

Don't Dabble in Something You Don't Understand

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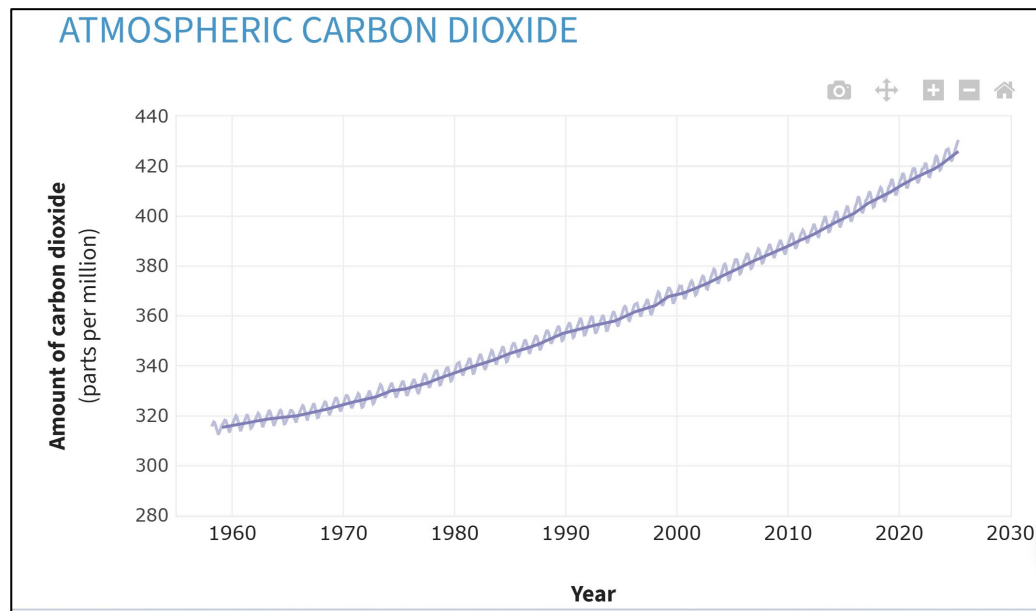
August 2026

1. Introduction

Disinformation comes in many flavors. One of them is what I say to not to do in the above title. Two potential reasons individuals ignore the title suggestion are: (1) they are really dumb, and/or (2) they are speaking to an audience that they think is really dumb.

For instance: a recent report from an influential climate scientist, Benjamin Santer and his colleagues say decades of satellite data clearly reveal the atmospheric “fingerprint” of human-caused climate change. In July 2025, however, a report issued by the US Department of Energy (DOE) cited Santer's research while arguing the opposite conclusion. I'm sure that most other readers that generally agree with the current administration will agree with the cited DOE report.

Not only did the DOE make a wrong-turn, they ignored the graphic evidence presented by other Federal employees. See Reference 1 at the bottom of this page from which the chart immediately below is an excerpt.



In case some readers don't know what NOAA is, this is the abbreviation for the National Oceanic and Atmospheric Administration, which is an agency in the U.S. Department of Commerce. Per their site:²

Our agency holds key leadership roles in shaping international ocean, fisheries, climate, space and weather policies.

¹ Rebecca Lindsey, NOAA Climate.gov, “Climate change: atmospheric carbon dioxide,” May 21, 2025, <https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide>

² <https://www.noaa.gov/about-our-agency>

2. Carbon Dioxide

Each year, human activities release more carbon dioxide (CO₂) into the atmosphere than natural processes can remove, causing the amount of carbon dioxide in the atmosphere to increase.³

The global average atmospheric carbon dioxide set a new record high in 2024: 422.7 parts per million ("ppm" for short). See the chart on page 1 of this paper for its growth over several decades.

The 2024 increase over 2023 was 3.75 ppm—the largest one-year increase on record.

Atmospheric carbon dioxide is now 50 percent higher than it was before the Industrial Revolution.

The annual rate of increase in atmospheric carbon dioxide over the past 60 years is about 100 times faster than previous natural increases, such as those that occurred at the end of the last ice age 11,000-17,000 years ago.

Also note that slope of the chart on page 1 is steadily increasing the rate of carbon dioxide emission, so we haven't even started to clean up our CO₂ emissions.

2.1. Why is CO₂ Bad?

Carbon dioxide is one of many greenhouse gases. It has many natural (non-human) sources, but humans produce massive amounts for several reasons.

