VATIS Update Ozone Layer Protection .Nov-Dec 2003

Contents

THE SCIENCE OF OZONE LAYER

EU funds new ozone project

The European Commission is funding a research project aimed at furthering understanding and forecasting of the ozone layers future. The new MAPSCORE project funded under the energy, environment and sustainable development section of the 5th Framework programme investigates the role of high altitude polar clouds in depleting the ozone layer. ENVISAT, the European Space Agencys environmental monitoring satellite, has enabled researchers, for the first time, to map the location of high altitude polar clouds in near real time. This information guided the atmospheric modelling of how these clouds form and their influence, a crucial aspect necessary to assess how much ozone could be depleted in the future. Findings of the MAPSCORE project will feed into Vintersol a wider ozone campaign of the Commission which aims to tackle the problem of measuring and understanding the causes of mid-altitude ozone depletion, and predict future ozone levels.

Website: www.euractiv.com

Resurgent ozone hole

Latest data from the European Space Agency (ESA) prove that reports of the demise of the annual Antarctic ozone hole have been greatly exaggerated. The extent of last years ozone hole was at its smallest, 40 per cent lower than previous years, for more than a decade. Recent ozone measurements from the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS) device aboard ENVISAT, ESAs latest Earth observation spacecraft, show that this years ozone hole is in no danger of splitting. With an area of 26 million km2, the ozone hole is almost as big as the one in 2000. The Belgian Institute for Space Aeronomy (BIRA-IASB) generated this value-adding MIPAS data based on level-2 products provided by ESA. MIPAS operates by quantifying infrared emissions from the Earths limb, the band of atmosphere between planetary surface and empty space, as seen from behind ENVISAT. MIPAS can map the concentrations of over 20 trace gases.

Website: www.esa.int

2003 ozone hole update

In the United States, researchers from NASA, NOAA and the Naval Research Laboratory report that this years Antarctic ozone hole is the second largest ever observed. The ozone hole reached around 17.54 million km2 on 11 September 2003. NASAs Earth Probe Total Ozone Mapping Spectrometer and the NOAA-16 Solar Backscatter Ultraviolet instrument provided ozone readings from space. These data were coupled with that obtained by NOAAs Climate Monitoring and Diagnostics Laboratory from balloon-borne instruments, which

measure the ozone holes vertical structure.

Contact: Ms. Elvia Thompson, NASA, Washington, United States of America. Tel: +1 (202) 3581 696; Or Ms. Carmeyia Gillis, NOAA Climate Prediction Centre, Camp Springs, Maryland, United States of America. Tel: +1 (301) 7638 000.

Or

Mr. Dick Thompson, Naval Research Laboratory, Washington, United States of America. Tel: +1 (202) 7671 936.

Website: www.earthobservatory.nasa.gov

Study reveals decrease in atmospheric bromine levels

Researchers at the National Oceanic and Atmospheric Administrations Climate Monitoring and Diagnostics Laboratory, the United States, report that the level of bromine is now at least 5 per cent less than in 1998. This scenario considerably diminishes the threat to ozone layer. The team further suggests that overall ozone depleting gases are declining faster than previously thought. They said the decline in bromine level was primarily due to international restrictions on industrial production of methyl bromide.

Website: www.in.news.yahoo.com

WMO report on ozone hole

The World Meteorological Organization (WMO) has stated that the size of the ozone hole over Antarctica started to decrease at the beginning of October, receding from the near record level it reached during the previous month, 28 million km2. The hole declined to an area of less than 18 million km2 during the first two weeks of October. WMO further adds that the southern Argentinian city of Ushuaia had been under the hole on four instances this year and had been exposed to very high UV levels on 6 October.

Website: www.news.yahoo.com

ODS PHASE-OUT IN INDIA

International ozone day celebrations in West Bengal

The International Day for Preservation of Ozone Layer, on 16 September 2003, was celebrated in West Bengal by the Department of Environment, West Bengal Pollution Control Board along with the Indian Chemical Manufacturers Association (ICMA). Students from various schools participated in the celebration. Referring to a documentary entitled Dangerous relations, which had won the first prize in UNEPs Global Video Competition on Ozone Layer Protection, Mr. J. D. Paloc, Chairman of ICMA, emphasized that the audio-visual presentation leaves a permanent impression on the minds of the students. He advised the participants to help protect the ozone layer by becoming ozone friendly. The Minister-in-charge of Environment and IT, Mr. Manabendra Mukhopadhya, gave an overview of how ozone layer is depleted. Apart from a lively question and answer session, 200 badges with the theme Save Our Sky: There is a Hole Lot More to Do for Our Children etched on them were handed out.

CMA Press release

Customs to monitor anti-ozone substances

The National Academy of Customs, Excise and Narcotics (NACEN) has signed an MoU with UNEP towards effective monitoring of ODS across the borders. As part of this agreement, experts visited the capital in October to help prevent the global exchange of ODS. NACEN the apex body for training personnel of Customs, Central Excise, Narcotics and other law enforcement agencies will now be the first agency in the Asia-Pacific to impart training in identification and monitoring of ODS.

Website: www.cities.expressindia.com

Production and consumption of halons phased out

India has made significant strides to comply with provisions of the Montreal Protocol. Consumption of CFCs has been reduced by 2,165 t from the baseline consumption of 6,681 t during 1995-97, through implementation of projects approved by the Multilateral Fund. Production and consumption of halons have been phased out while ExCom has approved the national phase-out plan for carbon tetrachloride (CTC) at a cost of US$52 million. Also, 13 new ozone depleting chemicals, which are not controlled by the Montreal Protocol, have been identified. The new chemicals are not amenable to control by the Protocol unless it is amended to include them. UNEPs Technology and Economic Assessment Panel (TEAP) has been reviewing the production and consumption patterns of these chemicals.

The externally aided India Eco-Development Project for the protection of biodiversity through eco-development in seven protected sectors has been extended by the Cabinet. Under the National River Conservation Plan and the National Lake Conservation Plan, two projects have been approved. One of these will be located at Sangli town, Maharashtra, at a cost of about US$4.36 million for construction of a sewage treatment facility with a capacity to treat 27 million l/d. The US$400,000 second project involves construction of an effluent transportation system for a common effluent treatment plant to be located at Kolkata.

