Ocean Acidification– A Severe Problem

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Problem

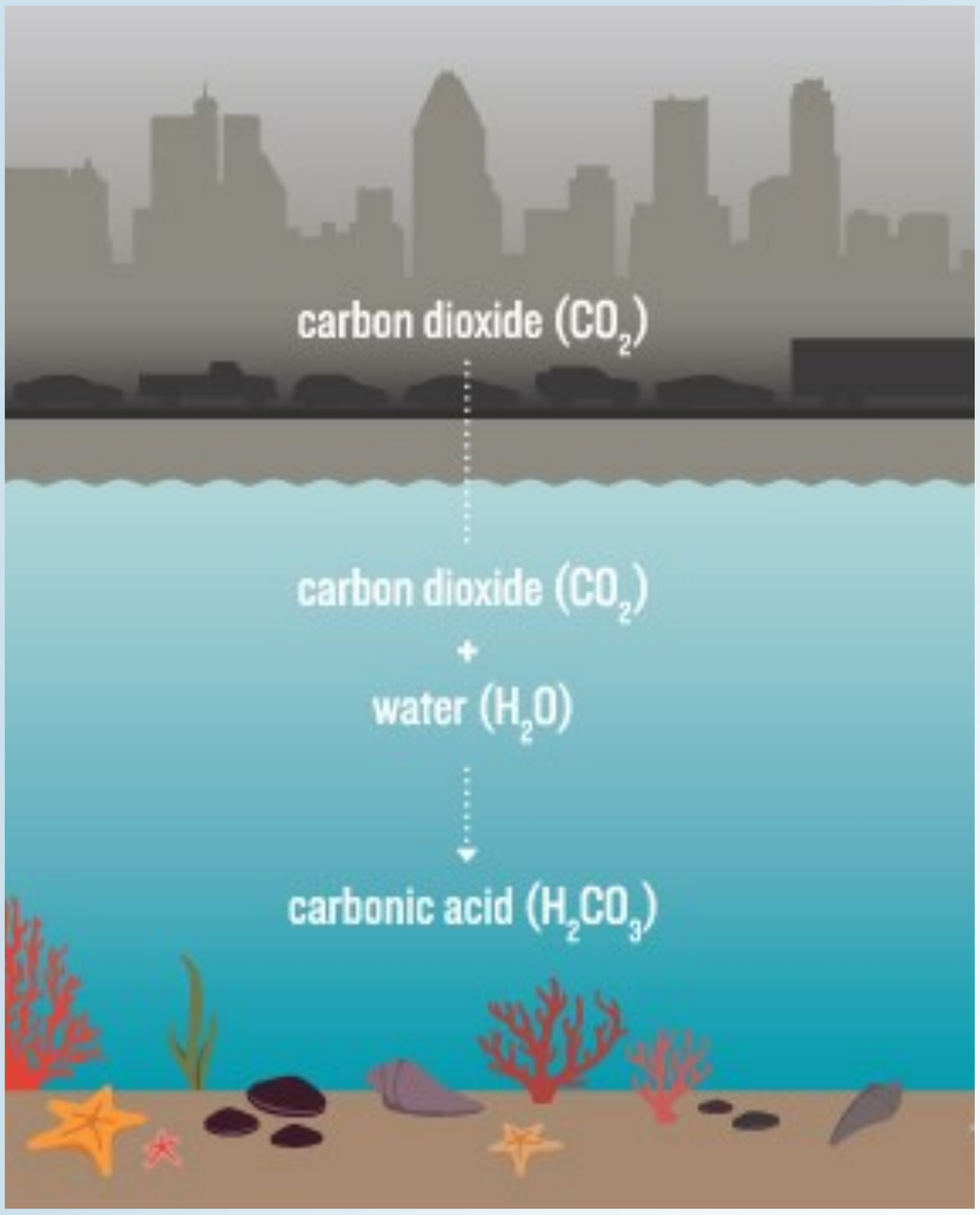
CO_2 emissions in the atmosphere and in the ocean have increased rapidly since the industrial revolution. This is because of humans and our contaminations. The CO_2 contributes to ocean acidification. Which leads to a decreased pH-value in the water. We see a special impact in the Arctic. The Arctic ocean acidification has a negative impact on sea animals and their habitats.

- How does ocean acidification affect animals in the Arctic?
- What can we do to prevent that it gets worse?

Background

The ocean has always absorbed carbon dioxide (CO_2) and chalk. It always tries to adjust its pH-balance and making it around pH 8. The CO_2 makes the pH-balance lower, while the chalk makes it higher. Today the ocean is trying to absorb chalk form the air, but it also absorbs CO_2. The CO_2 reacts with H_2O and creates carbonic acid (H_2CO_3). This lowers the pH-value and affects many animals. This is a big problem in today's society.

The ocean acidification is increasing because of global warming. The more CO_2 which is released, the more CO_2 is in the air. The pH-balance has changed for the worse by 28,8% since the 1800s. One-half of all CO_2 released since that time has been absorbed by the ocean. One third of this is in the Arctic Ocean. The Arctic Ocean is more exposed to the CO_2 emissions because the pH value already is lower than the warmer oceans.



(http://ensia.com/features/what-does-ocean-acidification-mean-for-sea-life/)
This picture shows how the ocean absorbs CO_2 and creates carbonic acid.

