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OzonAction SCOOP

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UNDER THE MULTILATERAL FUND FOR THE IMPLEMENTATION
OF THE MONTREAL PROTOCOL

OzonAction information services and outreach

OzonAction Clearinghouse Survey

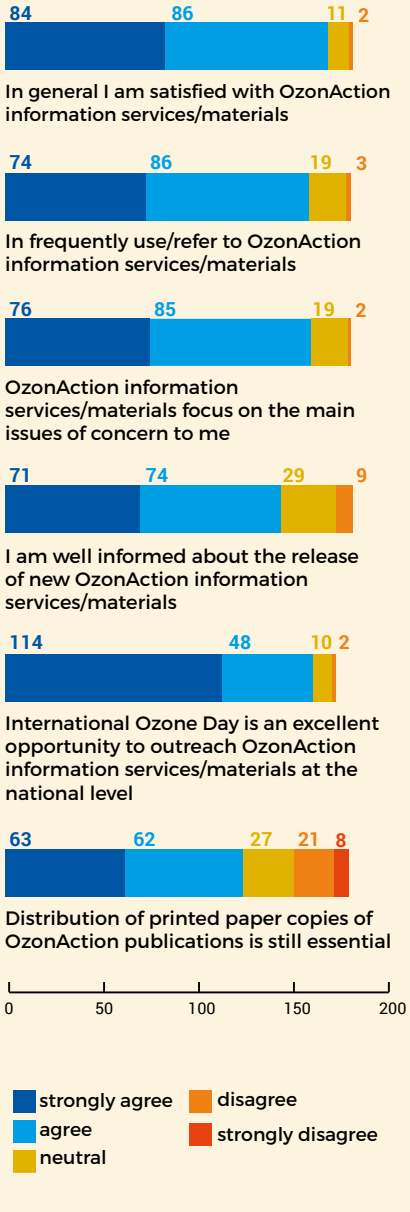
on publications, information sharing and capacity building tools

Since 1991, as part of UN Environment's role as an Implementing Agency of the Montreal Protocol's Multilateral Fund, OzonAction has provided developing countries with a global *'Clearinghouse'* service to assist them in complying with their commitments under the Protocol.

During its 77th meeting in December 2016, some members of the Multilateral Fund's Executive Committee suggested that UN Environment should conduct a survey to assess the level of satisfaction with the CAP's clearinghouse mechanism and e-learning modules, and other global activities. OzonAction therefore conducted an online survey to assess client satisfaction with the Clearinghouse information services and materials (publications, information materials, capacity building tools, etc.).

The Survey achieved a good rate of response (186 respondents). The fact that the great majority of respondents (77%) were from developing countries and that the majority (over 59%) were National Ozone Unit staff, coupled with the fact that the other main categories of respondents were a) customs & enforcement officers, b) other government staff and c) RAC technicians can give a level of confidence that the responses provided in the survey can provide a reasonable representation of the needs, wishes and ideas of OzonAction's main clients.

In general the respondents to the survey were satisfied with the type, quality and range of information services/materials produced by OzonAction. More than 92% of



respondents were satisfied or very satisfied with the information services/materials produced, with 86% indicating they frequently use or refer to these. Almost 88% of those surveyed responded that that the information services/materials produced focused on their main issues of concern. Of the 22 information service/materials individually identified in the survey to solicit specific feedback, 18 of these are considered by between 72% and 90% of respondents to be 'useful', 'very useful' or 'essential'. Only a very few respondents identified any specific products as 'not useful'. The most popular and most used information services/materials identified by the respondents to the survey were: OzonAction fact sheets; the Customs Training Manual; the customs poster/quick tool; the Safe Use of HCFC alternatives booklet; and the International Standards in RAC booklet.

The most popular category of use of OzonAction information services/materials identified by respondents to the survey was to enhance their own knowledge. Given that the great majority (59%) of survey respondents were NOU staff, this is an important result since NOUs are the main client of the clearinghouse and target audience for the majority of information services/materials produced. Survey respondents also indicated that dissemination of information services/ materials to stakeholders and to colleagues were the second and third most popular uses of these items.

The survey revealed a strong preference/ requirement for translation of OzonAction information services/materials into a wide range of languages. While recognised to be useful, this of course can have significant financial implications.

OzonAction Smartphone Applications assistance and information through innovative and modern tools

Recently, in addition to the more traditional capacity building and information products (such as publications and factsheets) OzonAction has been venturing into the area of smartphone applications. These up-to-the-minute tools provide a more inventive and exciting approach and can provide a real advantage over more conventional products in some respects. The four main applications already launched are briefly described below, with significant updates and new applications in the pipeline. We invite you to download and start using these.

GWP-ODS CALCULATOR

This new OzonAction application was designed for Montreal Protocol National Ozone Units (NOUs) and will also be useful for other related stakeholders. The GWP-ODS Calculator allows you to easily convert ODP, CO_2-eq and metric quantities of refrigerants and other chemicals.

