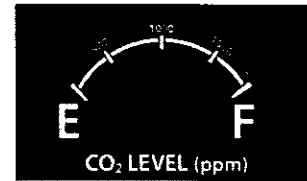


THE CO₂ DEFICIT

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On 07 December, 2007, EPA director Lisa Jackson declared that CO₂ is a pollutant . If you accept CO₂ is a pollutant, then it stands to reason that it would be desirable to eliminate all CO₂ from the atmosphere.

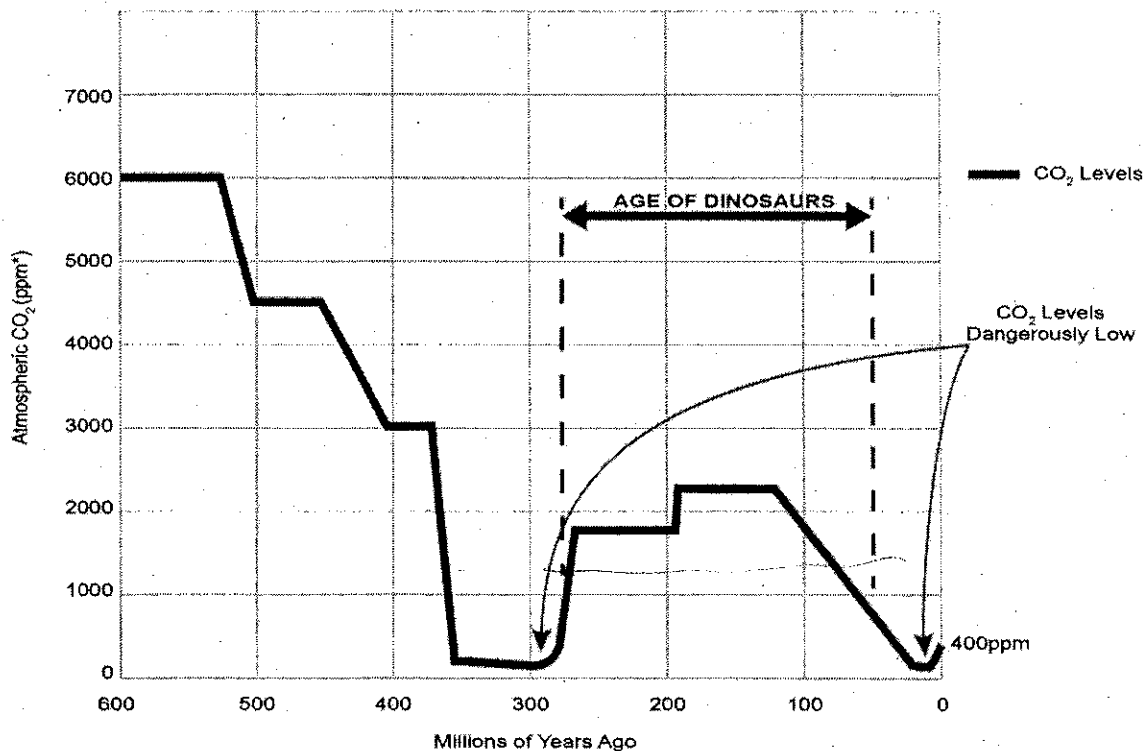
However, CO₂ is absolutely essential for plant life: No CO₂, No Plants, No Food, Death of all Humans.

CO₂ is the gas of life – when 6 molecules of CO₂ react with 6 molecules of H₂O in the presence of chlorophyll and sunlight, the plant creates 6 molecules of C₆H₁₂O₆ (glucose) and 6 molecules of O₂ without which air breathing animals could not survive. The glucose is processed to form other molecules essential for plant growth.

If CO₂ is essential for life on earth, what would be the optimum level ?

