

Climate at a Glance: Ocean Acidification

Bullet-Point Summary:

- **Ocean water is naturally alkaline and a long way from turning acidic.**
- A pH of 7 is neutral. A pH **below 7 is acidic**, while a pH **above 7 is alkaline**.
- The pH of the **oceans average 8.1**, and range from 7.8 to 8.5. By comparison, rainwater is “acidic,” averaging 5.6.
- **Since** the beginning of the Industrial Revolution in **1850**, according to models, the pH of surface ocean waters **has fallen by merely 0.1 pH units**.
- **Ocean health is improved, rather than harmed, by more carbon dioxide.** CO₂ is a phytoplankton food that forms the foundation of the marine food chain. Also, studies show marine life thrive and enhance their growth in elevated CO₂ conditions.

Short Summary:

Science and media outlets claim Ocean Acidification¹ is happening due to increased carbon dioxide in the atmosphere. But objective data show the ocean is far from acidic.

A pH of 7 is considered neutral, with anything below 7 considered acidic. Ocean pH averages 8.1, which is alkaline rather than acidic. Although climate models suggest the ocean’s surface pH may have dropped from pH 8.2 to 8.1 since 1750, that change was *never actually measured*. The pH drop is merely a modeled conjecture.² The concept of pH was [first introduced by in 1909](#), and agriculturalists first [developed field instruments to measure pH](#) in the 1930s.

A new white paper³ from scientists at the CO₂ Coalition, [Ocean Health – Is there an “Acidification” problem?](#), documents that ocean health is improved rather than harmed by more carbon dioxide. CO₂ is phytoplankton food that forms the foundation of the marine food chain. Also, studies show marine life thrive and enhance their growth in elevated CO₂ conditions.

The reality shown in Figure 1 is that with an average pH of 8.1, the oceans are a long way from actually turning acidic, but using the word “acidic” instead of more neutral in media reports sounds scarier for the cause of climate alarmism.

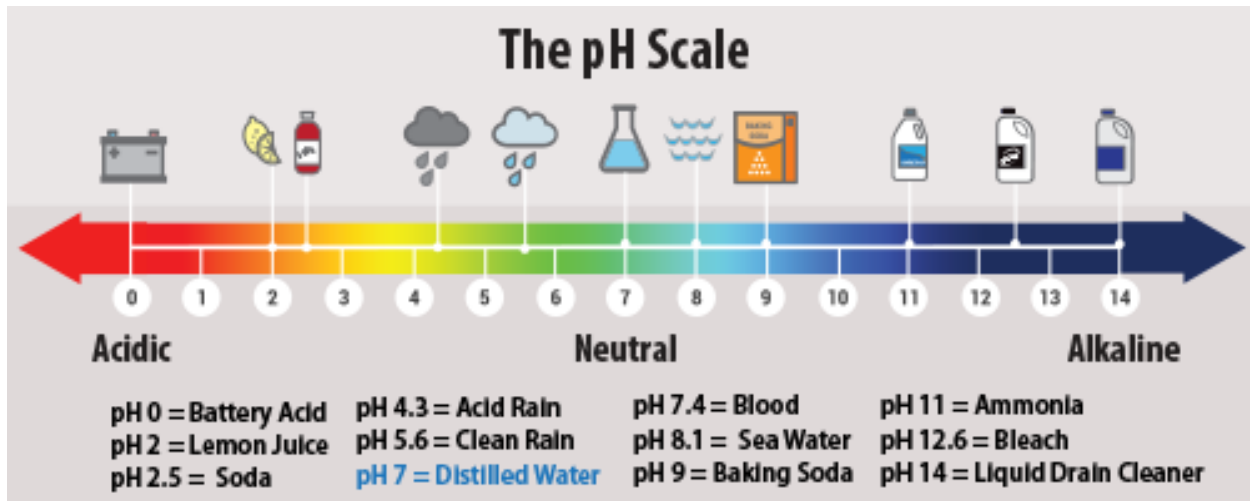


Figure 1: Comparison of the pH of common substances. Data source: U.S. Environmental Protection Agency [website](#).

Further reading:

1. *What is Ocean Acidification?* National Oceanic and Atmospheric Administration, Pacific Marine Environmental Laboratory
<https://www.pmel.noaa.gov/co2/story/What+is+Ocean+Acidification%3F>
2. Caldeira, K. & Wickett, M.E., (2005) Ocean model predictions of chemistry changes from carbon dioxide emissions to the atmosphere and ocean. *Journal of Geophysical Research*, vol. 110. <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2004JC002671>
3. *Ocean Health – Is there an “Acidification” problem?* The CO2 Coalition, May 1st, 2020
<http://co2coalition.org/wp-content/uploads/2020/06/Steele-Ocean-Health-White-Paper-final-5-28-20.pdf>

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