

## ENVIRONMENT

# Saving the Ozone is everybody's job

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On September 16 the globe celebrated World Ozone Day. This year's theme was "Universal Participation: Ozone protection unifies the world". But looking at this celebration and what it hopes to achieve would not be complete without going back to the basics and giving some background on what ozone is and its importance to our planet and all living organisms that call it home. We also need to see how humans have collectively contributed to its destruction and what is being done to remedy the situation.

Ozone molecules consist of three ozone atoms. Ozone exists in a gaseous state and is poisonous. Ninety percent of ozone exists in the stratosphere or upper atmosphere, 10 to 50 km above the earth's surface. The ozone found in this layer is what we refer to as the "ozone layer" and is responsible for blocking out harmful ultra-violet rays like UV-B and UV-C rays. UV-B rays are responsible for a wide variety of negative effects in ecosystems around the world and the health of the organisms. Some of the adverse effects of the radiation include skin cancers, weakened immune systems, and eye cataracts in humans, as well as reduced plant and fishing yields and damage to ocean ecosystems. It has also been found that this type of radiation coupled with high temperatures leads to faster degradation of plastics and wood. These two materials are used heavily in our construction industries, especially plastics, which are used to make or are part of most of the items we use in everyday life. Examples are bottles, syringes for medicines and containers for food.

Concern about the health of the ozone layer started around 1970 and continued throughout



the 1970's with growing concerns that chemicals like nitrogen oxides in fertilizers and supersonic aircrafts might deplete this layer of protective gas. It was later confirmed that CFCs (Chlorofluorocarbons) break apart in the atmosphere releasing chlorine atoms that react with the ozone, thereby removing them from this layer. Other ozone depleting substances include halons used in fire-fighting systems and methyl bromide used to fumigate high-value crops as a means of pest control. Both of these chemicals release bromine atoms which have the same effect as CFCs.

Concern for the depletion of the ozone layer is not unjustified as ozone is extremely rare, with three out of every ten million molecules being an ozone molecule. The ozone layer has thinned out most dramatically over the Antarctic, creating what is described as a "hole". This does not mean that the Antarctic is responsible for the hole. The use and release of ozone depleting substances is practised by all countries on the planet.

The Montreal Protocol is the most useful document when it comes to phasing out the use of ozone depleting substances and lists 96 chemicals that are scheduled for phase-out. The overall goal of this protocol is to return the ozone layer to a pre-1980 state by the year 2050. The countries that sign this protocol, therefore agree to stop using these chemicals by the given dates. Unfortunately governments are not legally bound to meet these requirements until they sign the Protocol and the related

Amendments.

After all this information you may be left with the impression that stopping ozone depletion is out of our hands, but you are quite wrong. We have two valuable weapons at our disposal. The first is arming ourselves with knowledge of the ozone layer, how it protects us and how it is being damaged. Secondly, we have the power of consumerism, where we have the choice of buying and supporting the manufacture of products that cause ozone depletion. However, to better understand this we need to realise that ozone-depleting substances are found in everyday items around the home or office. For example, large refrigerators and walk-in coolers like those found in canteens, restaurants or supermarkets are more prone to leakage than the smaller ones in our homes. Air-conditioning systems at home, work and in our vehicles leak ozone depleting substances. Even the fire extinguishers we keep around might contain halons.

The options/choices are becoming more of a reality, as there are more ozone-friendly alternatives being developed to replace harmful chemicals like CFCs. However, where implementation is necessary, for example, halons in fire fighting systems, which are only used in critical case such as, control rooms or aircrafts is slower in the process.

In an effort to lessen the emission of ozone depleting substances into the atmosphere there has been research and development of substances to replace harmful chemicals like CFCs, one such example are HCFCs



(Hydrochlorofluorocarbons), however, it has been found that they also have ozone depleting effects. What makes these chemicals extremely harmful is that they hang around in the atmosphere for many years, sometimes decades and take just as long to

break down.

So we see that everyone has a role to play if we are to return the ozone to a healthy state from government officials to the ordinary citizen by deciding to support and use products that do not damage the ozone layer.