Conclusion

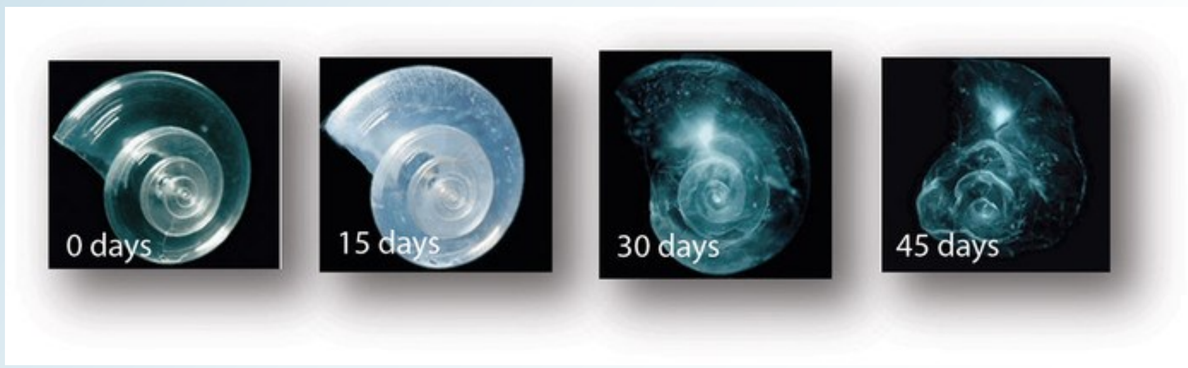
Today there are a number of issues due to CO_2. The ocean absorbs CO_2, which reacts with H_2O and forms carbonic acid. Ocean acidification causes many problems for the whole Arctic ecosystem. The planktons, shellfish and other fish have problems with survival, and species can go extinct. This may have severe consequences for the future. We all have to do something to save the Arctic species.

Impact on Animals

Ocean acidification has many negative effects on the marine life. The first problem is that the fish' hearing and the olfaction get impaired. The reason is that less chalk is provided in the ocean. The fish' senses are dependent on chalk since the systems are made by chalk and needs it to maintain the different senses. As a result the fish will struggle to survive.

Carbonic acid is created when CO_2 and H_2O react with each other. The carbonic acid weaken the shell of the shellfish, and causes it to break easily. We can compare this to the carbon acid which dissolves the enamel on the teeth, resulting in the teeth getting weaker. When the shells are weakened, the shellfish become more vulnerable. The shellfish will become more vulnerable to damages and it will be easier for other fish to eat them.

As a result some fish get higher population, while some fish can be extinct. This will have big consequences for the whole Arctic ecosystem. For example, the animal plankton is a shellfish and if this species goes extinct the whole food chain in the Arctic will be affected.

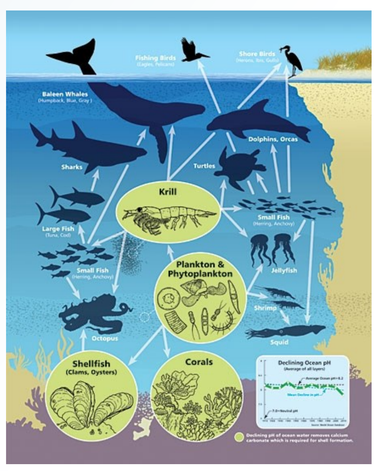


(http://www.pmel.noaa.gov/co2/story/What+is+Ocean+Acidification%3F)
This picture shows the effect ocean acidification has on shellfishes. Their shells are being desolved in only 45 days.

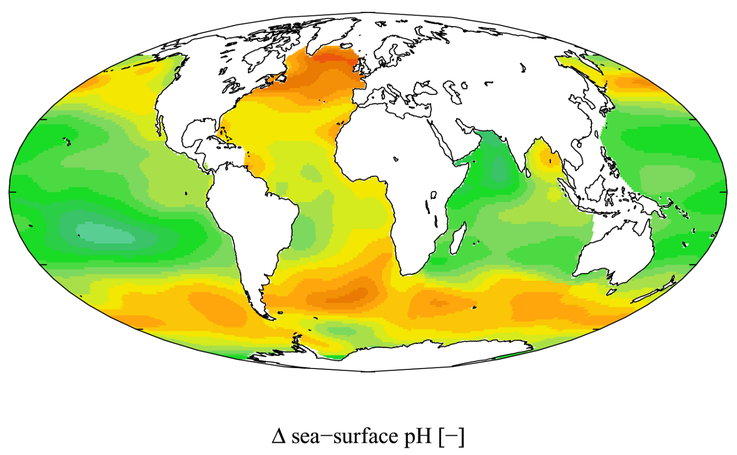
What Can be Done With Ocean Acidification?

It will be very hard to change the effect of the CO_2 in the ocean. The ocean will always continue to absorb CO_2 to adjust its pH-balance. As long as we continue to release the amount of CO_2 we do today, the ocean will never be able to adjust the pH-balance back to normal. The world must understand this, and begin to do something about it. Some countries are already doing small things to improve the circumstances. Norway has for example dumped chalk in the nearest ocean. This is helping the ocean to adjust its pH-balance back to normal. However it's not a long lasting solution, since we cannot do it to the whole ocean.

But what can we, as ordinary people, do to stop this development? Many things. We just need to make a smaller carbon footprint. Focus on the small things that make a big part of our life. Use the bicycle or walk to your job, instead of taking the car. Use public transport. Think about how much CO_2 you are releasing into the air. That is all you have to do.



(https://www.pinterest.com/pin/214554369718091672/)
A changed pH-balance will affect the whole eco-system.



(https://en.wikipedia.org/wiki/Ocean_acidification)
This picture shows just how much a problem ocean acidification is. The pH-balance are different around the world, but only a few places have a natrual balance.

Sources:

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