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**“Marine Refrigerated Vessels: Technologies and Refrigerant Management”
UNEP Session at the International Conference on Energy and Environment in Ships**



Athens, 22-24 May 2015 – In collaboration with the **ASHRAE** (American Society of Heating, Refrigerating and Air Conditioning Engineers) **Hellenic Chapter** in Greece, **UNEP OzonAction** led a special session on marine refrigerated shipping and fishing vessels including new and emerging ozone-friendly, climate-friendly and energy-efficient refrigeration technologies, vessel registration practices, as well as rules and policies for the management of refrigerants as required under the Montreal Protocol and in particular hydrochlorofluorocarbons (HCFCs).

This special event was part of three-day conference organized by the Greek Navy and The Hellenic Technical Chamber held in Athens, Greece on 22-24 May 2015 that addressed technologies related to energy and environmental management both on board and on shore, and the latest development in this sector. This is in line with the technical cooperation between ASHRAE and the UNEP.

Refrigeration is an essential technology in the mobile refrigerated marine and fisheries industries and HCFCs are the most common refrigerants used in these industries with almost 80% of the existing fishing fleet using HCFC-22. Given the cross-boundary nature of the marine industry, management of the HCFC phase-out in ships will require compliance with environmental, national and international laws.

During the event, UNEP and the International Maritime Organization (IMO) presented on both the Montreal Protocol and maritime compliance and regulatory requirements with case studies and approaches focusing on the particular needs and challenges of developing countries. United Nations Industrial Development Organization (UNIDO) presented on the work currently being undertaken in the fishing sectors. The session highlighted the status and implications of the HCFC phase-out in the marine, shipping/fishing sectors and the challenges in phasing out of HCFC in this sector.

Selected outcomes of this international event were:

1. Legislative and regulative:
 - a. The Interface of the Montreal Protocol requirements with those of the International Convention for the Prevention of Pollution from Ships (MARPOL) and other rules of international maritime law in particular that of flag states and port states responsibilities. The MARPOL regulations prohibit deliberate emissions and the use of HCFCs in new maritime installations from 1 January 2020.
 - b. Enforcement of Article 4B of the Montreal Protocol on the enforcement of import and export licensing system for ODS as they apply to shipping and fishing marine vessels.
 - c. Standards: With respect to industry standards, participants were presented in the ASHRAE Standard 26-2010 on “Mechanical Refrigeration and Air Conditioning Installations aboard Ships” that provide the minimum general requirements for the design, construction, installation, operation, inspection and maintenance of mechanical refrigeration and air-conditioning equipment aboard ships to permit the safe, efficient, and reliable operation of such systems. However it was not updated since 2010. Several participants expressed their willingness to join the Technical Committee that oversees the update.
2. Socio Economic: The impact to the economic importance of the fishing industry and food value chain and in particular for the Article 5 (developing) countries operating under the Montreal Protocol. For example for the Pacific Islands, fishery is the single largest economic sector. In 2013, the estimated catch was 2.62 million tonnes and valued at 6.3 Billion USD (The Pacific Islands Forum Fisheries Agency (FFA)).
3. Technology choices, availability and adaptation: There is the urgent need for research and development on the barriers towards adaptation to low-global warming potential (GWP) energy-efficient alternatives including: safety, technology standards, skills, policy framework, costs, and market availability.

The event brought into visibility the complexity and international/cross-border fluidity of this sector. Both developed and developing countries have to mutually cooperate at governmental and private sector levels in order to sustainably address these global obligations under the Montreal Protocol and other responsibilities for the protection of our global commons.

For further information:

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