

# What is Carbon Dioxide (CO<sub>2</sub>)?

## Climate Change ? < Global Warming ?

as an explanatory Addendum to Our Website  
[www.chromtech.net.au/blogs-m5.htm](http://www.chromtech.net.au/blogs-m5.htm)

for the edification of “pseudo” scientist, the Media and non-chemists of the IPPC and the 97-100% “consensus” of “climatologists” who apparently don’t know the difference between Carbon (C12) and CO<sub>2</sub>) and What pollution actually is !

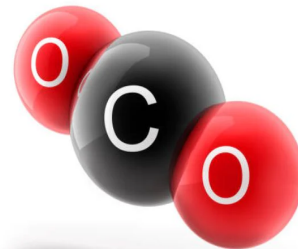
“Cause and Effect” > CO<sub>2</sub> does contribute to Global Warming insignificant as it appears to be Historically temperature rise precedes CO<sub>2</sub> increase in the atmosphere !

Computer models have ignored water vapor(H<sub>2</sub>O) and effect of Clouds in and potentially a multi-variant highly complex on-going expensive “hypothesis” effecting World-wide economies now but more-so in the future through Energy Crises restricting CO<sub>2</sub> emissions both in Industry and Domestic mainly caused by the use of fossil fuels for Energy since the Industrial Revolution dating back to the mid 1700s.

Il-defined average Global temperatures have understantably been increasing cyclic pattern roughly in sync with CO<sub>2</sub> mid 1900s exacerbated by many (World) Wars and the Atomic Bomb scourge of the ‘50-’70s and Not insignificant volcano eruptions and other more cyclic “Natural” Climate events Since the ‘70 there has in fact been a dramatic increase in CO<sub>2</sub> levels from 300 to current 415ppm levels causing alarm by environmentalsts in particular

despite global temperatures over recent centures being of the order +0.8C per 100years similar to that for past 1000years including intermediate mini-IceAges and Medieval Global Warming Current temperatures have stabilised perhaps ameliorated by CO<sub>2</sub> emissions reduction since by strict control on use of fossil fuels ( Coal and Gas ) altho’ NOT by actual CO<sub>2</sub> data increases Inavertant use of Computer modelling proven to be suspect has led to a “consensus” of “experts” sspured on by “alarmists” (“vested” interests) ( Al Gore , Tim Flannery and the juvenile “upstart” Greta Thunberg) to misinnerpret current data with prehistoric climate “proxy” extrapolations into what has become a Global “Panic” situation completely uncalled for but promoted by the UN via the IPPC a disjointed “consortium” of a “gaggle” of experts, headed by insecure bureucrats directed by Govts or even “despots” themselves infiltrated into a vey marginal Organisation

## What is Carbon Dioxide (CO<sub>2</sub>)?



### What is Carbon Dioxide?

Carbon dioxide is a vital gas that surrounds us, invisible and scentless. It consists of one carbon atom and two oxygen atoms.

CO<sub>2</sub> typically exists as a gas, but it can transform into liquid under pressure or solidify into dry ice at frigid temperatures below -109°F (-78°C).

This ubiquitous gas plays a significant role on Earth. While the exchange between air and sea primarily governs global CO<sub>2</sub> levels, human breath affects indoor concentrations more directly. Sea Temperature rise ??? via undersea volcanos Tectonic Plate Shifts not understood El Nino T Linja; Pacific Decadal Oscillations (PDO)

### So ? Is Carbon Dioxide Important? Certainly > “the Gas of Life” >

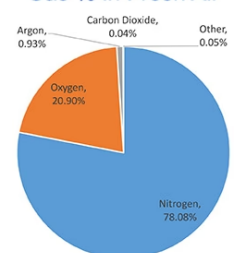
Carbon dioxide, a vital component for life on Earth, comprises a mere 0.04% of our atmosphere. It plays a crucial role in plant respiration, fueling their growth and energy production through the utilization of sugars and oxygen.

As humans and animals inhale oxygen and exhale CO<sub>2</sub>, plants perform the opposite exchange: absorbing carbon dioxide while releasing life-giving oxygen. This intricate process forms the foundation of the carbon cycle that sustains all living beings and is the foundation for all life on earth.

When we breathe out, our exhaled air contains approximately 3.8% or 38,000ppm (parts per million) of carbon dioxide. However, due to rapid mixing with the surrounding air and effective ventilation systems, these levels are quickly reduced to harmless concentrations.

Indoor CO<sub>2</sub> levels typically range from fresh air at 400 ppm (0.04%) to 2,000 ppm (parts per million). Outdoor environments usually maintain around 400 ppm; however, human activities such as power plants and transportation can elevate CO<sub>2</sub> levels in densely populated areas by up to 5-15%, depending on various factors like time of day or season.

