

The Ozone Layer & HALONS



What Is the Ozone layer?

No, ozone is not the bull's eye on a target! In fact, it's nothing you can see. Ozone is a naturally occurring gas found in the earth's atmosphere. At the outer edge of the atmosphere there is a thin layer of ozone gas that is critical to life on earth. It is the stratospheric ozone layer. This layer protects us from the harmful rays of the sun. If it weren't for the ozone layer, we'd get wicked sunburn, wreck our eyes, and kill our plants.

What Causes Reductions Of The Ozone Layer?

When certain chemicals used on earth escape into the atmosphere they are broken down by solar radiation and release chlorine and bromine atoms which, in a chainreaction, destroy ozone molecules. This reaction occurs more frequently than natural ozone replenishment, resulting in a thinning of the ozone layer.



Is The Ozone Layer Threatened?

Atmospheric measurements tell us that the ozone layer is getting thinner, and that at certain times of the year an ozone layer "hole" appears over Antarctica. Scientists believe that certain man-made chemicals are major contributors to the problem. These chemicals include the chlorofluorocarbons (CFCs) found in refrigerators, solvents and blowing agents for foams, and the halons used for fire fighting.



What Are Halons And How Do They Work ?

They are low-toxicity, chemically stable compounds that have been used for fire and explosion protection for over fifty years. Today, Halon 1211 (a liquid streaming agent) is used mainly in hand-held fire extinguishers and Halon 1301 (a gaseous agent) is used mainly in total flooding systems. These halons have proven to be extremely effective fire suppressants, which are clean (leave no residue) and remarkably safe for human exposure. Three things must come together at the same time to start a fire. The first ingredient is fuel (anything that can burn), the second is oxygen (normal breathing air is ample) and the last is an ignition source (high heat can cause a fire even without a spark or open flame). Traditionally, to stop a fire you need to remove one side of the triangle - the ignition, the fuel or the oxygen. Halon adds a fourth dimension to fire fighting - breaking the chain reaction. It stops the fuel, the ignition and the oxygen from dancing together by chemically reacting with them. Many people believe that halon displaces the air out of the area it is dispensed in. Wrong! Even for the toughest hazards, less than an 8% concentration by volume is required. There is still plenty of air to use in the evacuation process.

Who Uses Halons?

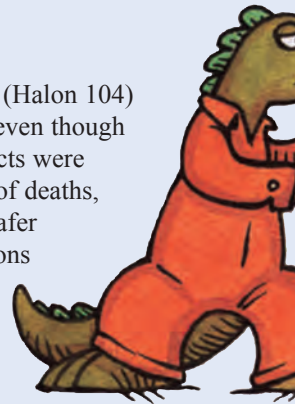
Historically, the largest single user of halon has been the electronics industry. The protection of vital electronics such as computer rooms and telecommunications facilities was estimated to account for 65% of Halon 1301 use. The U.S. Government uses halon for military applications (in ships, aircraft and tanks) and for protecting

fragile historical documents such as the Bill of Rights. Halons are also used extensively in oil production, electric power generation, and on commercial passenger aircraft.



How Long Has Halon Been Used For Fire Protection?