- (1) In case you haven't noticed, there are many humans on our planet. As of June 24, 2026, the global population is estimated to be around 8.41 billion (that's "billion" with a "b," and each billion is 1,000 million).
- (2) Modern humans (Homo sapiens) evolved in Africa about 300,000 years ago, based on fossil evidence.
- (3) Modern humans quickly discovered shortly after they evolved that burning things made life much easier.
- (4) Ever since then humans have been identifying new things to burn (starting with wood, and then peat, and then coal and lately petroleum and its products (like gasoline and diesel-fuel).
- (5) All of these "burnable substances" generate carbon dioxide when they burn, with recently discovered substances (diesel and gasoline) and modern combustion processes (internal-combustion engines) producing much more carbon dioxide and some deadly carbon monoxide (CO) than older processes and fuels.
- (6) All current internal-combustion (IC) engines vent the produced carbon dioxide (and CO) into the atmosphere as do a large majority of stationary IC engines.
- (7) Almost all fuels by volume (natural gas, coal and petroleum products) were produced millions of years ago. These are commonly called "lithic fuels."
- (8) The only good news in this litany is that lithic fuels are finite, so soon we will need to find new sources of energy, if we don't destroy our species (and most others) first.

³ <https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide>

2.2. Other Bad Greenhouse Gasses

Before I leave this recital of doom and gloom, I have a few more piece of bad news: natural gas (which is mostly methane) when released directly into our atmosphere has a much stronger “global warming potential” (GWP) than carbon dioxide. Carbon dioxide has a GWP of 1. Over 100 years, methane has a GWP of about 27–28. Methane, the primary “burnable” component of natural gas, can also be produced by many natural processes, but lithic-methane is produced by oil and natural gas wells (many such wells can produce both petroleum-liquid (oil) and natural gas).

Also, some other human-produced gasses are even stronger. Examples of refrigerant (and air conditioning) gases and their GWP:

- R22 – GWP ~1,810: about 1,810 times stronger than CO₂ over 100 years.
- R410A – GWP ~2,088: about 2,088 times stronger than CO₂.
- R134A – GWP ~1,430: about 1,430 times stronger than CO₂.
- R32 – GWP ~675: about 675 times stronger than CO₂.
- R125 – GWP ~2,800: about 2,800 times stronger than CO₂.
- R23 – GWP ~12,400: about 12,400 times stronger than CO₂

And the above is definitely NOT cool.

2.3. How Do We Reduce our Greenhouse Gas Emissions?

Message number one: it will not be easy, but the alternative (destruction of life on Earth as we know it) makes the effort REALLY worthwhile.

In order to answer the above question, I posed this query to Microsoft Bing. The following detailed response was given:

Reducing greenhouse gases requires a combination of individual actions, energy efficiency, renewable energy adoption, sustainable transportation, and protecting natural carbon sinks.⁴

2.3.1. Individual Actions

Individuals can significantly reduce emissions by using less energy, switching to renewable energy, and adopting low-carbon lifestyles. Simple steps include replacing incandescent bulbs with LEDs, improving home insulation, using smart thermostats, and reducing unnecessary electricity use

Dietary changes, such as eating less meat and dairy, can also lower your carbon footprint, as livestock production is energy-intensive and emits significant greenhouse gases

Choosing hybrid or electric vehicles and using public transport, cycling, or walking for short trips further reduces emissions

⁴ Result of a query of Microsoft Bing Browser: “How Do We Reduce our Greenhouse Gas Emissions?”

2.3.1.1. Energy and Technology

Transitioning electricity generation from fossil fuels to renewable energy sources like solar, wind, hydro, and geothermal is critical, as electricity generation accounts for a large portion of global emissions.

Improving energy efficiency in buildings, industry, and transportation—through high-efficiency appliances, LED lighting, and fuel-efficient vehicles—reduces energy demand without sacrificing comfort or productivity.

Emerging technologies, including battery storage, hydrogen fuel cells, and small modular nuclear reactors, can further support a low-carbon energy system.

2.3.1.2. Transportation

Transportation contributes significantly to greenhouse gas emissions. Electric vehicles (EVs) produce fewer emissions than conventional cars, especially as electricity grids become cleaner.

Promoting public transit, car-sharing, and active travel like walking or cycling can reduce reliance on fossil fuels

Urban planning that encourages compact, walkable communities also helps lower transportation emissions.

2.3.1.3. Land Use and Carbon Sinks

Protecting and restoring forests, wetlands, and other natural ecosystems enhances the Earth's ability to absorb carbon dioxide

Practices like afforestation, reforestation, and sustainable agriculture increase carbon sequestration and reduce emissions from land use changes. Avoiding deforestation and promoting soil health are essential for maintaining these natural carbon sinks.

2.3.1.4. Policy and Community Actions

Systemic change requires coordinated policies at local, national, and international levels. Governments can incentivize renewable energy, enforce emissions standards, and international agreements, such as the Paris Agreement, aim to limit global warming by reducing greenhouse gas emissions collectively.

2.3.1.5. Key Takeaway

Reducing greenhouse gases is a multi-faceted effort involving personal choices, technological innovation, sustainable land management, and policy interventions. By combining these strategies, we can slow climate change, protect ecosystems, and create a more sustainable future for all.