Website: www.indlaw.com

IN THE NEWS

Awards for national ozone units

The 2003 Outstanding National Ozone Unit (NOU) awards have been conferred to NOUs in China, Fiji, Jamaica and Senegal. These awards not only show appreciation of the countries progress in meeting compliance targets, but also encourage them to maintain a pro-active and enthusiastic attitude. The selection panel comprised representatives from the Secretariat of the Multilateral Fund, UNEP OzonAction Programme, UNEP Ozone Secretariat, UNDP, UNIDO and the World Bank.

Contact: Mr. Rajendra Shende, Head, UNEP Division of Technology, Industry and Economics, 39-43, quai Andre Citroen, Paris 75739, Cedex 15, France. Tel/Fax: +33 (1) 4437 1450/1474.

E-mail: rmshende@unep.fr

Website: www.uneptie.org

Role of UNIDO in Irans ozone layer protection efforts

In Iran, UNIDO has been particularly active in various sectors including refrigeration, compressor, foam and fumigation. Iran ratified the Montreal Protocol during March 1990 and prepared its first Country Programme

for the phase-out of ODS in 1993. The Country Service Programme is a collective effort that includes participation and funding by Montreal Protocol, the government and the private sector in collaboration with UNIDO and other implementing agencies. At the end of 2002, 71 projects were approved for UNIDO US$23.8 million and a total impact of 3,986.2 ODP tonnes. UNIDOs efforts have contributed in lowering 2,733.2 t of ODS. UNIDO has transformed most of the commercial and domestic refrigeration factories to stop using CFCs. It is also involved in the conversion of domestic and commercial refrigeration, flexible and rigid foam, and conversion of a compressor factory as well as in fumigants.

UNIDO in Action in the Asia-Pacific, Vol. 1, No. 2, 2003

Project to destroy ODS in Maldives

A US$115,000 project has been launched in the Maldives to eliminate substances that destroy the Earths ozone. An agreement has been signed between UNDP and the Ministry of Home Affairs for the Awareness and Incentive Programme, which is under the project on the Implementation of the Refrigerant Manegment Plan (RMP). This project, aimed at destroying ODS before the year 2010, is conducted with assistance from UNEP and funded by the Multilateral Fund under RMP of the Montreal Protocol. According to the government sources, under this project, cooling systems used in vehicles will operate on an ozone-friendly gas instead of CFC-12. Machinery and equipment required for this project would also be procured.

Website: www.haveeru.com.mv

Smuggling and complacency: Hurdles to ozone layer recovery

Environmental Investigation Agency (EIA) of the United Kingdom reports that the Montreal Protocol is at serious risk of being sabotaged by illegal trade and production of ODS. Investigations by EIA uncovered evidences of CFC smuggling in many parts of the world, particularly now in developing countries, where CFC phase-out schedules are beginning to be felt. Despite a ban on production of CFCs for domestic use since January 1995, CFCs are still produced in Europe for export to developing nations. EIAs ozone layer campaigner Dr. Ezra Clark states that There is strong evidence of surplus global production and the European Union produced CFCs ending up on the black market in developing countries. A further problem that could significantly undermine the Montreal Protocol and delay ozone layer recovery is the United States plea to the Montreal Protocol for exemptions allowing it to drastically increase its use of the fumigant methyl bromide.

Contact: Dr. Ezra Clark/Ms. Julian Newman, Environmental Investigation Agency, United Kingdom. Tel: +44 (0207) 3547 960.

Website: www.eia-international.org

China to ban methyl bromide

According to Chinas national plan, production and use of methyl bromide (MB) will be greatly reduced by 2005. The use and production of MB will be reduced by 20 per cent, compared with the average levels used between 1995 and 1998. The national plan states that with the exception of some critical uses, MB production and use in the country will be banned by 2015. The plan was created by experts from both home and abroad in accordance with the Copenhagen Amendment of the Montreal Protocol. The three MB producers in the country have a total capacity of 8,400 t/y.

Website: www.english.peopledaily.com.cn

New standards for field conversion of equipment

In the United States, UL has developed three safety standards for the field conversion of refrigeration and air-conditioning equipment to assist equipment users and the safety community. While UL 2170 is for construction and operation requirements for field conversion/retrofit of products to change to an alternative refrigerant, UL 2171 is the standard for safety of insulating material and refrigerant compatibility requirements for field conversion/retrofit of products to change to an alternative refrigerant. UL 2172 is for refrigerant field conversion/retrofit safety requirements procedures and guidelines. The three standards include safety requirements for the evaluation of refrigeration and air-conditioning equipment that has been modified to use other refrigerants. These standards apply only to UL listed equipment bearing the UL mark.

Installation requirements for this type of equipment are included in the National Electrical Code, NEC, and the Safety Code for Mechanical Refrigeration (ASHRAE 15).

Contact: UL Corporate HQ, 333, Pfingsten Road, Northbrook, IL 60062 2096, United States of America. Tel: +1 (847) 2728 800; Fax: +1 (847) 2728 129.

E-mail: customerservice.nbk@us.ul.com

Website: www.ul.com

Euro-Australian tie-up for natural refrigerants

Eurammon, the pan-European initiative for natural refrigerants, has signed a collaboration pact with Australias Natural Refrigerants Transition Board (NRTB) aimed at strengthening and extending the international natural refrigerants competence network by means of a mutual membership. NRTB aids the industrial sector down under in switching to eco-friendly, natural refrigerants like ammonia and carbon dioxide. It provides users with extensive information for planning, building and maintenance of refrigeration plants using natural refrigerants. Eurammon has campaigned for several years for a sustainable approach to refrigeration at the international level. It has mutual membership agreements and close, practically oriented relationships with the International Institute of Ammonia Refrigeration and the Association Francaise du Froid.

