

H2S Alive Course Vancouver

H2S Alive Course Kelowna - H₂S or hydrogen sulfide is a significant contributor in the biogeochemical cycle of sulfur on our planet. H₂S plays a central part in the sulfur cycle of the Earth.

By reducing elemental sulfur or sulfate to hydrogen sulfide, energy from oxidizing hydrogen or organic molecules is derived without oxygen by sulfur-reducing bacteria and sulfate-reducing bacteria. At this particular time, other bacteria liberate H₂S or hydrogen sulfide from sulfur-containing amino acids. This contributes to the odor of flatulence and is also what causes the "rotten egg" odor. Like for example, the black color of pond sludge, is caused by the metal sulfides found within.

When organic matter decays under hypoxic or low-oxygen conditions such as in swamps or in ocean dead zones or in eutrophic lakes, sulfate-reducing bacterial would utilize the sulfates found in the water to oxidize the organic matter. The end result is hydrogen sulfide produced as waste. Some of the hydrogen sulfide would react with metal ions in the water. This reaction produces metal sulfides which are not water soluble. These metal sulfides, such as ferrous sulfide or FeS are usually brown or black and this contributes to the dark color of sludge

Hydrogen sulfide can be utilized as fuel by various groups of bacteria. They oxidize it to sulfate or to elemental sulfur by using nitrate as oxidant, metal oxides or dissolved oxygen.

In photosynthesis, H₂S is used as an electron donor by both the purple sulfur bacteria and the green sulfur bacteria. This ends up producing elemental sulfur. This form of photosynthesis is in truth older than the form of plants, algae and cyanobacteria. In these cases, oxygen is released and water is utilized as an electron donor.

In some mass extinctions which occurred on earth in the past, Hydrogen Sulfide has been implicated. It is believed by some that the Permian-Triassic extinction event 252 million years ago might have been caused by a large buildup of Hydrogen Sulfide or H₂S in the atmosphere.

It was indicated that the oceans were oxygen-depleted or anoxic when the organic residues from these extinction boundaries were tested. H₂S was metabolized since these oceans had species of shallow plankton. The formation of Hydrogen Sulfide can have potentially been initiated by huge volcanic eruptions. Vast amounts of methane and carbon dioxide into the atmosphere was emitted by these eruptions. The oceans were warmed up by this process that in turn lessened their capacity to absorb oxygen which would otherwise oxidize H₂S.

The ozone layer might have been depleted and the oxygen-generating plants could have been desecrated because of the increased levels of hydrogen sulfide in the ocean. This could also lead to stress. In the Dead Sea and off the coast of Namibia in the Atlantic Ocean during modern times, small H₂S blooms have been detected.