The application:

- Helps in understanding and reporting under the Montreal Protocol (and for future commitments under the Kigali Amendment)
- The calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO2-equivalent tonnes (or kg) and display the corresponding converted values
- The app includes both single component substances and refrigerant blends
- The components of a mixture and their relative proportions (metric, ODP, CO2-eq) are also displayed
- Full instructions are included in the app
- Updates in the development include a desktop interface to use on a computer and a "Montreal Protocol reporting mode"

WHATGAS?

The *WhatGas?* application is a versatile and useful tool. It enables you to search OzonAction's chemicals database of ODS, HFCs and their alternatives to quickly identify the information you need. Customs and enforcement officers can quickly obtain additional information when handling shipments of substances controlled under the Montreal Protocol. National Ozone Officers and other stakeholders will find this tool a good resource in understanding the substances controlled under the Montreal Protocol and their alternatives. A desktop version, best suited to office use is coming soon.

WhatGas? will help you quickly find the following information on any specific refrigerant and other chemicals:

- Chemical name, formula, and type
- ASHRAE designation
- Trade names
- HS code
- CAS and UN numbers
- Montreal Protocol Annex and Control measures
- Ozone depleting potential (ODP)
- Global warming potential (GWP)
- Blend components
- Toxicity and flammability class
- Main uses

eDOCS+

The OzonApp eDocs+ application allows you to quickly and easily consult the latest OzonAction publications and awareness materials directly on your mobile device. This application includes publications, videos, fact sheets and other awareness materials to help National Ozone Units (NOUs) and other stakeholders to build their capacity to implement the Montreal Protocol in a sustainable manner and at the same time to derive climate benefits.

REFRIGERATION AND AIR-CONDITIONING TECHNICIAN VIDEO SERIES

The *Refrigeration and Air-conditioning Technician Video Series* is a mobile application consisting of a series of short instructional videos on techniques, safety and best practice for refrigeration and air conditioning (RAC) technicians. This serves as a complementary training tool for technicians to help them revise and retain the skills they have acquired during hands-on training. The app is part of OzonAction's portfolio of activities and tools to help enhance the knowledge and skills of technicians in the servicing and maintenance of RAC systems.The videos were produced in collaboration with Bundesfachschule Kälte Klima Technik. Additional videos will be released through the application soon.

The videos cover the following topics:

- Basic Tools
- Copper Tube Handling
- Bending
- Copper-Copper Connections
- Copper-Brass Connections
- Flaring
- Press-Fit Connections
- Leak Detection (soap solution)
- Evacuation
- Refrigerant Charging
- Connecting RAC Unit to Manifold
- Electronic Leak Detection
- Refrigerant Recovery
- Thermal Insulation
- Preparing the Cables

Available in: English, French, Spanish, German & Armenian. Chinese, Russian and Arabic coming soon.

To install, search for "GWP ODP CALC" in the Google Playstore or Apple IOS store, or scan the following QR code:

To install, search for "WhatGas?" in the Google Playstore or Apple IOS store, or scan the following QR code:

To install, search for "OzonAction eDOCs+" in the Google Playstore or Apple IOS store, or scan the following QR code:

To install, search for "RAC Video" in the Google Playstore or Apple IOS store, or scan the following QR code:

Refrigerants Literacy
eLearning Course

ASHRAE and UN Environment have partnered on a web-based course entitled "Refrigerants Literacy." It provides 4.5 hours of instruction covering the basics of refrigerants used in air conditioning and refrigeration applications. The course provides a basic understanding of refrigerants required by all involved in refrigerant policy and management, including policy makers, facility managers, and specialists. The course consists of 4 lessons.

LESSON 1 → covers refrigerants types and addresses environmental considerations.
LESSON 2 → deals with refrigerant classifications including ASHRAE Standards 15 and 34.
LESSON 3 → addresses refrigeration selection, including residential and small commercial applications.
LESSON 4 → covers Refrigerant Management, including development of a management plan, containers, storage, and recover, recycling and reclamation.

The course includes interactivities in form of knowledge checks to test the learner's mastery of content as well as narration to keep the learner engaged. At the end of the course, there is a compulsory examination which, if the user passes, earns a successful course-completion certificate. The exam consists of 35 questions and has unlimited attempts. Subscription period lasts for 12 months.

Sound Management of Refrigerants eLearning Course

ASHRAE and UN Environment are developing a web-based learning course that reviews best practices for air conditioning and refrigeration specialists. Topics to be covered include principles of refrigerant recovery, recycling, and reclaiming. Lubricants, their properties and applications, including compatibility issues with various refrigerants, will be reviewed. The course will embrace safe handling, service, and installation of refrigeration equipment utilizing modern refrigerants. It will also provide introduction to refrigerant management programs, certification schemes and relevant policies and regulations.

This course is designed for end-users, operators, and contractors who service air conditioning and refrigeration equipment globally. The content is broken down into six (7) individual modules, which can be stand-alone, or offered sequentially as an entire course. Participants will be tested after each module and must achieve a 70% or higher on each test to obtain a Certificate of Completion upon completion of all of the modules.

