
Impact Category. Ozone Depletion Potential

Brief summary. The earth is shielded by a layer of ozone (O₃), which when compromised allows increased amount of Ultraviolet radiation to the earth surface. High Ultraviolet contributes to deleterious effects as diverse as reduced biological productivity, damage to building materials, and increased risk of skin cancer and other health problems.

Units. kg CFC-11 equivalents (CFC – 11 = trichlorofluoromethane)

Detailed summary. The main ozone depleting substances are resilient chemicals that contain chlorine or bromine atoms. Because of their long lifetime they are able to reach the upper stratosphere and can degrade the ozone layer through a chemical process of heterogeneous catalysis. The ozone depletion potential of a substance is a synthesis of a relative measure for the potency to form equivalent effective stratospheric chlorine and the predicted residency time.

Global cooperation to reduce the deleterious effects on the ozone layer began in 1985 in Vienna and a formalised protocol was drafted thereafter to 'phase out' controlled substances (the Montreal Protocol). Since the Montreal Protocol on Substances that Deplete the Ozone Layer was internationally agreed to in 1987, ozone depleting substances are being phased out until 2015 (1). If this protocol is followed it is expected that ozone depletion will no longer be an environmental issue. However, currently ozone depleting gases are still used as refrigerants.

Nevertheless there is still a significant ozone hole in the Antarctica region. New Zealand is one of the countries worst affected by depletion of the ozone layer because it lies on the outer edge of the Antarctic ozone hole. The intensity of summertime ultraviolet in New Zealand is very high compared with other mid latitude locations.

References.

1. United Nations Environment Programme (2000), The Montreal Protocol on Substances that Deplete the Ozone Layer, <http://ozone.unep.org/pdfs/Montreal-Protocol2000.pdf> (accessed June 2011).
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