Website: www.videolife.kiev.ua

Award for developing alternative technology to CFCs

In the United States, DuPont has been awarded the National Medal of Technology, the highest honour for technological innovations, for its global leadership in developing alternative technology for reducing the environmental impact of CFCs. This is the fourth National Medal of Technology Award affiliated with DuPont in 13 years. The company was the first to commercialize environmentally acceptable hydrofluorocarbon refrigerants, such as DuPont Suva, which enabled major industries like refrigeration and air-conditioning to continue meeting societal needs with products that reduced the impact of ozone depletion. This effort led to the successful development of a series of alternatives for CFCs, substantially reducing the time from research to commercial production.
As part of its environmentally responsible sustainable growth mission, DuPont has set four goals for 2010, supplementing existing goals:

Derive 25 per cent of revenue from non-depletable resources;
Hold energy use flat using 1990 as a base year;
Reduce global carbon-equivalent greenhouse gas emissions by 65 per cent, using 1990 as a base year (the company has already surpassed this goal with a 68 per cent reduction); and
Source 10 per cent of the companys global energy use in the year 2010 from renewables.

Contact: Ms. Anthony Farina, DuPont, United States of America. Tel: +1 (302) 7744 114.

E-mail: anthony.r.farina@usa.dupont.com

Website: www.stockhouse.com

Study on albuterol

In the United States, a comprehensive economic analysis was undertaken to assess if patients would continue to be adequately served when the FDA changes the status of albuterol CFC metered-dose inhalers (MDIs). For the past two decades, patients with asthma and chronic obstructive pulmonary disease (COPD) have used albuterol CFC MDIs as a rescue medication. However, use of the CFC propellant in medically essential products will eventually have to be eliminated. The Montreal Protocol has created incentives for pharmaceutical companies to invest resources in R&D for alternative delivery methods. Two non-CFC, albuterol-based MDIs have been developed and approved for patients. Availability of these replacements for albuterol CFC MDIs has enabled FDA to consider designating CFC MDIs non-essential.
The study estimates the average increase in total costs per MDI to be US$9.87 where patients pay an average increase of US$7.33 per MDI and third-party payers pay an average increase of US$2.54 per MDI. It was also found that the average daily increase in costs to the national healthcare system during the first year after the FDA designates albuterol CFC MDIs non-essential would be US$0.005 per capita or US$0.044 per asthma/COPD patient. On average, there is an increase in costs for albuterol.

Contact: Dr. Richard Rozek, NERA Senior Vice-president, United States of America.
E-mail: richard.rozek@nera.com

Or Ms. Emily Bishko, NERA, United States of America. E-mail: emily.bishko@nera.com

Website: www.nera.com

Quest for alternative blowing agents to HCFC-141b

In Taiwan, ITRI was commissioned by the Industrial Development Bureau, Ministry of Economic Affairs, to assist the foaming plastic production sector to switch-over from using HCFC-141b to alternative technologies/processes. At a seminar held in July 2003 and organized by ITRI, more than 70 people from the foaming industry shared their experiences on developing and application of non-HCFC-141b foam blowing agents. Speakers from important companies like Solvay, Honeywell and BASF took part in this event. One non-technical aspect of concerns expressed by the industry was the ban on using HCFCs for production of many products in the country regardless of their export destination.

Contact: Ms. Fei-Chiao Yang, ITRI, Taiwan. E-mail: cyang@itri.org.tw

Or Mr. Ko-Ming Hung. E-mail: 7358@moeaidb.gov.tw

Website: www.unep tie.org

REFRIGRATION/AIR-CONDITIONING

Recycling fridges

Anlagenbau Umwelt+Technik Chemnitz GmbH, Germany, offers refrigerator recycling plants with operational capacity ranging from 20-60 fridges/h (standard mix: 60 per cent fridges, 20 per cent fridge-freezer combinations, 20 per cent freezers). First, refrigerators are sorted according to the used coolant and isolating materials. The facility can operate optionally in CFC or pentane mode. After separation, the coolant is removed at a suction station and all built-in materials are taken out. Next, the pre-disassembled fridges are conveyed to a pre-crusher where they are reduced to a maximum size of 40 150 mm. From the pre-crusher, the material get over a charging conveyor into a bunker with a size of about 5 m3. On reaching the right level in the bunker, bunker flaps get open and the material enters a cross-flow shredder where all the materials are ground against each other. As such, composite materials are liberated while plastics get crushed and the metals become conglobates, free of plastics. During the grinding process, polyurethane is ground to a maximum size of 0.2 mm.

The recycling rate of the refrigerator recycling plant is around 80 per cent. The main component is recycled into resaleable products. Polyurethane powder is used to manufacture isolation-plates or as oil absorber. The recovered, granulated polystyrene is used for high-quality injection moulding parts while aluminium is sent back to the works.

Contact: Mr. Kunert, Anlagenbau Umwelt+Technik Chemnitz GmbH, Germany. Tel: +49 (0371) 9098 623; Fax: +49 (0371) 9098 611.

E-mail: r.kunert@u-t-chemnitz.de

Website: www.u-t-chemnitz.de

Compressor breakthrough

Turbocor recently showcased its latest compressor that offers up to 30 per cent more efficiency than other units in the same size range. This advanced level of performance can be monitored, on-site or remotely, using a web-based monitoring and diagnostics system. An oil-free design eliminates the risk of efficiency loss through oil contamination of the refrigerant and the need for accessories such as oil heaters, pumps, separators and filters. The award-winning system works with chilled water or direct-expansion systems. The lightweight unit operates almost noise-free (< 70 dB) and offers soft-start qualities (draws only 2 amps for start-up).

Contact: Ms. Eugene Smithart, Turbocor. E-mail: smitty@turbocor.com

Website: www.turbocor.com

OzonAction Newsletter, No. 44, June 2003

Low ODP and GWP refrigerant

In the United States, the American Society for Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) is gathering data on a new refrigerant with zero ozone depletion potential (ODP) and low global warming potential (GWP). R-245fa is suitable for low pressure water chillers typically used in large building air-conditioning. Also being developed are equipment using R-245fa in other heat transfer and working fluid applications.

