



ENVIRONMENTAL EDUCATION SERIES

TIMELY INFORMATION

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THE OZONE LAYER: WHAT IT DOES FOR US AND HOW WE CAN HELP PREVENT ITS DESTRUCTION

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THE OZONE LAYER

The ozone layer is a form of oxygen less stable than that which we normally breathe. It is found primarily in the stratosphere between 15 and 25 miles above the earth's surface.

WHAT THE OZONE LAYER DOES FOR US

This rather thin layer of ozone acts as a protective screen, filtering out the sun's harmful ultraviolet (UV) rays. According to a study by the National Academy of Sciences, if ozone depletion reaches 20%, two hours in the sun will cause a blistering sunburn. This means that we will almost always have to think about covering up, wearing sunscreen, and avoiding the mid-day sun.

HOW OZONE IS BEING DESTROYED AND HOW MUCH IS BEING LOST

The ozone layer is being destroyed by man-made chemicals containing chlorine and bromine. The most common of these are chlorofluorocarbons (CFCs) and bromofluorocarbons (halons), used as coolant gases in air conditioners. When these chemicals are released into the atmosphere, they rise up to the stratosphere where they are broken down by intense UV radiation, releasing atoms of chlorine or bromine that react with and destroy ozone.

Based on data from a current satellite borne ozone monitor, the 1991 U.N. Scientific Assessment of Stratospheric Ozone reported a 3.5 to 5.5% decline in ozone level over the U.S. from 1979 to 1991. At present, predictions for future ozone-depletion over the remainder of the decade vary between 3% and 30%, depending on the researcher and the global area to be affected. More extreme thinning has been measured over Northern Europe, including ozone levels 43% below normal seasonal lows recorded over Scandinavia in January, 1991.

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HOW OZONE DEPLETION CAN AFFECT US

Ozone depletion results in elevated levels of UV radiation. All of earth's life forms depends on the ozone layer to filter out most of the sun's harmful UV rays. Dangers from elevated levels of UV radiation include the following:

HUMAN HEALTH PROBLEMS:

- Increased instances of skin cancer.
- Increased instances of cataracts, the leading cause of blindness in the U.S.
- Weakening of the immune system, causing us to be more susceptible to infectious diseases.
- Premature wrinkling, toughening, and aging of the skin.

DAMAGE TO CROPS AND OTHER LAND PLANTS:

- Reduced crop yields and stunted growth of natural vegetation.

THREATS TO MARINE LIFE:

- Disruption of the marine food chain and further reduction of already shrinking fisheries.

WHAT IS BEING DONE ABOUT OZONE DEPLETION

Depletion of the ozone layer is a global problem. This problem stands to affect all people in all parts of the world. Solving the ozone depletion problem requires action and cooperation from world organizations; national, state, and local government; industry; and people like us.

WHAT THE GOVERNMENT IS DOING

The United States, along with approximately 70 nations, signed the Montreal Protocol on substances that deplete the ozone layer. The latest revisions of this agreement call the CFCs and halons to be phased out of production by the year 1995. This action shows environmental responsibility on the part of our government. However, it should be noted that this date is still several years away, and in the meantime, there are many other steps that we as individuals can take to prevent unnecessary release of these chemicals.

WHAT INDIVIDUALS CAN DO TO HELP PROTECT THE OZONE LAYER

Leaking car air conditioners are among the largest sources of CFC releases into the atmosphere in the United States.

To reduce these CFC releases, think about the following:

- Consider buying a car without air conditioning.

If your car air conditioner is essential to you, consider the following:

1. When your air conditioner breaks, don't just refill it with freon, have the system fixed so that it will not continue to leak.
 2. Find a repair shop that recycles CFCs in air conditioners, instead of allowing CFC coolant to be released to the atmosphere prior to conducting repairs.
- Avoid foam containers and packaging such as foam "peanuts" unless they indicate that they were not made with CFCs or HCFCs.
 - Immediately repair any leaks in your refrigerator, and if you are discarding a refrigerator, make sure the CFCs are recycled (recovered) before it is scrapped.
 - Avoid purchasing halon fire extinguishers, usually identified by a yellow canister.
 - Consider alternatives to air conditioning in your home. If you are building a home, look into passive cooling designs.

For an existing home, consider the following options:

1. Insulate to keep heat out.
 2. Install an effective fan cooling system.
 3. Apply a coat of reflective seal on your roof to keep heat out, or install light colored roofing material.
- Check all products before purchasing to avoid buying ozone-depleting chemicals.
 - Write your federal, state, and local government representatives and inform them of your concern about ozone depletion.

Reference

E. Miller and S. Bogle, 1992. What Would it be Like to Live in a World Where the Sun Was Dangerous? Sea Grant publication UNIHI-SEAGRANT-AB-92-01, University of Honolulu, Hawaii.