ultrasonic energy propagated in liquid CO2. The plant, already productive, can clean 15 kg/h of precision writing balls and has also been successfully tested for other industrial applications. Substitution of CFCs, chlorinated solvents and detergents, absence of contaminated solutions and vapour emissions and improvement of the surface cleanness are the most important results. Propagation of ultrasonic energy in a homogenous and pressurized medium like liquid CO2 (T< 32C; P> 60 bar) is realized using a novel ultrasonic structural, multifrequency actuator, able to initiate ringing and relaxing, multimode mechanical oscillations (harmonics and sub-harmonics) in an autoclave with very thick

walls, producing pulse-repetitive, phase, frequency and amplitude-modulated bulk-wave-excitation. Such ultrasonic driving creates uniform and homogenous distribution of acoustical activity on a surface and inside of the vibrating system, while eliminating the generation of stationary and standing waves structure, ensuring that the complete vibrating system (autoclave) is fully agitated.

A complete washing cycle takes 40 minutes. The volume of the autoclave is 10 l, which allows a batch of approximately 15 kg of small tungsten carbide or metal balls.

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Website: www.eco2.ch

Or

Mr. Miodrag Prokic, MP Interconsulting, R&D Activities in Ultrasonics, Marais 36, 2400 Le Locle, Switzerland. Tel: +41 (32) 9314 045; E-mail: mpi@powerultrasonics.com

Website: www.mpi-ultrasonics.com

New electrical cleaner

Polywater Corp., the United States, offers a new fast evaporating electrical cleaner and a specialty cleaner that is a unique and effective replacement for chlorinated solvents. SpliceMaster Type NF closely matches trichlors desirable characteristics without the negative trade-offs typical of other slow-drying solvents. This fast-evaporating, non-inflammable cleaner offers excellent solvency properties. Free of chlorinated solvents, NF cleans semiconducting cable shield, corrosion inhibiting compound, silicone greases, filling gels, transformer oils and many other contaminants found in electrical cleaning. It is compatible with most materials.

A recent addition to the SpliceMaster family is the speciality cleaner Type GP, an enhanced terpene-based cleaner engineered specifically for electrical and telecom cable cleaning. It evaporates rapidly and leaves no residue, while exhibiting excellent solvency power on silicone and hydrocarbon greases, fluxes, varnishes, shield picks, adhesives, hand grime and other organic soils.

Contact: American Polywater Corporation, P.O. Box 53, Stillwater, MN 55082, United States of America. Tel: +1 (651) 4302 270; Fax: +1 (651) 4303 634.

Website: www.polywater.com

Petroleum-free bio-based solvent for industrial parts

In the United States, Arnco offers a patented EPA-approved bio-based parts and degreaser solvent that contains no petroleum ingredients, is 100 per cent biodegradable and can be used as a direct replacement for isopropyl alcohol (IPA). Arnco BioSolv Gold solvent made with soybean and corn derived ingredients is cost

effective, offers longer performance life and has low vapor pressure and high loading capacity. It does not contain environmentally hazardous ingredients, ozone depleting chemicals, toxic air pollutants or global warming compounds. The non-carcinogenic and non-toxic formula is non-inflammable by OSHA, DOT and IATA regulations, has a flash point above 60C and has been approved for use at military bases.

Website: www.arnconet.com

Industrial cleaner/degreaser

Classic Chemical Corp., the United States, offers a powerful non-hazardous, liquid concentrate degreaser. ALT Industrial cleaner/degreaser is a free rinsing industrial degreaser that effectively replaces ozone depleting chemicals like TCE, PCE, corrosive caustic cleaners and solvent type degreasers. Extraneous oils, dirt and impurities can be quickly removed from parts using ALT, which is safe to use on all types of ferrous and non-ferrous metals. Common applications for ALT include spraywash cabinets, heated dip tanks, ultrasonic systems and even hand-wiping uses.

Contact: Classic Chemical Corp., 26, Little Leaf, Batesville, IN 47006, the United States. Tel/Fax: +1 (812) 9343 289.