ASHRAE has approved funds totalling US$986,953 for eight research projects in the areas of indoor air quality, comfort and health, energy conservation, operating and maintenance tools, environmentally safe materials and design tools. Among them is 1256-TRP, thermophysical properties of R-245fa. The project is expected to take ten months to complete at a cost of US$55,000. Researchers plan to provide accurate thermodynamic and transport property data.

Contact: ASHRAE, 1791, Tullie Circle NE, Atlanta, GA 30329, United States of America. Tel: +1 (404) 6368 400, ext. 1140; Fax: +1 (404) 3215 478.

E-mail: jdunlop@ashrae.org

Website: www.hvacmall.com

Refrigerant recovery machine

Vortex refrigerant recovery machine from Inficon, the United States, offers high performance, durability and compactness in a single system. Vortex provides rapid recovery of all refrigerants. Individual valves with dual-sealed stems greatly reduce leakage potential. An enlarged, strategically placed fan ensures better airflow over the condenser and compressor, allowing for improved cooling and lower pressures. Its cutting-edge condenser design makes for less air restriction, more direct heat transfer and improved durability. The single-valve, liquid-tolerant, oil-less compressor with 1/3 hp DC motor drive can stand up to heavy use and liquid slugs. Vortex comes with a sturdy carrying strap. An optional overflow protection device is available separately.

Contact: Inficon, Global HQ, 2, Technology Place, East Syracuse, NY 13057, United States of America. Tel: +1 (315) 4341 100; Fax: +1 (315) 4373 803.

E-mail: reachus@inficon.com

Website: www.inficon.com

New products

In the United States, ASHRAE SSPC 34 Committee has granted R-419a as the reference number for Atofinas Forane FX90 refrigerant fluid. The non-inflammable and non-toxic HCFC-22 substitute is an HFC-based blend with zero ODP and can be used in existing installations. It delivers optimum performance in high-temperature applications, typically air-conditioning. R-419a does not require an oil change when retrofitting.

Another product, Forane 134a UV glow is designed to facilitate quick and efficient detection of leaks from HFC-134a automobile air-conditioning units. This refrigerant combines the benefits of standard HFC-134a and an effective UV colourant. It is stable over time and compatible with every component of the air-conditioning circuit, in particular the compressors lubricating oil. Its unique and patented formulation offers a long-lasting colourant effect. With a low UV additive concentration, Forane 134a UV glow offers the same performance and thermodynamic properties as standard R-134a.

Website: www.atofina.com

HC-based refrigerators

In Japan, Fujitsu General plans to shift all models in the large refrigerator segment, above 350r, to hydrocarbon (HC). Fridges using HC refrigerant were launched this year by Toshiba, Matsushita Electric Industrial Co., Hitachi and others. All major Japanese manufacturers will add HC refrigerant models to their line-up. These fridges use isobutane (R-600a), a natural refrigerant not conducive to ozone layer depletion and global warming. Apart from Toshiba, middle-size models (below 350r) are generally launched by other manufacturers. Fujitsu plans to launch a 400r class model this year. Except for top freezer type models, the middle-/large-size units adopt the companys own solid suction cooling system, aimed at improving profitability.

Website: www.autofreon.com

SOLVENTS

Non-CFC cleaning/degreasing solvent

Seacole-CRC LLC, the United States, offers a high-quality cleaning solvent comprising a mixture of terpene hydrocarbons derived from naturally recurring and renewable sources. ADHESIVE/Solv has a low order of toxicity to both land animals and aquatic organisms. Its extremely high solvency makes ADHESIVE/Solv an excellent cleaner for removing residual adhesives and other surface coatings. It can be employed in dip or wipe-down applications where it is desirable for the parts to air dry, and is compatible with virtually all types of glass, ceramics, metals and plastics. The slightly yellow-coloured liquid has a strong citrus odour and has a specific gravity of 0.86. Notable performance features include:

Excellent for removing adhesive residues and other surface contaminants;
Chlorine-free and does not contribute to ozone depletion or acid rain;
Evaporates at ambient temperatures;
Classified as readily biodegradable in aerobic conditions; and
Can be used in spray, immersion or wipe-on-spot cleaning applications.

Contact: Seacole-CRC LLC, Corporate Headquarters, 702, South 7th Street, Delano, Minnesota, United States of America.

Website: www.seacole.com

Oil absorbent recycling process

CRI Recycling Service Inc., the United States, offers an eco-friendly process for recycling oil absorbent material. This process does not generate wastewater effluents, oily absorbent for landfilling or air emissions. It yields recycled oil, absorbent and other materials. The physical and chemical properties of the non-CFC solvent used in CRIs process, along with physical properties of the absorbent materials, facilitate effective cleaning. The cleaning process runs as a batch process, which enables individual customer and material tracking, with more than 99 per cent of the cleaning solvent recycled. The process can remove petroleum-based contaminants from the absorbent material to a level exceeding 98 per cent. Appearance of the material and its reabsorbancy is comparable to that of the virgin material.

Contact: CRI Recycling Service Inc., 101, Hagen Drive, Woodville, Wisconsin 54028, United States of America. Fax: +1 (715) 6983 485.

E-mail: info@crirecycling.com

Website: www.crirecycling.com

CO2-based cleaning technology

Deflex Corp., the United States, offers new carbon dioxide (CO2)-based cleaning technologies as a substitute to using solvents. Centrifugal Shear CO2 cleaning technology is a revolutionary development in immersion cleaning technology. Liquid or supercritical CO2 that may contain trace amounts of gaseous or liquid chemical cleaning additives is used in combination with bi-directional centrifugal shear and Coriolis force cleaning actions. The commercial SuperFuge LCO2 cleaning process employs a centrifugal shear cleaning chamber and a CO2 cleaning fluids recovery and purification module. Cleaning times may range from 10-60 minutes/cleaning cycle. The separation system recovers 90-95 per cent of the CO2 for reuse. Low vapour pressure additive recovery is predetermined and managed through a scheduled drag-out cycle based on contaminant loading as well as economic considerations. This process may be augmented with patent-pending BlueFire plasma treatment technology, which provides in situ surface modification and surface functionalization capability prior to or following the cleaning or extraction process.

