

MAJOR GREENHOUSE GASES						
Greenhouse Gas	Chemical Formula	Pre-Industrial Concentration	Recent Concentration (parts per billion)	Atmospheric Lifespan	Anthropogenic Sources	*Global Warming Potential (100 years)
Water Vapour	H <sub>2</sub> O (gas)	Poorly understood	Poorly understood (but increasing due to climate change and increasing air travel?)	Days	Climate change (i.e. warmer troposphere can hold more water vapour), but also due to methane breakdown in atmosphere, aircraft etc.	N/A
Carbon Dioxide	CO <sub>2</sub>	280 (parts per million)	386 (parts per million)	~100 years	Fossil Fuel Combustion Land Use Conversion Cement Production	1
Methane	CH <sub>4</sub>	700 (parts per billion)	1742 (parts per billion)	12 years	Fossil Fuel Rice Paddies Landfill Waste Livestock	25
Nitrous Oxide	N <sub>2</sub> O	270 (parts per billion)	321 (parts per billion)	114 years	Fertilisers Combustion Industrial Processes	298
Tropospheric Ozone	O <sub>3</sub>	25 (parts per billion)	50 (parts per billion)	Hours-days	atmospheric pollutants, such as those from biomass and fossil fuel burning, lightening	N/A
CFCs	CFCs	Zero (parts per trillion)	241 (parts per trillion)	Tens to hundreds of years	Aerosols, refrigerants	4750 – 10,900

\*All greenhouse gases have a Global Warming Potential (GWP). This value is used to compare the abilities of different greenhouse gases to trap heat in the atmosphere. GWPs are based on the heat-absorbing ability of each gas relative to that of carbon dioxide (CO<sub>2</sub>). Conventionally, the GWP of CO<sub>2</sub> is 1. The GWPs of other greenhouse gases are then measured relative to the GWP of carbon dioxide. Other greenhouse gases have much higher GWPs than CO<sub>2</sub>, but because their concentration in the atmosphere is much lower, CO<sub>2</sub> is still the most important greenhouse gas, contributing about 60% to the enhancement of the greenhouse effect.

GWPs can also be used to define the impact greenhouse gases will have on global warming over different time periods. These are usually 20 years, 100 years and 500 years. For most greenhouse gases, the GWP declines as the time period increases. This is because the greenhouse gas is gradually removed from the atmosphere through natural processes, and its influence on the greenhouse effect declines. Some of the CFCs however, have long atmospheric lifetimes, and the 100-year GWP may be greater than the 20 year GWP.

**Table compiled using data/information from:**

[http://cdiac.ornl.gov/pns/current\\_ghg.html](http://cdiac.ornl.gov/pns/current_ghg.html)

<http://www.global-greenhouse-warming.com/global-warming-potential.html>

<http://www.ghgonline.org/>

<http://www.climatechangeconnection.org/science/Greenhousegases.htm>