Gas % in Fresh Air



# What is Carbon Dioxide (CO<sub>2</sub>)?

## What is Carbon Dioxide mainly used for?

Carbon dioxide, a versatile gas, has various applications across industries. It is transformed into a liquid and stored in high pressure tanks for transport. These CO<sub>2</sub> tanks are then utilized in numerous sectors.

For example, the fertilizer industry relies heavily on carbon dioxide for urea production, a vital component of nitrogen-based fertilizers. Additionally, the oil and gas sector employs CO<sub>2</sub> for enhanced oil recovery. Other commercial uses include food and beverage manufacturing, metal fabrication, HVAC cooling and refrigeration systems, fire suppression techniques, and promoting plant growth in greenhouses.

Of course, tanks or cylinders of compressed CO<sub>2</sub> is used by every restaurant and brewery to add the "fizz" to our favorite beers and soft drinks

## How do we create CO<sub>2</sub> on a commercial scale?

Commercial quantities of carbon dioxide are obtained as a by-product during the industrial manufacture of ammonia, alcohol and fertilizers. While not as common, it can also be removed directly from fresh air.

Once CO<sub>2</sub> is generated and purified, it is compressed from a gas into a liquid at [5.1 atmospheres pressure](#) (5.2 bar; 75 psi), and kept at a temperature below 31.1 °C (88.0 °F) (the [critical point](#)) and above -56.6 °C (-69.9 °F) to maintain its liquid state.

# What is Carbon Dioxide (CO<sub>2</sub>)?

## Is CO<sub>2</sub> a Major Pollutant? **NO !**

[Learn more about the chemical properties of carbon dioxide.](#)

Absolutely not! Carbon dioxide, often referred to as CO<sub>2</sub>, is far from being just any pollutant. In fact, it plays an indispensable role in sustaining life on our planet.

However, here's the fascinating part: while carbon dioxide may not be classified as an indoor air pollutant per se, its levels can serve as a crucial indicator of something much more concerning - the presence of dust, pollen, mold, VOCs (volatile organic compounds), and even airborne micro-organisms like germs and viruses that have a detrimental impact on our air quality.

The higher the concentration of CO<sub>2</sub> in a room or space, the less fresh and clean the air becomes. When CO<sub>2</sub> levels start to rise significantly indoors, things can take a turn for the worse. People begin experiencing constant fatigue; headaches become their unwelcome companions; and there's even this unsettling feeling of sickness creeping up on them. Carbon dioxide itself isn't directly responsible for these issues until its levels reach around 2,000ppm (parts per million).

The next time someone questions whether CO<sub>2</sub> truly matters as a pollutant or not, keep this in mind: although it may not be solely accountable for all our indoor troubles, it certainly serves as an alarming signpost pointing towards potential hidden dangers lurking within our precious air! Remember that maintaining optimal indoor air quality is vital for your well-being. By monitoring carbon dioxide levels alongside other pollutants using [indoor CO<sub>2</sub> monitors like these](#) - which provide accurate real-time data - you can proactively ensure healthier living spaces free from harmful contaminants.

So appreciate carbon dioxide for what it truly represents - an essential component of Earth's atmosphere that contributes to maintaining temperature zones suitable for life.

## What Are Typical CO<sub>2</sub> Levels?

[Learn more about indoor air quality here.](#)

Organizations and authorities all over the world have established recommendations for the maximum permitted concentration of carbon dioxide and/or permitted minimum air flow in occupied buildings:

**400-420 ppm** - Common outdoor concentration in fresh air worldwide.

**400-800 ppm** - Risk for over-ventilation indoors when occupied (too much fresh air = energy wasted)

**800 ppm** - Target CO<sub>2</sub> levels by commercial HVAC companies. It is also a maximum permitted concentration for offices in California. It corresponds to an airflow (a need of fresh air) of about 10 liters/second per person.

**1,000 ppm** - [The American Society of Heating, Refrigerating and Air-Conditioning Engineers \(ASHRAE\)](#) recommended maximum carbon dioxide concentration in a closed room. It is also a recommended as the maximum comfort level in many other countries, i.e. Sweden and Japan. It corresponds to an airflow (a need of fresh air) of approximately 7 liters/second per person.

**2,000 ppm** - According to many investigations this level of CO<sub>2</sub> produces a significant increase in drowsiness, tiredness, headache and a common discomfort. Try reducing your CO<sub>2</sub> levels indoors by opening windows, analyzing your air quality and checking your indoor ventilation.

**5,000 ppm** - Maximum concentration during an 8-hour working-day according to OSHA, ASHRAE and many EU countries.

**50,000 ppm (5%)** - The level at which CO<sub>2</sub> is hazardous to human and animal life.

## Is Carbon Dioxide Harmful to Humans? **NO! 150ppM to 2000ppM**

**Carbon dioxide** gas plays a vital role in our atmosphere. It is one of the most abundant greenhouse gases and contributes to climate change. However, when it comes to human health, carbon dioxide can have both minimal toxicity by inhalation and more significant effects as an asphyxiant.