Since the Cambrian Period, 550 million years ago, when advanced multi-celled life began, CO₂ concentration in the atmosphere has averaged over 2,000 ppm. This is what plants are used to. Over the last 550 million years, there have been two drops of CO₂, either of which could have ended in mass extinction of life on Earth (Figure 1).

Figure 1: CO₂ levels for the past 600 million years (+from data by Berner & Kothavala, 2001)

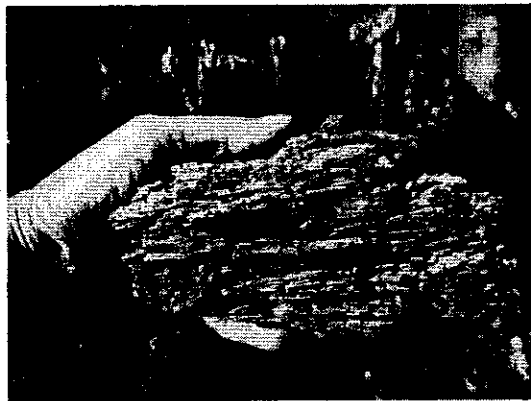


*ppm = parts per million

In the first drop, from about 400 to 370 million years ago, the probable cause was lignin formation in the wood of trees (lignin is a carbon-based polymer comprising 30% of the dry mass of wood). The trees turned some carbon into lignin, but when the trees died there was nothing that could break it down. So wood didn't decompose, but turned into coal and oil. CO₂ was sucked out of the air. Finally, at the 11th hour, about 290 million years ago, a rescuer came along. It was the white rot fungus, which used very complicated chemistry to break down the lignin and release CO₂ back into the air.ⁱ Catastrophe was averted.



Figures 2-3: Wood rot. Almost 300 million years ago, the rot fungus infested dead trees to decompose its lignite to release CO₂ back into the atmosphere. That fungus prevented extinction of life on earth as we know it today.



The second drop in CO₂ happened from about 150 to 20 million years ago. This time the probable cause was an increase in shell forming marine organisms. These made calcium carbonate compounds from carbon. When they die, nothing can decompose them and they settle at the bottom of the oceans forming limestones and marble. In the last 500,000 years, during the ice ages, CO₂ dropped to as low as 180 ppm. This was very close to catastrophe, which would have happened at about 150 ppm. It rose to about 280 ppm after each ice age (cold water absorbs CO₂, warm water releases it), but it was still dangerously low. And then another rescuer came along: us.ⁱⁱ

We have forced CO₂ up from about 280 ppm in the 19th Century to about 400 ppm now, mainly by burning coal, oil and gas. It's the best thing we have ever done for the planet. Craig D. Idsoⁱⁱⁱ, in 2007 conducted experiments showing that significantly increased CO₂ levels were very beneficial for plant growth. Figure 4 shows the amazing improvement in plant growth when the CO₂ concentration was increased from about 200 ppm to 750 ppm.

Recent research at Boston University has shown that as a direct result of increased atmospheric CO₂ over the past 30 years, there has been a 14% increase in green vegetation on earth – in all vegetation types, from tropical rainforests to arctic tundra. (Global Greening up exponentially due to CO₂ increase)^{iv}

Figure 4: Growth of common houseplant at 196 ppm and 752 ppm above the atmosphere's current CO₂ concentration.