Snow Shear CO2 cleaning technology is an innovative development in solid phase CO2 spray cleaning. Compared with conventional Snow Gun cleaning sprays, the Snow Shear cleaning spray produces a much lower localized humidity and higher localized temperatures, which translate into little or no atmospheric condensation during normal scan cleaning operations. Moreover, spray pressures as low as 10 psi to as high as 5,000 psi may be applied, providing a spectrum of surface spray cleaning energy. Additionally, the higher efficiency achieved through capillary condensation results in much lower usage of liquid CO2 than conventional Snow Guns.

The PlasFlex (employed in the SuperFuge BlueFire system) and Hybrid combinational CO2-Plasma surface treatment technology is a recent addition to the companys dense phase CO2 cleaning technology platform. The Hybrid technology uses solid and plasma phase CO2. Dense solid particles impacting a substrate at supersonic velocity produce a high shear stress on surface contaminants and deliver a chemically active solid phase, providing efficient and effective removal of inorganic residues, organic thin-film contaminations and particles from critical substrate surfaces. The PlasFlex technology utilizes Centrifugal Shear liquid and supercritical CO2 cleaning technology (SuperFuge BlueFire) in combination with plasma phase CO2. PlasFlex and Hybrid provide surface treatments required to prepare surfaces for coating, adhesive bonding, underfilling, among many other surface finishing treatments.

Contact: Deflex Corp., 25345, Avenue Stanford, Unit 208, Valencia, California 91355, United States of America. Tel: +1 (661) 7757 691; Fax: +1 (661) 7757 695.

E-mail: info@deflex.com

Website: www.deflex.com

New process

Forelec SA, Switzerland, employs a co-solvent process with an existing vapour degreaser, without retrofitting, to clean its SMD boards. In the new Topklean EL-20A/Novec HFE-71IPA (Promosol and 3M products) cleaning process, the product to be cleaned is dipped for a minute in Topklean EL-20A with ultrasonics and

then dipped for the same duration in boiling HFE-71IPA at 54C. The product is then rinsed in neat distilled HFE-71IPA with ultrasonics, rinsed again in the vapour phase followed by 30 seconds of drying. Outstanding clean appearance without any white residue is achieved.

Website: www.promosol.com

AEROSOLS

Inhaler for nerve agent antidote

In the United States, the University of Pittsburgh School of Medicine won a US$1.52 million federal grant to develop an inhaler capable of delivering a nerve agent antidote. The inhaler would administer a powdered version of the drug atropine to treat effects from nerve agents including sarin and VX gas. Such an inhaler would represent a new and improved method of protection against chemical warfare agents. Research will be undertaken in conjunction with MicroDose Technologies Inc., a privately held company that developed a technique to deliver powdered medicines through inhalers. The MicroDose technology employs a device that converts electrical energy to a vibration that loosens powdered medicines into an aerosol that can be inhaled. When the inhaled powder meets the tissue of a patients lungs it dissolves and is absorbed into the bloodstream. By controlling the vibration, the device can be used to administer various kinds of medicines.

Website: www.bizjournals.com

Preventing exercise-induced bronchoconstriction

Researchers at the Department of Respiratory Medicine and Allergy of Guys Hospital, the United Kingdom, have assessed the efficacy of albuterol HFA in relation to albuterol CFC and placebo HFA for preventing exercise-induced bronchospasm (EIB). The methods evaluated include randomized, double-blind, placebo-controlled and three-way crossover in patients with documented EIB. Aged 18-45 years, the patients received albuterol HFA or albuterol CFC or placebo HFA via an MDI, 30 minutes before a standardized exercise challenge. Serial forced expiratory volume in one second (FEV 1) measurements were recorded every 5 minutes before exercise and 5, 10, 15, 20, 25, 30 and 60 minutes post-exercise.

Results have shown that the adjusted mean maximum percentage falls in FEV 1 post-exercise for albuterol HFA and CFC groups were 15.4 per cent and 14.9 per cent, respectively. The two formulations were comparable with a treatment difference of -0.5 per cent. In comparison with the fall in FEV 1 in placebo (33.7 per cent), both active treatments demonstrated a significantly smaller fall in FEV 1 post-exercise. Safety profiles were similar among the three treatments.

Website: www.ncbi.nlm.nih.gov

Study on FP HFA

Lyttle et al. at the Childrens Hospital of Western Ontario, Canada, have compared the efficacy of an MDI containing fluticasone propionate with an HFA propellant (FP HFA) 200 mcg/d with the standard MDI containing FP-CFC 200 mcg/d in a multi-national, randomized, double blind and parallel group protocol in 315 asthmatic children. The patients were steroid naive, receiving 500 mcg/d of inhaled corticosteroid (ICS) or receiving 250 mcg or less of inhaled FP/d. Over a four-week treatment period, the morning peak flow rates increased to a similar degree in both FP-HFA and FP-CFC treated subjects (increases of 14 l/min vs. 17 l/min) with other evidence of equivalent therapeutic responses between the two groups. It was concluded that FP-HFA had equivalent efficacy and comparable safety to FP-CFC delivered in MDI.

Website: www.aaaai.org

HFA MDI formulation technology

Hydrofluoroalkanes HFA-134a and HFA-227 are qualified for human use. SkyePharma has made several inventions to overcome the traditional HFA MDI formulation problems, resulting in a range of proprietary technology and several late-stage development products. SkyeFine technology involves addition of CO2/N2O to obtain higher fine particle fractions for both solution and suspension aerosols. Compared to a CFC-driven MDI, increase of the respirable dose is about 2.3 fold at the expense of undesired USP-throat deposition. Budesonide SkyeFine HFA MDI is a highly efficient formulation with 70 per cent (in vitro) increase of fine particles compared with presently available CFC MDIs. It uses HFA-227/134a as the propellant.

The SkyeDry process involves adding a sub-therapeutic dose of Chromoglycate to improve formulation stability and reduce adsorption losses. This is especially useful for moisture sensitive and unstable compounds such as Ipratropium and Formoterol. The value of SkyeDry has been proven in several in vitro studies. Formoterol is a SkyeDry HFA MDI. This 120 dose canister supplies 6 g/puff. It contains propellant (HFA 227), formoterol fumarate, surfactant and cromoglycate as excipient in sub-therapeutic dose.

