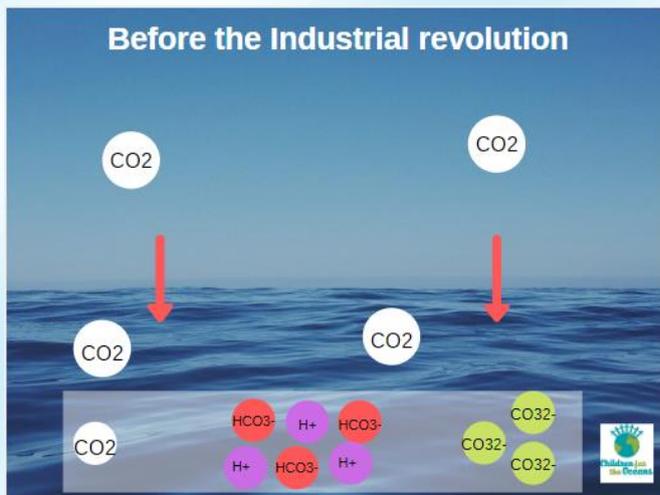


# Ocean acidification

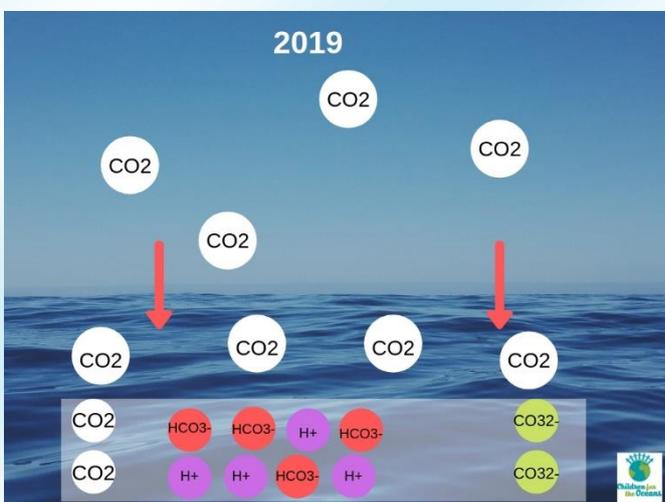
During this XIXe century period, especially the Industrial Revolution, societies started to produce goods in quantity creating uncontrolled  $\text{CO}_2$  emissions. The ocean is a regulator of the  $\text{CO}_2$  existing in the air, given that it absorbs 26% of what is released each year. An absorption in important quantity is the root of a destructive phenomenon for the marine environment: acidity. The oceans acidification has increased by about 30% for 250 years and the extent of its negative effects is not yet known.

## What is the acidification of the oceans?

Ocean acidification means that its PH decreases. At the beginning of the XXs century, PH was at 8.5/10, while it is now at 8.1/10 and may decrease at 7.8/10.



Besides, the scale is not proportional. Thus, when the PH decreases of 1%, it does not create a rise of 0.1% of the PH acidity, but a rise of 30%. During the last 300 million years, the PH level never dropped below 7.5. Therefore, if the oceans keep acidifying, the consequences could be irreversible for the marine ecosystem.



At the origin of the phenomenon: the  $\text{CO}_2$  dissolution in the ocean by chemical reactions. In the water, there are 5 components carbon dioxide, carbonic acid, hydrogen, bicarbonate and carbonate. During those chemical reactions, a higher proportion of  $\text{CO}_2$  in the water increases the proportion of bicarbonate and decreases the carbonate's one. It results in an acidification of the hydrogen since the carbonate compensate for its acidity.

### **What threats does it represent?**

The growing acidification has damages upon the marine ecosystem and some species are already impacted. Indeed, acidification mainly has consequences on crustaceans and corals. The ocean water being more acid, it is harder for them to build their shell and skeleton. To illustrate, the Vesuvius waters which are highly acid because of the volcanic eruptions are 70% less of limestone organisms than in other Mediterranean regions. Around 25% of the marine species are living in the corals and acidification could lead to their disappearance, impacting the whole food chain.