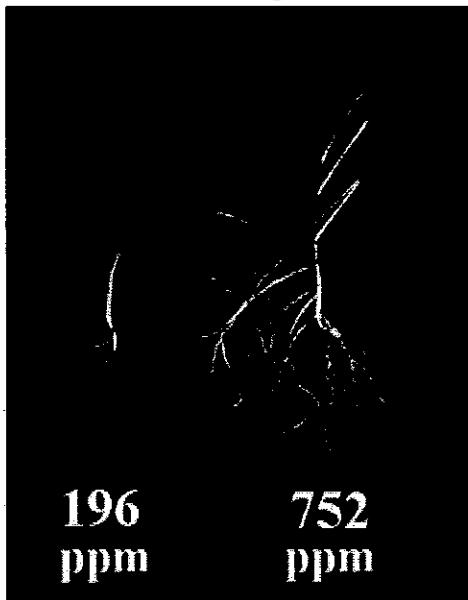
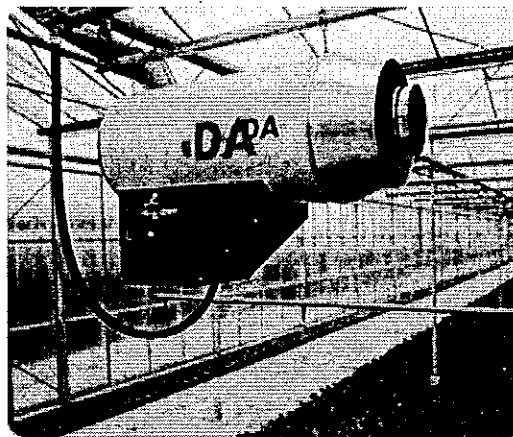


Figure 5: Greenhouse CO₂ generator to boost CO₂ concentration to 1,500 ppm

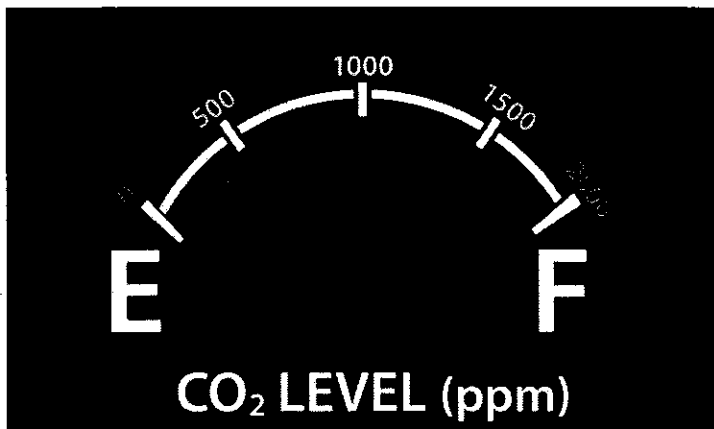


Patrick Moore¹¹ has determined that the optimum level of atmospheric CO₂ to provide abundant food for the world's expanding population should be 2,000 ppm.

It is interesting to note that previous CO₂ alarmist, James Lovelock (originator of the Gaia hypothesis), reversed himself about 10 years ago and now supports increased use of fossil fuels to potentially help mitigate the effects of the next ice age. This action was also proposed in 1900 by the first proponent of CO₂-linked global warming, Svante Arrhenius (Nobel Prize in Chemistry 1903).

The present 400 ppm CO₂ concentration appears, therefore, to be too low in historical terms, and the present CO₂ deficit can symbolically be presented by comparison to a fuel gauge as in Figure 5.

Figure 5: Moore CO₂ atmospheric fuel gauge



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ⁱ Source: (28 June 2012). *Tracking the Remnants of the Carbon Cycle: How an Ancestral Fungus May Have Influenced Coal Formation*. https://jgi.doe.gov/news_12_06_28/

ⁱⁱ Source: Moore, Patrick (15 Oct 2015). *Patrick Moore: Should We Celebrate Carbon Dioxide?* <https://www.thegwpf.org/patrick-moore-should-we-celebrate-carbon-dioxide/>

ⁱⁱⁱ Source: (Accessed 2018, April 11). *Plants Need CO₂. CO₂ is Green... and Green is Good!* <http://plantsneedco2.org/default.aspx?MenuItemID=103>

^{iv} Source: Ridley, Matt (23 October 2016). *Global Greening Up Exponentially Due To CO₂ Increase: Green is a bigger effect than warming*. <https://www.infowars.com/global-greening-up-exponentially-due-to-co2-increase/>