Contact: Mr. Paul Wotton, Global Head of Business Development, SkyePharma, United States of America. Tel/Fax: +1 (212) 7535 780/7593 928.

E-mail: paul.wotton@skyepharma.com

Website: www.skyepharma.com

New inhaler

Forest Laboratories Inc. recently announced the results of a new lung biopsy study involving one of its products. It was found that the companys hydrofluoroalkane (HFA)-based inhalation aerosol Aerospan reduced both large and small airway inflammation and improved lung function in patients with asthma. This is the first time lung biopsies from the distal lung have demonstrated this effect for an inhaled corticosteriod. Samples were taken from the peripheral and central airways of 12 asthmatic patients lungs prior to and after six weeks of treatments with Aerospan, which was administered in a dosage of four puffs twice daily. The samples were examined to assess the levels of a number of different cell types that indicate inflammation, e.g. eosinophils.

Contact: Website: www.frx.com

OzonAction Newsletter, No. 44, June 2003

Zero VOC aerosols

Nicrosol Technology, Australia, offers custom-made zero VOC aerosols manufactured by adding carefully chosen surfactants/emulsifiers/stabilizers. These products work just like presently available commercial products in terms of delivery and performance. Nicrosols process creates products that are free of oxygen and are less expensive than existing non-renewable hydrocarbon alternatives. Combined with the efficacy of the MegaBac antimicrobial formulation, Nicrosols new inhalation delivery mechanism has proved to be a more accurate and successful dispensing system in clinical trials for patients with antibiotic resistant tuberculosis. It is lightweight, highly transportable and may be used safely in a range of geographical and climatic conditions. Similar success has been achieved with antimicrobial surface sprays, used in dental, veterinary and food preparation areas. The companys nitrogen propellant technology has yielded a world-first aerosol fire

extinguisher.

Contact: Nicrosol Technology, Australia. Fax: +61 (07) 3299 5725.

Website: www.nicrosol.com.au

FOAMS

CFC-free insulation for cryogenic use

Tokyo Gas Co. Ltd., Japan, has developed a new type of CFC-free and eco-friendly carbon dioxide (CO2) foam insulation. The main materials of polyurethane foam (PUF) are polyol and polyisocyanate, and the polyurethane of high polymers is generated by the addition of a polymerization reaction. When CFC is used as a foaming agent, CFC evaporates owing to the reaction heat from the generation of urethane resin, and foams and hardens. On the other hand, if it changes to CFC and water is added, CO2 will be generated by the reaction of water and polyisocyanate. The CO2 re-foaming PUF is obtained using this phenomenon. Moreover, some urethane resins join together by urea linkages generated at this time.

To achieve CO2 foaming PUF of practical use, the combination of the kind and quality of the polyol, polyisocyanate, which are the main materials, and various additive agents were scrutinized and the physical properties successfully improved. PUF thus obtained exhibits tensile, compressive, shear and bending strength, and creep characteristics equivalent to currently available materials.

Contact: Mr. Seiichi Uchino, Production Engineering Sect., LNG Technology Team Production Dept., Tokyo Gas Co. Ltd., 1-5-20, Kaigan, Minato-ku, Tokyo 105 8527, Japan. Tel: +81 (3) 5400 7582; Fax: +81 (3) 3578 8365.

E-mail: s-uchino@tokyo-gas.co.jp

Website: www.tokyo-gas.co.jp

Urethane blowing agent

Zeon Corp. of Japan is offering characteristic and environmental solvents that have 5-membered ring structures. Cyclopentanone has very high solubility and is used for electronics, cleaning and polymer solvent. Zeorola-H is an eco-friendly, new-generation HFC with no ODP, low GWP and a short atmospheric lifetime. It is applicable as a degreasing agent for metals and electronic devices as an alternative to PFC/HCFC or HFCs that have high GWP. Zeonsolve HP is used as a blowing agent for polyurethane as a substitute to CFC/HCFC. Boiling points of cyclopentanone, Zeorola-H and Zeonsolve HP are 130-131C, 82.5C and 49.3C, respectively.

Contact: Zeon Corp., Furukawa Sogo Building, 2-6-1 Marunouchi, Chiyoda-ku, Tokyo 100 8323, Japan. Tel: +81 (3) 3216 1772; Fax: +81 (3) 3216 0501.

Website: www.zeon.co.jp

Metering and mixing systems for HC-based blends

Cannon Group, Italy, offers dedicated technologies to add different percentages of carbon dioxide (CO2) in polyurethane (PU) blends and to control the froth during a moulding operation. The benefits of using natural CO2 include:

PU foam can be expanded without CFC;
CO2 has a chemical and physical affinity with PU; and
Eco-friendly, safe, readily available and non-inflammable blowing agent with direct benefits to health, safety and insurance costs in the workplace.

CannOxide is now in production for the following applications: Automotive - headrest, sound deadening, and seats for bike and cars; Furniture - cushions, armchairs and sofa. A wide range of dosing machines and mixing heads were specially designed by Cannon to be used with this specific technology to realize dedicated and customized industrial applications.

Cannon A-system Penta Twin is a high-pressure metering machine designed for the safe use of inflammable blowing agents such as cyclopentane, isobutane, etc. Components groups in contact with the blowing agent are sited in a special ventilated enclosure and fully equipped with explosion-proof electrical gadgets, inert circuits and safety sensors. This allows constant control of the foaming process and maintains the working environment at the highest level of safety. The system integrates a polyol/hydrocarbon (HC) blending unit under the same section hood. The machine range comprises four models with 40-100-200-350 kg/min of output capacity. The complete polyol group, tank and metering unit, is placed over a drip pan welded to and integrated in the ventilated box frame, and has been designed to obtain a high degree of ventilation and respect strict safety requirements.

The unit is split into two independent parts, one for the polyol circulating system and the other for Isocyanate, each with a special and proper structure. This means restricting the use of safety devices only to the polyol unit. Explosion-proof devices can be mounted exactly where they are needed.