Course Learning Objectives

- Examine global environmental issues as it pertains to refrigerants
- Become Familiar with the various refrigerants and the ASHRAE numbering system
- Define pure refrigerants, azeotropic mixtures, and zeotropic mixtures
- Describe the differences between refrigerant recovery, recycling, and reclaiming
- Clarify the function and types of lubricants in air conditioning and refrigeration systems
- Recognize proper service and installation procedures with various refrigerants
- Demonstrate safe handling procedures with refrigerants, lubricants, tanks, and recovery equipment.
- Introduction to refrigerant management programs, certification schemes and relevant policies and regulations

Upon the successful completion of this course, participants will be able to:

- Have a solid understanding of refrigerants and their global impact upon the environment.
- Categorize and explain the ASHRAE Refrigerant numbering system.
- Identify the differences between recovery, recycle, and reclaimed refrigerants.
- Associate the proper lubricants with the correct refrigerant.
- Safely install, handle, and service mechanical refrigeration systems that utilize refrigerants.
- Demonstrate the proper use of tools, test equipment, and operating procedures while recovering, or recycling refrigerants.
- Maintain professional values and ethics to safely handle refrigerants while practicing environmental stewardship.
- Possess the ability to successfully comply with U.S. and international laws as they pertain to refrigerants used for air conditioning and refrigeration systems.

UN Environment expects the course will be available to its National Ozone Units in Spring 2018.

OzonAction to empower future engineers about sound management of refrigerants

Under the Multilateral Fund, training programmes for the refrigeration servicing sector focus on building the capacity of currently-employed technicians on good servicing practices and refrigerant management. While these programmes continue to be highly effective at helping today's technicians meet ozone protection objectives, OzonAction sees a need to influence future engineers to adopt a "Montreal Protocol mentality" as they are learning. Accordingly, OzonAction and its partners developed a unique and comprehensive curriculum for future engineers who will join or lead the servicing sector workforce in the near future.

As an attempt to address this gap and assist to offer dedicated programme for future engineers to be well abreast with the requirements of good management of refrigerants, UN Environment developed special course to support the engineering education through acquainting the future engineers with the knowledge and skills required to manage refrigerants soundly as well as understand the technical and policy aspects associated with the refrigeration and air-conditioning industry as a result of global environmental considerations in particular the protection of the ozone layer and the combat of the climate change.

This special course is first of its kind that offer comprehensive scientific information and knowledge, about management of refrigerants that is suitable for the academic levels. It offers thorough a combination of scientific background as well as applied knowledge that would help building the capacity of future engineers about management of refrigerants.

Engineering institutes and colleges are encouraged to benefit of this effort and use it in accordance to their internal academic structures. The course is developed to ensure complying with international academic standards for similar engineering education.

Users of the course are also encouraged to keep abreast with the development at the global level in relation to environment and technology. They are also advised to wisely use the course, or any part of it, in accordance to the local capacities and needs.

The course is developed in partnership with the American University in Beirut (AUB) with the support from Lebanese National Ozone Unit (NOU). Substantive review and input was also provided from subject matter professors and experts from Australia, Egypt, Georgia, Ghana, Thailand & Trinidad and Tobago.

UN Environment will work with NOUs to support the introduction of the course to national engineering colleges and institutes, as needed, and ensure linking it to national training and capacity building programmes related to refrigerants management and good service practice which are crucial for reducing emission of refrigerants, while servicing HVAC&R units, hence support to complying with Montreal Protocol reduction targets either for the phase-out of HCFC refrigerants or for new commitments, under the Kigali Amendment, for the phase-down of HFC refrigerants.

Refrigerant Management
Special University Course for Future Engineers

Course Outline

MODULE 1 - 4 WEEKS

REFRIGERATION & AIR CONDITIONING INDUSTRY, EVOLUTION OF REFRIGERANTS & ENVIRONMENTAL IMPACTS

MODULE 2 - 3.5 WEEKS

ALTERNATIVE REFRIGERANTS FOR DIFFERENT SECTORS & LUBRICANTS

MODULE 3 - 3 WEEKS

CONTAINMENT OF REFRIGERANTS, SERVICE & MAINTENANCE OF AIR CONDITIONING & REFRIGERATION SYSTEMS

MODULE 4 - 2 WEEKS

SAFE USE & HANDLING OF REFRIGERANTS

MODULE 5 - 2 WEEKS

RELATED STANDARDS AND CODES OF SYSTEMS AND SUBSTANCES

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Shamila Nair-Bedouelle
Head OzonAction
1, rue Miollis
75015 Paris - France

Available online at: www.unep.org/ozonaction

Publication manager: Anne-Maria Fenner
Design/layout: Anna Mortreux

Please send comments to:
Anne-Maria Fenner
+33 1 44 37 14 54
Anne.Fenner@unevironment.org