



Ozone Depleting Substances

What are they?

Ozone depleting substances are chemicals that destroy the earth's protective ozone layer. They include:

- chlorofluorocarbons (CFCs)
- halons
- carbon tetrachloride (CCl₄)
- methyl chloroform (CH₃CCl₃)
- hydrobromofluorocarbons (HBFCs)
- hydrochlorofluorocarbons (HCFCs)
- methyl bromide (CH₃Br)
- bromochloromethane (CH₂BrCl)

The use of these chemicals is controlled by the Montreal Protocol on Substances that Deplete the Ozone Layer (the Montreal Protocol). There are other ozone depleting substances, but their ozone depleting effects are very small, so they are not controlled by the Montreal Protocol.



One kilogram
of halon 1211 can destroy
50 tonnes of ozone

What is ozone depleting potential?

Ozone depleting potential is a measure of how much damage a chemical can cause to the ozone layer compared with a similar mass of trichlorofluoromethane (CFC-11). CFC-11, with an ozone depleting potential of 1.0, is used as the base figure for measuring ozone depletion potential. The higher the number, the more damage a chemical can cause to the ozone layer. Bromotrifluoromethane (halon-1301) has an ozone depleting potential of 10.0. Carbon dioxide (CO₂) is a naturally occurring greenhouse gas, but has an ozone depleting potential of 0.

What did we use ozone depleting substances for?

The main uses of ozone depleting substances include; CFCs and HCFCs in refrigerators and air conditioners, HCFCs and halons in fire extinguishers, CFCs and HCFCs in foam, CFCs and HCFCs as aerosol propellants and methyl bromide for fumigation of soil, structures and goods to be imported or exported.

Have we stopped using ozone depleting substances?

Production of most ozone depleting substances has been phased out under the Montreal Protocol. In Australia and other developed nations the phase out of the most potent chemicals happened between 1991 and 1995. Australia's import of HCFCs, which have lower ozone depleting potential, dropped from 250 ODPt (ozone depleting potential tonnes) in 1996 to 2.5 ODPt in 2016.

Why do we still use some ozone depleting substances?

Some substances with a high ozone depleting potential are still used in quarantine and safety applications as no suitable alternative exists. Methyl bromide is extremely effective as a quarantine fumigant. The immediate fire suppression qualities of halon are needed in confined spaces such as on airplanes and in submarines. Research is continuing to find suitable replacements.