

MARINE POLLUTION – What solutions?

Our planet EARTH has 6 continents, 5 oceans, 7 seas...

The water cycle is a natural phenomenon that represents the journey between the major reservoirs of water, liquid or solid or water vapor on earth (oceans, seas, streams, rivers, lakes, streams, groundwater, glaciers and the atmosphere) ...

The "Sciences & Vie" magazine of April 2021 called the ocean "Blue Carbon" and in the title "Will he save our planet? a stake for the survival of our planet.

In 2020, it is estimated that the oceans have absorbed around 9 billion tons of carbon per year, i.e. more than a quarter of global emissions.

It is shown that the oceans represent 70% of the surface of the globe and that the oceans have the capacity to trap carbon dioxide.

The consequences of various types of pollution lead to global warming of our planet.

There are many types of pollution in the oceans, namely: hydrocarbon discharges, intensive fishing and plastic debris, etc.

Hydrocarbon discharges:

Worldwide, goods transported by sea represent 9.1 billion tons per year.

Oil pollution of the seas and oceans is a serious global problem.

Maritime observations by air are made by various organizations, including the French Association of Captains and Officers of the Merchant Navy and Cooperation with Shipping States (AFCAN) aim to improve safety at sea, despite everything, the pollution becomes dramatic.

World trade represents 90% by sea, i.e. 49,422 ships, tankers, container ships, cargo ships, crisscross our oceans every year.

According to experts, 3 million tons of hydrocarbons are released annually into the seas and oceans, of which 10% or 300,000 tons by ships.

90% of hydrocarbons coming from tankers or other transport on our oceans, and our seas are differentiated:

- 1- Telluric pollution = from industry and domestic = 70%
- 2- Pollution from offshore oil extraction activities 10%
- 3- Seabed pollution 10%

It should be noted that CHINA rejects 80% of their industrial waste in rivers, rivers without prior treatment.

We must remember the shipwreck off the coast of Brittany on March 16, 1978 of The AMOCO CADIZ, and ensuing damage.

The International Maritime Organization (IMO) has established a convention known as MARPOL "marine pollution"

This is the international convention for the prevention of pollution from ships. The said convention provides for a significant reduction in the quantities of hydrocarbons that can be discharged into the oceans and the seas by setting up maritime rules in February 1978, this convention was put into force only in October 1983.

Amendments were added and implemented on May 19, 2005 providing for stricter regulations.

Two main rules are:

- Prohibition of discharges or harmful liquid substances transported at sea or oceans, of water containing more than 15 ml or one tablespoon per 1000 liters of hydrocarbons.
- Reprocessing of hydrocarbons by ships, tankers, boats (cleaning the holds of ships, tankers, etc.)

Intensive fishing and in particular modern industrial fishing:

Modern industrial fishing has caused enormous CO² emissions. It is to be considered that the fishing industry receives heavy subsidies.

Hence this intensive fishing which causes a significant consumption of fossil fuels including heavy fuel oil in sulfur content.

Especially to go to distant fishing areas. As of January 1, 2020, the world fleet of ships will have to use fuel oil with a low sulfur content by 2030.

Modern fishing is trawling, i.e. weighted nets on the seabed.

It does gigantic damage in these deep seas. Marine sedimentation takes a considerable time to recover.

Also the ecosystems are slow to regenerate because of the mooring of boats...

Plastic debris:

In the oceans of the globe according to the "National Geographic 2019" it has been found:

- 5.25 trillion pieces of plastic debris
- Of which 269 tons floating on the surface.

The waste left by humans in the rivers ends up in the seas and then in the oceans, thereby destroying several species of animals and plants.

The countries most concerned rejecting plastics at sea are: CHINA, INDONESIA, PHILIPINES, THAILAND, VIETNAM, and then this waste invades the oceans from 88% to 95% .

The rivers draining this waste are: Yangtze, Indus, Yellow, Hai, Nile, Ganges, Pearls, Love, Niger, Mekong.

What solutions?

Despite the COP 26 meeting in Glasgow, no constraints were imposed on the countries present.

1st emitter of greenhouse gases CHINA, 2nd emitter the USA, the fight against global warming cannot be done without the involvement of CHINA and the USA.

Note the ecological disaster of the Beijing Olympics with all the artificial snow produced by water-based snow cannons.

According to the magazine "SCIENCE & VIE" n° 1243 – April 2021

Whose title " **BLUE CARBON: will the ocean save the planet ?**

The ability of the oceans to capture CO² is a major asset against global warming.

Protecting our oceans is therefore an essential issue for the survival of our planet.

Scientists estimate that in 2020, the oceans absorbed around 9 billion tons of carbon, more than a quarter of global emissions.

Knowing that the oceans represent 70% of the surface of the globe, they have the ability to trap carbon dioxide.

The solution proposed by scientists is to protect the 4 treasures we have

- Mangroves protect shorelines like a skin. Associations are responsible for the reforestation of these mangroves.
- Salt marshes: they have been destroyed before, it has been proven that they trap their own carbon, an experiment with salt marshes is currently being carried out in La ROCHELLE (France).
- Seagrass beds: they are home to a great diversity of flora and fauna.
- Ocean phytoplankton is made up of some 20,000 species of microscopic algae, 50,000 gigatonnes of carbon are transformed into biomass each year by phytoplankton.

Other solutions:

- Building waste boats or as in Le Havre an anti-plastic robot is used to capture marine litter, this cleaning robot called Jellyfishbot was developed by the company Ladys in Aubagne (France), it is remotely controlled and can go as far as end of the earth.
- Producing new plastics from algae like a British start-up that makes bioplastics.
- Seabed restoration
- Monitoring the oceans, the seas by drones, the Drone of STE XSUN in Guérande (France) offers its services to identify illegal hydrocarbon discharges, and monitor maritime routes or map biodiversity.
- The company Mercator Ocean International (Moi) in Toulouse (France) has a project to realize a superpowerful tool for compiling marine data in order to bring together the world's knowledge on the hydrosphere. It is a digital replica called "digital twin of an ocean" at the service of the marine ecosystem to analyze measures to mitigate the significant risks to the oceans.
- To reflect on an individual behavior, and make each individual on the planet responsible, through a criminal sanction either in terms of the environment what we can call: **the crime of ecocide.**

Two of the precepts of HIPPOCRATE :

- 1- Primum non nocere - first do no harm
- 2- Natura medicatrix - nature provides the remedy

In conclusion: A challenge for 2050, Save MARINE LIFE.

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