Editorial
Volume 12:4, 2021

Chemical Sciences Journal

ISSN: 2150-3494 Open Access

Editorial on Chemical Oceanography

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Editorial

Chemical oceanography is a comprehensive and complicated study of how chemicals in seas, living marine organisms, and the ocean floor change over time. The ocean is full of chemicals, some of which are natural and others which are man-made. These chemicals find their way into the sea in a variety of ways. Weathering of rocks or soils, industrial sources such as irrigation, power plants, or manufacturing facilities, and emissions from surrounding towns and cities are all examples of this. Ocean mining, the shipping industry, and petroleum production are all possible sources of chemicals entering the ocean. The introduction of chemical waste into ecosystems that aren't designed to hold such pollutants will result in an increase in toxic elements in the environment. Chemical waste in an ecosystem produces a hazardous atmosphere for the animals that live there. 47 percent of the oil contained in the ocean entered naturally, steadily seeping in through a gap in the sea floor. This suggests that the remaining 53% entered in an abnormal and human-caused manner. Chemical oceanographers may use these measurements to forecast and draw conclusions about the planet. They know everything there is to know about the ocean's cycles, patterns, and chemical interactions. We can make assumptions about what the ocean was like millions of years ago or how it would be in the coming centuries using this information.

Carbon dioxide levels in the atmosphere affect Earth's surface temperature and are an important part of the carbon cycle. Carbon is found in all living beings and the fossil fuels that they will evolve into. The ocean has a large carbon reservoir, many times the size of the atmospheric reservoir, that can significantly alter CO_2 levels in the atmosphere.

Understanding the climate system's natural variability is critical for assessing where the current climate has strayed from its normal range. Since thermometers, rain gauges, oceanographic research vessels, and satellites have only been widely used for less than a century, the only way to recreate climate is to use ocean and lake sediment cores, ice cores, tree rings, coral, and other similar sources. When the oxygen content in the ocean is depleted, chemical reactions shift drastically and are aided by a special group of microbes. The most common example is in ocean sediments, which serve as the primary nitrate sink after organic matter diagenesis depletes oxygen. Other examples include ocean oxygen minimum zones and anoxic basins such as the Black Sea.

How to cite this article: Alberto Cavazzini. "Editorial on Chemical Oceanography." Chem Sci J 12 (2021). 229

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Received 12 April 2021; **Accepted** 18 April 2021; **Published** 23 April 2021