Website: www.degreaser.net

Surface cleaner

Mykal Industries, the United Kingdom, is offering De.Solv.It DSI 1000FD fast-dry precision cleaner, which has been awarded a DefStan number as approved for use within the armed forces in the country. Following search and trials with a variety of products, DSI 1000FD was awarded the MoD Defence Standard 08-121 (NES 844) for Acoustic cladding treatment employing epoxide adhesive systems essentially cleaning and preparation of surfaces prior to bonding. The DSI 1000FD fast-dry precision cleaner was chosen due to its excellent degreasing performance, fast drying capabilities and good safety profile.

Contact: Mykal Industries, 5, Morris Close, Park Farm Industrial Estate, Wellingborough, Northants NN8 6XF, the United Kingdom. Tel: +44 (1933) 402 822.

Website: www.engineeringtalk.com

New SNAP-approved solvents

In the United States, three new solvents have been added to 3Ms Novecs line of SNAP-approved ODS alternatives. HFE-71DA is a true azeotrope, with constant vapour and liquid composition at its boiling point. HFE-71DA is a hydrofluoroether in an azeotropic formulation with trans-1,2-dichloroethylene and ethanol. HFE-71DE is intended to replace chlorinated and brominated solvents in medium-duty cleaning and degreasing applications. HFE-72DE is a stable solution developed specially for medium to heavy duty cleaning and degreasing applications. It is an excellent cleaning agent, low in toxicity and non-ozone depleting.

Contact: 3M Center, Building 223-6S-04, MN 55144 1000, the United States.

Website: www.products3.3m.com

Precision cleaner with HCFC 141b alternative formula

CRC Industries Inc., the United States, offers NT Precision Cleaner, a moderately aggressive technology alternative to HCFC 141b-based cleaners. It evaporates quickly, leaves no residue, is non-inflammable, and is NSF registered for use in meat and poultry plants. The formula does not contain any Class I or Class II ozone depleting chemicals and complies with EPA regulations on use of CFCs and HCFCs. The precision cleaner, which uses patent-pending advanced COzol technology, is designed to remove contaminants from electrical and electronic equipment.

Contact: CRC Industries Inc., Industrial Products Division, 885 Louis Drive, Warminster, PA 18974, United States of America. Tel: +1 (215) 674 4300; Fax: +1 (215) 674 2196

Website: www.crcindustries.com

AEROSOLS

New pressurized metered dose inhaler for budesonide

SkyePharma Plc., the United Kingdom, reports that a new pressurized metered dose aerosol inhaler (pMDI) formulation of the inhaled corticosteroid Pulmicort (budesonide) has been filed by AstraZeneca in its first European market. Pulmicort HFA-pMDI will be available in two strengths, 100 g and 200 g, and will be used for the treatment of asthma in adults and children. The currently available pMDI formulation of Pulmicort has been on the market since 1981 and uses CFCs as the propellant. SkyePharma developed the new HFA pMDI device, which employs its proprietary formulation technology. SkyePharma also conducted the clinical development project for AstraZeneca.
The filing triggers a milestone payment to SkyePharma, which will also earn a royalty on AstraZenecas sales of this formulation of Pulmicort.

Contact: Mr. Michael Ashton, Chief Executive Officer, SkyePharma Plc., United Kingdom. Tel: +44 (207) 4911 777; Website: www.skyepharma.com

Source Website: www.pharmalive.com

Salmeterol HFA for patients with persistent asthma

Two multi-centre, randomized, parallel group, double-blind studies were conducted in the United Kingdom to compare the safety and efficacy of salmeterol xinafoate delivered by an MDI using hydrofluoroalkane 134a (HFA-134a) propellant with a licensed CFC formulation (Serevent) in asthmatic populations of children (4-11 years) and adults (above 12 years). Patients on a stable dose of inhaled corticosteroids with scope for improvement based on mean morning peak expiratory flow (PEF) and symptoms were randomized to receive salmeterol HFA MDI 50 g twice daily or salmeterol CFC MDI 50 g twice daily for 12 weeks.

The primary efficacy variable was mean morning PEF, and secondary variables included other lung function

parameters, symptom scores, use of relief medication and safety assessments. The difference between the treatments in adjusted mean morning PEF (salmeterol HFA-salmeterol CFC) were 2.5 and 3.2 l/min for per-protocol populations of children and adults, respectively. The lower limit of 95 per cent confidence intervals for both populations was within the predefined limit (15 l/min) set for non-inferiority. Similar results were observed in intent-to-treat populations. In children, both formulations resulted in a lack of any statistically significant difference in secondary efficacy parameters. A significant difference at endpoint in clinic forced expiratory volume in 1 s was reported in favour of the HFA formulation in adult population, although the magnitude of this effect was not considered clinically significant. The incidences of adverse events were similar for both formulations and populations, and no safety concerns were generated. Together, these data demonstrate salmeterol HFA to be as effective as salmeterol CFC in adults and children.