As experts in this field, we want to emphasize that while carbon dioxide is minimally toxic when inhaled at normal atmospheric concentrations, it can become harmful in high concentrations within enclosed spaces. This is because CO<sub>2</sub> acts as an asphyxiant, which means it reduces or displaces the normal oxygen levels in breathing air.

It's important to note that the primary health effects caused by carbon dioxide are due to its behavior as an asphyxiant rather than its direct toxicity. In other words, inhaling small amounts of CO<sub>2</sub> won't cause immediate harm; however, if you find yourself in an enclosed space with elevated levels of carbon dioxide for a prolonged period of time, it can lead to oxygen deprivation and potentially dangerous consequences.

To better understand how carbon dioxide affects us on a physiological level, let's dive into some science. When we breathe in air containing CO<sub>2</sub> from sources such as combustion processes (like burning coal) or even our own exhalations (as we naturally release CO<sub>2</sub>), our bodies work efficiently to remove excess carbon dioxide through respiration. The respiratory system helps maintain the balance between oxygen intake and carbon dioxide elimination. However, if there is too much CO<sub>2</sub> present or inadequate ventilation occurs within a confined area like a closed room or vehicle without proper airflow exchange with fresh outdoor air - then problems may arise.

Signs such as dizziness, shortness of breath, confusion or disorientation could indicate increased levels of carbon dioxide affecting your body's ability to receive enough oxygen.

For more information on this topic, you can refer to reputable sources such as Wikipedia, Britannica, NASA, or even scientific journals like PubChem or NCBI. Understanding how carbon dioxide works and its impact on human health is an important part of learning about climate change and the overall well-being of our planet.

## To Animal Or Plant Life **NO!**

**CO<sub>2</sub> IS The Elixir of Life ! > PLANT Food ! via Photosynthesis CO<sub>2</sub> > Sugars**

**Humans expire ~40,000ppM (breath )**

# What is Carbon Dioxide (CO<sub>2</sub>)?

## What are the symptoms of too much Carbon Dioxide?

- Headaches
- Nausea
- Dizziness
- Shortness of Breath
- Asphyxiation
- Increased heart rate and blood pressure
- Convulsions

Shop Now: CO<sub>2</sub> Monitoring

**Many Simple Devices ! > from Chromtech  
but seek Advice IF deemed necessary !**

## Is Carbon Dioxide the same as Carbon Monoxide?

CO<sub>2</sub> must not be confused with carbon monoxide (CO), a very toxic gas that is a by-product from poor combustion (cars or fireplaces, for example). Carbon monoxide is dangerous at very low concentrations (25 to 50 ppm).

[Learn more about the difference between carbon dioxide and carbon monoxide here.](#)

## How do I Monitor Carbon Dioxide Levels?

### Indoor !

Typical Accuracy is a bit ambiguous ?

Specs +/- 40ppm

Some devices are multi-functional  
eg O<sub>2</sub> Levels

Temp/humidity  
even particulates in air



#8610C

**Still need Help? Talk to an Expert !**

**Laboratory > Detail & more Accuracy !**

**SRI GC**

**Real > multicomponents**

**H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub> CO<sub>2</sub>, CH<sub>4</sub> Methane Water and C<sub>1</sub>-C<sub>6</sub> HCs requires Gas Chromatography .**

**Chromtech distributes GCS from**

**SRI GCs.com in Australia MG#5**

**Thermal Conductivity Detector (TCD)**

**/ Gas Sampling Valves built-in !**

**Accuracy +/- 3 to 4% 100ppm to 100%**

**Is Carbon Dioxide the same as "Carbon" (C<sub>12</sub>) ? ! some "experts don't seem to even know !**

**NO ! it is Graphite > Diamond > & Soot /particulates > like London > Indian "smog" > that's deadly !**

**1/3 of the World still burns "Cow dung" for basic Energy ! HELLO The UN > ICPP where are YOUR priorities ?**

**CO<sub>2</sub> Is NOT Pollution ! any 'scientists' should Know that ! but they're NOT necessarily "Chemists" either !**

**- proverbial "Smoke Stacks" emit mainly Water Vapor > particulates are filtered out**

**and CO<sub>2</sub> but a few % . . . but still globally "millions of tonnes" ! ( & ONLY ~10% of Natural CO<sub>2</sub> emissions ! )**

**Monitoring carbon dioxide levels !** in your home YES ! It is essential to ensure indoor air quality and to prevent potential health issues related to high CO<sub>2</sub> concentrations. These are just a few solutions to monitoring carbon dioxide in your home:

1. **Carbon Dioxide Monitor:** Purchase a standalone carbon dioxide monitor that can analyze and detect high CO<sub>2</sub> levels in indoor air environments. These devices are readily available online or at home improvement stores. They typically display real-time CO<sub>2</sub> levels and may have
4. **Smart Thermostats:** Some modern smart thermostats also include environmental sensors, including CO<sub>2</sub> monitoring. They can adjust heating, ventilation, and air conditioning (HVAC) settings based on the indoor air quality.
5. **DIY Solutions:** For a more hands-on approach, you can even build a DIY carbon dioxide monitor using an Arduino or Raspberry Pi board and a [CO<sub>2</sub> sensor](#). However, this approach requires some technical knowledge > a **learning curve !**.

**How Do I Know if My CO<sub>2</sub> Monitor is Working?** but you skeptic!s would you actually trust LED displays ?

A simple test is to take your CO<sub>2</sub> monitor outdoors for several hours. It should read approximately 400 ppm. Note that because different CO<sub>2</sub> sensors have different accuracy ratings, low-cost CO<sub>2</sub> monitors will read a bit higher or lower than 400ppm.

Another test is to simply blow on your CO<sub>2</sub> monitor. because human breath is approximately 3.8% CO<sub>2</sub>, you should see the monitor immediately spike when you blow.

Also, remember to place the CO<sub>2</sub> monitor in a central location where you spend most of your time around 4-6 feet above the floor and away from drafts or direct heat sources. Regularly check and calibrate the device according to the manufacturer's instructions for accurate readings. ( at best +/- 40ppm for an ambient of ~ 400ppm ), but Spec "readability" of 1ppm is **Nonsense !**

Monitoring carbon dioxide levels in your home can help you identify when additional ventilation or air purification is necessary to maintain a healthy indoor environment. If you notice consistently high CO<sub>2</sub> levels, it's essential to identify the source of the excess CO<sub>2</sub> and take appropriate measures to mitigate it.

**Really !** Only proper **Analytic instrumentation** is definitive ! GC in particular > the most effective > IF used properly +/- ~2% or 8ppm)





## What is Carbon Dioxide (CO<sub>2</sub>)?

## Laboratory Environmental Applications “CO2” Analysis !

**C02** is of main interest to Global Warming environmental impacts by environmentalists > climatologists and its's inference from Agriculture use unconventional Greenhouses hence now commonly referred to as a Greenhouse Gas in fact an "oxymoron" as the two are absolutely non-related and confused collectively by many pseudo scientistss but include elements of the media but includin meny other Scientific discipline > geologist, paleantologists, Environmental Organisations The Greenies even decision makers like the IPPC and politicians

A highly complex paradigm involving Climate Change and the principle “*GreenHouse*” *Gases*” not only CO<sub>2</sub>, but Methane(CH<sub>4</sub>), Nitrous Oxide(N<sub>2</sub>O), Water Vapor and associated Cloud effects

A “consensus” has been arrived at by the IPCC of 97to100% but of arbitrarily defined interested scientist that anthropogen man-made CO2 is driving the current Global Warming “hypothesis’

Despite Satellite measurement suggesting only minor change over the last 45 years in CO<sub>2</sub> well within natural variation over millenia

Against ALL scientific principle CO2 which has been increasing significant from ~300ppm to current 415ppm(2023) has created a “panic situation amongst “politicians to “out of control” Global Warming and the need to curb CO2 emission generally Worldwide both industrially and agriculture and even domestic use of fossil fuels. Highly exaggerated arguably as the driving force of CO2 increase

Premature restricting use of Coal and Natural Gas with accelerated toime deadlines has resulted in an “artificial” Energy Crisis” to the tune of multi tens of Trillions of \$s WW by 2050 Net Zero CO2 being regulated.

Panic has led to so-called Renewable Energy sources of Solar and Wind power as Alternatives > now proving > NON-sustainable, non economic due to installation cost, agricultural land use but also the necessary back-up batteries requires and the necessary Electricit Grid expansion and upgrade

**Many false assumption are inbred into the “controversy “**

Computormodelling is demonstrably “flawed” oversimplified and leads to grossly exaggerated catastrophic predictions to even” Life-on-Earth”

Most probably a “beat up” by “vested interests” added and abetted by Al Gore the disputed “Mann Hockeystick” argument and the hysterics of a juvenile Gretta Thunburg. The media in general and politicians Worldwide are just gullible or complicit in dumbing-down “volters at the risk of being “CANCELLED” all on “arguable false pretences”

Timely R&D is still necessary to test ANY hypothesis

Satellite measurement being the obvious criteria and the main element > some “truth” distinct from current “sheer” speculation!



**SRI 8610C GC**



**a complex instrument > beyond the “consensus”**

