

ABSTRACT

The refrigerants have many applications such as household refrigeration, retail refrigeration, transport refrigeration, industrial refrigeration, air conditioning, comfort air conditioning, heat pumps, Hospital utility, Food preservation, and Hospitals utilization. The refrigerant is a fluid used for heat transfer in a refrigerating system. The desire of Many countries in the world to save environment from the depletion of stratospheric ozone have resulted in restrictions of the production and trade of ozone- depleting substances(ODS) (Chlorofluorocarbons-CFCs and hydrochlorofluorocarbons-HCFCs) through an international treaty known as Montreal Protocol. The Ozone is a gas formed naturally in the stratosphere by the action of sunlight on oxygen. This Ozone layer prevents harmful ultra-violet radiation from reaching the earth. Stratospheric ozone protection is a global problem. This paper briefly reviews the consumption of HCFC as a road map to phase out the ODS in Kenya basing on the finding in western Kenya. The objective of the study was to conduct a study of the consumption of HCFC in western Kenya. The study was carried out using survey as a method. Tools of data collection were interviews, observation, and questionnaires. It was found that 79% of the equipment in Hotels, Restaurants, and Quest houses use R134a as refrigerant. 18% of the refrigeration systems in Hotels, Restaurants and Quest houses use R12 as refrigerants. It was further found that total consumption of HCFC (R22, R12, R600a and R600b) in hotels and restaurants $R_{22}+R_{12}+R_{600a} + R_{600b} = 59314 \times 10^{-6}$ tons. Where as in the total consumption at the Western Ambience Hotel of R22 is 40000×10^{-6} tons Ozone layer depletion increase UV light surface level which leads to damage and skin cancer. Finally replacing the R22 R12, R404a , R600b is good however it is important for the general public and entrepreneurs to know the impact of the refrigerants to Ozone Layer and its affect on human being, animals, vegetations and environment in general.

Key words: - Ozone Depleting Substances, Chlorofluorocarbons, Hydrochlorofluorocarbons,

1.1 BACKGROUND OF THE STUDY

Food preservation, Air conditioning and Hospitals utilization, are the basic requirements in most of world Countries due to high ambient conditions prevailing 6 to 8 months in a year. The refrigeration industries are one of the major sectors which consume refrigerants a chemical used to produce refrigeration effect. The refrigerant is a fluid used for heat transfer in a refrigerating system, which absorbs heat during evaporation at low temperature and pressure, and releases heat during condensation at a higher temperature and pressure, (Omer, A. M. 2008)

The fluorocarbon refrigerant industry has been growing fast hence refrigeration and air conditioning system was made possible. The refrigerants are designated based on the international number system. For example R₁₂ is CFC-12; R-22 is HCFC-22; R-134a is HFC-134a. (Selinger, B. 2013).

1.2 Statement of the Problem

The refrigerants have many applications such as household refrigeration, retail refrigeration, transport refrigeration, mobile refrigeration, industrial refrigeration and air conditioning, comfort air conditioning, heat pumps, Hospital utility, (Tegus, O, *et al.*, 2002)