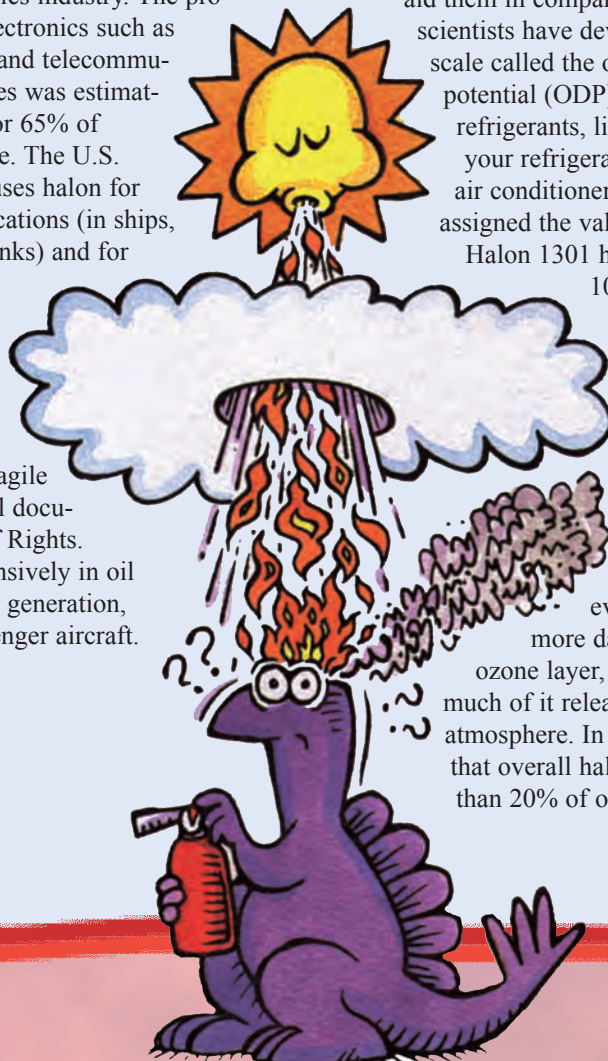
Carbon tetrachloride (Halon 104) was used prior to 1900, even though its combustion by-products were lethal. Due to a number of deaths, a search for something safer began. Several other halons were tried, but it was not until 1947 that research by the Purdue Research Foundation and the U.S. Army resulted in the discovery of two effective low toxicity halons: 1211 and 1301. When used properly, these halons have an excellent fire fighting record with little, if any, risk.

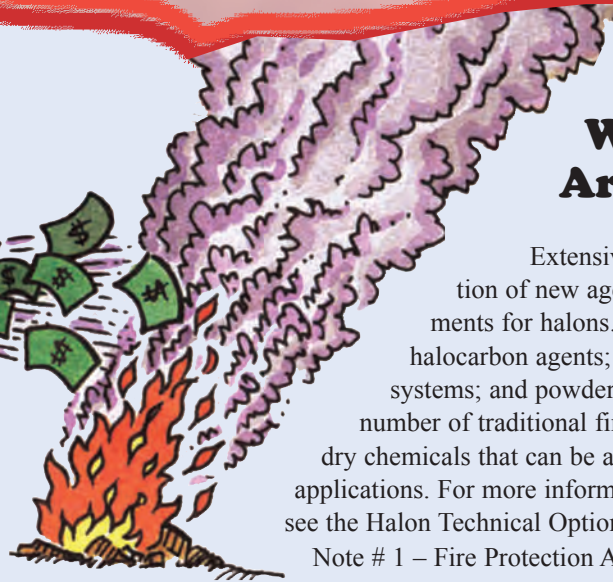


How Damaging Is Halon?

A compound's ability to destroy ozone depends on many factors, including the amount of chlorine and/or bromine that it contains. To aid them in comparing compounds, scientists have developed a relative scale called the ozone depletion potential (ODP). Common refrigerants, like those found in your refrigerator and in your car air conditioner, have been assigned the value 1 as a reference. Halon 1301 has a value between 10 and 16, meaning it has 10-16 times more potential for destroying the ozone layer.

Halon use worldwide is significantly less than that of CFCs, so even though it is more damaging to the ozone layer, there is not as much of it released into the atmosphere. In fact, it is estimated that overall halons account for less than 20% of ozone depletion.





What Alternatives Are There?

Extensive research has led to the commercialization of new agents and technologies as potential replacements for halons. These fall into four basic categories: halocarbon agents; inert gas systems; water-mist or fogging systems; and powdered aerosols. In addition, there are a number of traditional fire extinguishing agents such as water and dry chemicals that can be alternatives to halons for some applications. For more information on halon replacement agents, see the Halon Technical Options Committee Technical Note # 1 – Fire Protection Alternatives to Halons

http://ozone.unep.org/en/Assessment_Panels/TEAP/Reports/HTOC/Technical%20Note%201-%20Revision%204%20-%20Fire%20Protection%20Alternatives%20To%20Halon%20-%202014.pdf

What Is HARC?