The company also offers retrofitting solutions, which comprise a Pentamodule to the existing customer line i.e. a complete metering polyol side with all the required safety features are added to the line replacing all the old polyol fixtures. The areas where cyclopentane vapours are expected to be released continuously or for long periods of time are closed in a monitored and ventilated box so as to minimize the presence of hazardous surfaces. Special attention is devoted to the ventilation of foaming jigs.

Penta EasyFroth is a closed-loop high-pressure pre-blending unit, specially designed for HCs and other liquid blowing agents. The closed-loop control system is extremely important to keep a constant ratio of polyol and cyclopentane, guaranteeing better foam quality. The system consists of three main frames a polyol pumping group, a double acting cylinder dosing group for HCs with a static mixer placed in a ventilated box and a control cabinet positioned far away from the safety area. The equipment is also available in a configuration that allows installation in two separate rooms. The metering unit is connected to the part of the pre-mix device that comes in contact with HCs and it is also placed in a ventilated box. Penta EasyFroth offers significant benefits to manufacturers and a wide range of applications, especially in the refrigerator and insulated panel industry.

Website: www.thecannongroup.com

HALONS

New clean agent fire suppression system

Ansul Inc., the United States, offers SAPPHIRE fire suppression system containing a total flooding clean agent, which serves as an effective halon replacement. Complementing the companys existing INERGEN line of fire suppression systems, the SAPPHIRE system is based on NOVEC 1230 fluid by 3M, the first alternative chemical clean agent to provide a viable long-term solution for special hazards fire protection. NOVEC 1230 has zero ODP and an atmospheric lifetime of just five days, the lowest for halocarbon alternatives. Stored as a liquid but expelled as a gas, NOVEC 1230 fluid is easy to handle, field rechargeable and requires about the same number of cylinders as halocarbon agents. It is ideal for special hazards such as electronics, ships and critical military applications.

Contact: Ansul Inc., Corporate HQ, 1, Santon Street, Marinette, Wisconsin 54143 2542, United States of America. Tel: +1 (800) 8626 785.

Website: www.ansul.com

New inert gas system

Ginge-Kerr has developed Argonite system as a viable but environmentally friendly alternative to halons. Tested and approved by regulatory bodies throughout the world, Argonite is effective against fires involving almost all combustible materials and inflammable liquids, and is particularly suitable for use in areas where the use of water, foam or powder would be unacceptable. Benefits of the Argonite system are:

Fast-acting and effective against nearly all fire hazards;
Minimum downtime after a fire;
Environmentally neutral - zero ODP and GWP;
Low installation and maintenance costs;
No post-fire residues or damage to protected equipment;
Electrically non-conductive;
Safe for occupied areas;
Automatic or manual release;
Can be integrated with existing detection and alarm systems; and
Total flooding or modular design.

In a closed space almost all fires are extinguished in less than 60 seconds when the oxygen concentration falls below 15 per cent. The Argonite fire extinguishing system, based on a mixture of 50 per cent nitrogen and 50 per cent argon, reduces oxygen concentration to 12.5 per cent a level acceptable to human exposure over short periods thus eliminating the fire quickly and effectively without affecting personnel. Knowing the size and complexity of the area to be protected, the fire hazard present and requirements of the local approving authority, a dedicated computer program is used to specify the size and geometry of the Argonite system hardware. Generally one of two methods is used to protect an area with Argonite. These are total flooding, where the required amount of gas is released into a room, and modular or local systems that are designed to cover a particular piece of enclosed machinery, equipment, etc.

Argonite systems consist of one or more pressure cylinders connected through a common manifold. System actuation can be manual or automatic and the gas is dispersed through a pipe network and enters the protected

area via nozzles. Valve design, the size and pressure of the cylinders used and the computer calculated pipe and nozzle dimensions together ensure that the correct amount of Argonite is released effectively. Argonites extinguishing and inerting properties act quickly to eliminate the fire. If more than one area within a building is to be protected, a single Argonite system, designed to extinguish a fire in the largest room, can be used. Provided that there is no risk of more than one fire within the facility at any one time, the total cost of the fire protection system can be reduced significantly in this way.

Argonite systems are ideally suited for the protection of fixed equipment and plant. They are particularly applicable for high-value risks where fires can have devastating consequences, way beyond the cost of damage and lost production. Applications include computer suites, telecommunications facilities, archive stores, petrochemical plant, offshore oil and gas installations, gas turbines and control centres.

Contact: Ginge-Kerr Danmark A/S, Stamholmen 111, DK-2650 Hvidovre, Denmark. Tel: +45 3677 1131; Fax: +45 3677 2231.

E-mail: ginge@ginge-kerr.dk

Website: www.ginge-kerr.com

New fire extinguishers

MFS Fire Extinguishers, the United Kingdom, offers a range of FE-36 automatic fire suppression units for marine engine compartments using a clean agent drop in halon replacement extinguishant. Available as fixed units of 1, 1.5 and 2 kg models, the FE-36 units come with a five-year warranty and are easy to maintain. Ensuring zero ozone depletion, these systems are safe for use on electrical equipment and suitable for B and C fire classifications. Manufactured under BS EN ISO 9002 quality management system, GTFE1000, GTFE1500 and GTFE2000 are suitable for a maximum enclosed volume of 1.7 m3, 2.5 m3 and 3.4 m3, respectively.

Available in red cylinders, these models have a discharge time of eight seconds. While the cylinder test pressure is 28 bar, minimum burst pressure is 55 bar. They operate at a working temperature of -20 to 80C.

Contact: MFS Fire Extinguishers, P.O. Box 125, Accrington, Lancs. BB5 4XA, United Kingdom; Tel: +44 (0845) 6446 515.

E-mail: sales@mfs-fire-extinguishers.co.uk

Website: www.mfs-fire-extinguishers.co.uk

Halon-1301 replacement

Clean agent FS 49 C2 was developed as a replacement agent for halon-1301, and offers the same optimum characteristics, yet with minimum impact on the environment. The main component includes the most used replacement gas for refrigeration systems. No other gas offers the same safety and economy advantages as FS 49 C2. Key benefits include:

A clean extinguishing agent residue free;
Compatible with existing halon-1301 systems;

Quick-acting;
Favourable weight/volume ratio;
Not hazardous to humans at working concentration; and
Type approved by major classification societies.