Contact: GlaxoSmithKline Research and Development, Global Commercial Strategy, Respiratory Building 38, 1st Floor, Greenford Road, Greenford, Middlesex UB6 0HE, United Kingdom.

Website: www.ncbi.nlm.nih.gov

Salmeterol/fluticasone propionate for asthma

Researchers at the Chinese PLA General Hospital, China, have studied the efficacy and safety of using salmeterol/fluticasone propionate delivered by a HFA metered dose inhaler (MDI) in patients with moderate asthma poorly controlled with inhaled corticosteroids. A randomized, open-label, multi-centre study compared the efficacy and tolerability of salmeterol 25 g/fluticasone propionate 125 g (two puffs, twice daily) delivered via a HFA MDI and salmeterol 50 g/fluticasone propionate 250 g (one puff, twice daily) delivered via a Diskus inhaler. Morning peak expiratory flow (PEF) was the primary efficacy endpoint. Secondary endpoints included evening PEF, forced expiratory volume in 1 s, day and night symptom scores, rescue medication and patient self-evaluation. Safety was assessed according to adverse events recorded.

Results have shown that both treatments were equipotent and significantly improved morning PEF and all secondary endpoints from baseline, over a period of 1-4 weeks. Similarly, both treatments were well tolerated.

Contact: Prof. Liu You-Ning, Dept. of Respiratory Medicine, Chinese PLA General Hospital, 28, Fu Xing Road, Beijing 100853, China. Tel: +86 (10) 6693 9366.

Website: www.blackwell-synergy.com

New medicinal aerosol formulation

Researchers with Aeropharm Technology Inc., the United States, have developed a new medicinal aerosol formulation that involves a stable aerosol for delivery and includes a pioglitazone medicament and a fluid carrier. The pioglitazone, e.g. hydrochloride, may be present as a single drug or in combination with a suitable .beta.-cell hypoglycaemic, such as amylin and an insulin and their derivatives, and the .alpha.-cell hypoglycaemic glucagon. A preferable .beta.-cell hypoglycaemic medicament is one selected from either an amylin or an insulin and any of their derivatives.

A suitable synthetic, anti-diabetic agent is one selected from an acetohexamide, chlorpropamide, tolazemide, tolbutamide, glipizide, glyburide, glucophage, phentolamine, etc. and a mixture of any two or three of the foregoing medicaments. A suitable fluid carrier includes air, a hydrocarbon (such as n-butane, propane,

isopentane, etc.) or a propellant. An appropriate propellant is any fluorocarbon, e.g. a 1-6 hydrogen containing fluorocarbon, a perfluorocarbon or any mixture of the foregoing, having a sufficient vapour pressure to render them effective as propellants. Non-CFC propellants such as 1,1,1,2-tetrafluoroethane, 1,1,1,2,3,3,3-heptafluoropropane or their mixtures are preferred.

Generally, the formulations of the invention can be prepared by combining:

Pioglitazone hydrochloride drug/s in an amount sufficient to provide a plurality of therapeutically effective doses;
The fluid, e.g. propellant, in an amount sufficient to propel a plurality of doses, e.g. from a canister;
Optionally, water addition in an amount effective to further stabilize each of the formulations; and
Any further optional components, e.g. ethanol as a co-solvent and dispersing the components.

Website: www.pharmcast.com

FOAMS

Polymer nanocomposite foams

Researchers at the Ohio State University Research Foundation, the United States, report that nano-sized particles such as nano-clays can be mixed with polymers through either melt compounding or in situ polymerization. By modifying the particle surface with various surfactants and controlling processing conditions, it is possible to achieve either intercalated (partial dispersion) or exfoliated (full dispersion) nano-clay distribution in polymers with the clay content up to 35 per cent by weight. When a blowing agent is injected into the nanocomposite in an extruder (a continuous mixer) or a batch mixer, polymeric foam can be produced. Supercritical carbon dioxide, an environmentally friendly, low-cost, non-inflammable, chemically benign gas is used as the blowing agent. This process forms a microcellular foam with very high cell density (> 109 cells/cc) and small cell size (< 5 microns) can easily be achieved by controlling the CO2 content, melt and die temperature, and pressure drop rate.

