HENRY’S LAW
AND THE
CARBON DIOXIDE (CO$_2$) CYCLE

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CO$_2$ IN THE AIR

Data from US Department of Commerce National Oceanic & Atmospheric Administration NOAA Research shows:

The sudden drop in CO$_2$ mid year coincides with colder southern ocean and strong winter winds.
CO\textsubscript{2} at 386 parts per million is equal to just over one third of the first millimetre:
CO$_2$ acts to enrich all forms of sea, land, plant and animal life.
WHERE IS ALL THE CARBON ON EARTH?
Refer Prof Ian Plimer “Heaven and Earth” p412

CARBON stores in four areas of the upper mantel including:

➢ Rocks
➢ Oceans
➢ Flora & Fauna
➢ Air
What proportions does carbon represent when likened to the planets of our solar system?

Carbon in the air as CO$_2$ is a relatively small component of carbon deposited elsewhere on Earth’s surface.
HOW SOLUBLE IS CO$_2$ IN THE OCEANS?

CO$_2$ enters the ocean in three stages:
(1) as a DISSOLVED GAS
(2) then as a BICARBONATE and
(3) and finally as a CARBONATE.
The portions of each are sensitive to water pH (acid level)

It is fair to say:
“CO$_2$ is VERY, VERY, VERY, VERY, soluble in sea water.”
71% of the World’s surface is water which acts like a huge sponge soaking up then storing CO$_2$
The Carbon Dioxide which dissolves is dependent on the \( \text{CO}_2 \) concentration in the air, and the sea temperature. This is described scientifically as **HENRY’S LAW**

In essence Henry’s Law formulated in 1803 means: The quantity of a gas dissolved in a liquid at a particular temperature is proportional to the pressure of that gas above the liquid.

Similar to a glass of warming beer
And similar to the CO$_2$ dissolved in sea water

A straight line relationship between sea temperature and CO$_2$ is shown to exist by Emeritus Professor Lance Endersbee consistent with Henry’s Law. Refer http://icecap.us/images/uploads/Focus_0808_endersbee.pdf
CONCLUSION

The science fact is that the atmospheric level of CO$_2$ is always in balance with the sea temperature as postulated by William Henry two centuries ago.

It does not matter how much CO$_2$ is pumped into the air, it will always find an equilibrium concentration such as 386ppm, but always dependent on the sea temperature.