Contact: Brassbell, P .O. Box 325, N-1377 Billingstad, Norway. Tel/Fax: +47 6685 3380/3381.

E-mail: brassbell@brassbell.no

Website: www.brassbell.no

FUMIGANTS

Patented methyl iodide uses

Researchers at the University of California, the United States, have developed two patented methyl iodide uses as an alternative to methyl bromide (MB). Tests have shown that methyl iodide is as effective, if not more so, than MB in combating weeds, nematodes and soil pathogens. One of the patented uses has been licensed to Arvesta Corp. Arvesta has named its iodomethane product as Midas and is continuing field trials and working to develop the best application methods.

Contact: Prof. James J. Sims, 3401, Boyce Hall, Riverside, CA 92521, United States of America. Tel: +1 (909) 7874 127; Fax: +1 (909) 7874 294.

E-mail: james.sims@ucr.edu

Website: www.ucanr.org

New biofumigant

AgraQuest Inc., the United States, has submitted an application with the Environmental Protection Agency (EPA) to register its latest Arabesque biofumigant. The new natural fumigant has the potential to replace methyl bromide. Arabesque is based on a new micro-organism, Muscodor albus, which produces gaseous substances that fight plant and human pathogens. The company is focusing first market entry for Arabesque on post-harvest prevention and eradication of moulds on fruits and vegetables, seeds, bulbs and flowers. Studies have shown complete or near complete prevention and eradication of all major diseases that cause rots in fruits and vegetables, such as apples, lemons, peaches and tomatoes. Other uses for the biofumigant include applications to control or eradicate food-borne pathogens like Salmonella, E. coli and Listeria, for grain treatments to control moulds and for treatment of moulds in buildings.

Website: www.biz.yahoo.com

Safe pesticide

Acme International Ltd., the United States, has developed a safe pesticide-fungicide whose basic ingredients are safe for humans, animals and plant life. The 100 per cent biodegradable PFA-2000 has been developed in a liquid form. Intended as a safe replacement for many of the poisonous pesticide-fungicides, this produce is not phyto-toxic and can be applied to the dripping point on any plant without damage to the plant or fruit. Some of the fruits, vegetables and other crops on which this low-cost product can be used include grapes, corn, cotton, soya beans, wheat, potatoes, onions, tomatoes, bananas, coffee, rice, sugar beets, melons, lettuce, strawberries,

as well as ornamental flowers found around the world.

Contact: Marketing Director, Acme International, 7222, S. Tamiami, Suite 106, Sarasota, FL 34231, United States of America. Tel: +1 (941) 9261 410; Fax: +1 (941) 9261 025.

E-mail: acmeintusa@aol.com

Website: www.marketwire.com

Soil sterilization

Siebring, the United States, offers Steam N Air Soil Sterilization system, which comprises three components Steam Generator SG10, Aeration Blower AB28 and the optional Tow N Dump Soil Aeration Cart that work together to perform the task of sterilizing potting soil and other materials. In the sterilization steam cycle, SG10 raises the temperature of the matter in 15 minutes. The AB28 blower assists with enough air flow for 28 inches of material when the material is placed in an aeration bin or cart. In the cool down cycle, the AB28 blower will dry the material to the moisture saturation level that existed before the steam cycle.

Contact: Siebring, 303 S, Main Street, George, IA 51237, United States of America.

Website: www.commercial-greenhouse-equipment.com

Biofumigants help beat the wilt

Poor farmers in developing countries could soon be using a range of biofumigant plants to help increase tropical vegetable yields. CSIRO is part of a team from Australia and the Philippines which has found that Brassica species such as radish, mustard or broccoli can be used to help reduce yield losses from bacterial wilt, a major pathogen of vegetables in tropical farming. Brassicas contain compounds that suppress pests and pathogens, principally isothiocyanates (ITCs), says CSIRO Plant Industry researcher, Dr. John Kirkegaard. The project has already evaluated Brassica species and management methods with the aim of maximizing the biofumigant effect.

Contact: Dr. John Kirkegaard, CSIRO Plant Industry, Australia. Tel: +61 (02) 6246 5095.

E-mail: john.kirkegaard@csiro.au

Website: www.csiro.au

PUBLICATIONS

Blowing Agents and Foaming Processes: Rapra Conference Proceedings 2003

The 5th blowing agents and foaming processes conference was held in Munich, Germany, and was dedicated to the critical role of blowing agents in foamed plastics and rubber. The two-day international conference brought together major blowing agent manufacturers and suppliers, foaming process providers and academia to present an insight into the latest industrial progress and research for foam generation. Reports were presented

on new injection moulding processes, structural foam, and micro-cellular and extrusion processes. There were also presentations from the more theoretical and academic side, which provide a good overview of the physical properties, effects, performance and functions of blowing agents.

Contact: Rapra Technology Ltd., Shawbury, Shrewsbury, Shropshire SY4 4NR, United Kingdom. Tel: +44 (01939) 250 383.

E-mail: info@rapra.net

The Methyl Bromide Issue

Methyl bromide (MB) is a fumigant used widely in agriculture, horticulture and the preservation of structural materials, among other things. This book sets out the scientific debate covering the major relevant fields, including agriculture, atmospheric chemistry, oceanography, environmental sciences, chemistry and biology and toxicology. Some of the important topics discussed include MB in perspective (global production and uses, safety and medical treatment), MB in the atmosphere, MB and the environment (scientific assessments of MB and ozone depletion), effects on target organisms, MB as a soil fumigant, MB in storage practice and quarantine (monitoring and detection), chemical alternatives and alternative physical methods, and emission reduction.

Contact: C.H.I.P.S, 10777, Mazoch Road, Weimar, Texas 78962, United States of America. Tel: +1 (979) 2635 683; Fax: +1 (979) 2635 685.