Website: www.polyurethaneweb.com

Improved phenolic foams from phenolic resole resins

BP Chemicals Limited, the United Kingdom, has developed novel blowing agents comprising a blend of perfluoro- or partially fluorinated-(cyclo) alkanes and one or more of hydrogenated chlorofluorocarbons, hydrogenated fluorocarbons and a low boiling (cyclo)alkane. These blowing agents perform as well as the conventionally used CFCs but are user friendly and do not deplete the ozone layer. They are particularly suitable for use in producing foams from synthetic polymers and resins, especially phenolic foams of very low and stable thermal conductivity.

Website: www.freepatentsonline.com

Isopropyl chloride as foam blowing agent

In the United States, a research team at Vulcan Materials Co. has developed a composition useful as a blowing agent having no flash point or reduced combustibility. The new blowing agent comprises 2-chloropropane and a gas selected from the group consisting of a fluorohydrocarbon, perfluorocarbons, fluoroethers,

hydrofluoropolyethers and their mixtures. The studies covered a polyisocyanurate foam or a polyurethane modified polyisocyanurate foam having a mainly closed cell structure and also a procedure for manufacturing this foam. The latter consisted of closed cells wherein a foam blowing agent comprising a mixture of 2-chloropropane and one or more HFC compounds including pentafluoropropane, pentafluorobutane, heptafluoropropane, hexafluoropropane or pentafluoroethane. A pentane may be added if desired. Azeotropic mixtures in which 2-chloropropane is an ingredient are also possible.

Website: www.patentstorm.us

New foam technology

BP Chemicals, one of the largest integrated oil companies in the world, has developed a unique process. The new Styrenics technologies include the production of styrene and its precursor ethyl-benzene (EB), and the polystyrene products of high-impact polystyrene (HIPS), crystal polystyrene (GPPS) and expandable polystyrene (EPS).

EPS is sold as beads ranging from 0.4 mm to 2 mm in diameter. It is manufactured in a water-based suspension, using pentane gas as a blowing agent. Pentane allows the beads to expand to over 40 times their original size when heat-steamed in a subsequent process. Nearly two-thirds of the worlds EPS capacity is employed in building applications, such as thermal insulation, drainage and road construction, while the remaining one-third is used in packaging.

Website: www.plastics-technology.com

Polyether-based blowing agent

Dongda Chemical Industry Group, China, offers a blending polyether-based cyclopentane/isopentane as blowing agent. DCP-402 is used to produce polyurethane heat insulation layer for refrigerators and iceboxes. DCP-402 and isocyanate react together to yield foams with excellent fluidity and well-distributed density. The foams offer excellent measurement stability and cohesiveness. Compared with pure cyclopentane foams, cyclopentane/isopentane foams can reduce density to 8-10 per cent, the lowest density core of the foams can be as much as 31-32 kg/m3, which approaches that offered by CFC-11.

DCP-402 polyols can be used in high-pressure foaming machine as well as low-pressure systems.

Contact: Dongda Chemical Industry Group, No. 21, Xincun East Road, Zhangjiaidan District, Zibo City, Shandong Province, China. Tel: +86 (533) 2159 999; Fax: +86 (533) 2150 666

E-mail: dongdachem@dongdagroup.com

Website: www.dongdagroup.com

Flexible solution for foam injection moulding

Sulzer Chemtech has developed Optifoam as a flexible solution for foam injection moulding. The general requirements for a foaming procedure include physical blowing agents, such as nitrogen or carbon dioxide.

Sulzer Chemtechs Optifoam system for foam injection moulding consists of a special nozzle, which is mounted between the plasticizing unit and the shut-off nozzle of a conventional injection moulding machine. The system is shown to be flexible and offers the capability of retrofitting existing machines.

Website: www.polymerlibrary.com

Better blends: A spin-off of SNAP-approved alternative

Arkema Inc., the United States, has obtained the Environmental Protection Agencys approval to market its blowing agent additive as a stand-in for various CFC and HCFC agents in rigid polyurethane foam (PUR) applications. Transcend is suitable for a broad range of applications and offers economic as well as performance benefits. It can be used to replace CFC-11, CFC-12, HCFC-141b and/or HCFC-22/HCFC-141b.