HARC is a non-profit trade association originally formed in 1989 to promote the development and approval of halon alternatives. HARC serves as an information clearinghouse and a focal point for cooperation between government and industry on issues of importance to special hazard fire protection. HARC has facilitated and encouraged the involvement of the fire protection community in environmentally responsible activities, including:

- Coordinated development of an Industry Code of Practice for the best use of recycled halon.
- Coordinated development of a Voluntary Code of Practice (VCOP) in partnership with EPA, FEMA, FSSA, and NAFED for the reduction of emissions of HFC/PFC fire protection agents.
- Developed a Recycling Code of Practice (RCOP) intended to provide basic guidelines for companies engaged in the recovery and recycling of halogenated clean agents in order

to promote safe handling, prevent contamination, and minimize emissions.

- Developed the HFC Emissions Estimating Program (HEEP) to estimate emissions of HFCs and PFCs from fire protection and to measure the effectiveness of the VCOP.
- Sponsored major conferences on aviation fire safety and alternative technologies.
- Coordinated a health panel evaluation of water mist fire suppression systems and a workshop on toxicology issues related to halocarbon replacements.
- Assists in the management of the UNEP Halon Technical Options Committee (HTOC).

HARC is now in its 28th year and during that time has developed a unique, cooperative working relationship with government agencies concerned with ozone depletion and climate change. For more information contact HARC at the telephone or email addresses listed in this brochure.

Can Halon Be Recycled?

Unlike aluminum cans or newspapers, once halon is released it is virtually impossible to recover. If halon is still contained in cylinders retired from service or if a container is leaking, the halon can be recovered for reuse. In fact, some halon distributors and users have been doing this for many years, long before halon emissions were identified as an environmental problem. Current legislation prohibits the production or importation of new Halon 1211, 1301, or 2402 into the U.S.. Recycled halon is now the only supply, and it can be obtained from a number of sources including fire equipment distributors and independent recyclers. Industry, in conjunction with EPA, formed a non-profit organization to assist with halon recycling, the Halon Recycling Corporation (HRC). HRC acts as a

facilitating organization by providing information services to match companies who have a surplus of halon with those companies who have an ongoing need for the fire fighting agent. For more information contact HRC.



What Is Industry Doing About Halon Use?

When the environmental effects of halon became known, industrial users of halon and fire protection professionals worked together to limit halon use and emissions. Through changes in standards and specifications, industry has virtually eliminated its use of halon for testing and training purposes. Historically, testing and training has been responsible for the majority of halon emissions. Many companies have also implemented programs to reduce false discharges due to human error and equipment failure. Safety training and awareness programs in conjunction with advances in detection and control systems have contributed greatly to a reduction in emissions. Many organizations that continue to rely on halon systems for fire protection have instituted programs to identify their most critical needs. Halons that can be removed from non-critical or obsolete facilities are then recovered for use in more critical applications.



**ONLY YOU
CAN PREVENT
UNNECESSARY
HALON
RELEASE!!**

For More Information



HALON RECYCLING CORPORATION

On halon recycling and banking, contact:
Halon Recycling Corporation (HRC)

Phone: (800) 258-1283 Fax: (571) 384-7959

E-mail: cortinaec@comcast.net

Or visit the HRC home page at www.halon.org

HARC

On halon alternatives and regulations, contact:
Halon Alternatives Research Corporation (HARC)

Phone: (571) 384-7914 Fax: (571) 384-7959

E-mail: cortinaec@comcast.net

Or visit the HARC home page at www.harc.org

Is Halon Use Restricted?

The use of halons is not restricted in the United States. However, effective January 1, 2010, the production and importation of new halons for fire protection uses was banned worldwide by international agreement. Careful use and conservation of halon is, therefore, important so that existing supplies will be sufficient to meet future needs.