Developed originally to improve fire suppressant qualities of PUR products, Transcend is also useful in modifying the physical properties of polyol blends and improving the solubility of HFC blowing agents in these blends.

Contact: Ms. Kirsten Makel, Arkema Inc., the United States. E-mail: kirsten.makel@arkemagroup.com; Website: www.arkemagroup.com

Source: Ozonaction Newsletter, No. 49, April 2005

FUMIGANTS

Zapping fruit pests

In the United States, researchers at the Agricultural Research Service (ARS) have developed a new technology known as Controlled Atmosphere/Temperature Treatment System (CATTS). This pesticide-free technology kills codling moths, oriental fruit moths and certain other insects with a lethal combination of rising temperatures and mixtures of low oxygen and high carbon dioxide. ARS entomologist Ms. Lisa Neven envisions using this technology as a post-harvest treatment for apples, peaches, pears, cherries and nectarines destined for export to foreign markets. In tests, CATTS killed 100 per cent of codling moth larvae infesting apples, peaches, sweet cherries and nectarines without adverse impact on the fruits appearance, texture, taste and aroma. Oriental fruit moth tests are also promising, adds Ms. Neven, who collaborates with other ARS scientists, university scientists as well as two commercial firms.

Website: www.ars.usda.gov

New route to pest management

A specialized programme at the University of Californias Kearney Research and Extension Centre, the United States, offers pest management professionals and growers the latest information on nematode control problems and solutions. Dr. Mike McKenry, who presides over the programme, suggests chemigation as an alternative to preplant methyl bromide (MB) soil fumigation for perennial crops. Dr. McKenry has developed methods and equipment that use water to carry low-fuming biocides 5 ft deep. It has been demonstrated that chemigation with biocides like metam sodium, in highly porous soils, can easily achieve nematode control efficacy on par with MB.

Another promising natural treatment for nematodes is the fungus Dactylella oviparasitica, which was found to attack the pests eggs. Development of resistant rootstocks also yields the same result.

Contact: Dr. Michael V. McKenry, Kearney Agricultural Centre, 9240 S. Riverbend Ave., Parlier, CA 93648, United States of America. Tel/Fax: +1 (559) 6466 500/593.

Website: www.calag.ucop.edu

Fumigant for grains storage

In Australia, a collaboration between BOC Ltd., Grains Research Development Corp. (GRDC) and CSIRO Entomology has resulted in a new fumigant. Vapormate kills insects that feed on stored grain and is the first new fumigant registered in the country after many decades. Vapormate uses a naturally occurring substance found in fruit and vegetables. Ethyl formate, a registered food additive used to enhance flavours in products such as ice cream, achieves a fast kill of insects and breaks down rapidly into common naturally occurring products ethanol and formic acid.

Vapormate has been released on the market using innovative fumigation technology to treat sealed stored grain quickly. The new treatment is a cylinderized mixture of ethyl formate and carbon dioxide. So far only small storage facilities have been tested. However, it has the potential to be employed in large-scale storages, such as silos, mills, warehouses, etc.

Contact: Ms. Victoria Haritos, CSIRO Entomology, Australia. Tel: +61 (2) 6246 4245;

E-mail: victoria.haritos@csiro.au

Website: www.ento.csiro.au

Drip irrigation for strawberries

Researchers in the United States have studied the efficacy of drip application of methyl bromide (MB) alternatives CP, 1,3-dichloropropene (1,3-D) and methyl isothiocyanate (MITC) generators like metam sodium for strawberry production. Commercial formulations of the fumigants applied singly and in combination through drip irrigation systems were evaluated at two sites for three consecutive growing seasons as alternatives to MB:CP fumigation. For soils with high pathogen populations, fruit yield from the untreated plots was 34-50 per cent relative to the MB:CP treatment. The greatest (95-110 per cent) yields relative to MB:CP were in the high rates of the InLine treatments. Yields from simultaneous drip fumigation with a combination of Vapam HL InLine or CP EC were less (67-79 per cent) than yields from shank fumigation with MB:CP.

Contact: Mr. Thomas Trout, Agricultural Research Service (ARS), Water Management Research Laboratory, 9611, South Riverbend, Parlier, California, CA 93648, United States of America.

Website: www.aggie-horticulture.tamu.edu