

Sources of water pollution and procedures necessary for the prevention of pollution (a review)

Editorial

We all know the importance of water for life on the Earth's surface it constitutes 17% of the weight of the Infant child and 60-80% of adult men and 95% of the weight of the weight of option and lettuce, and a decrease of 10-20% of the water in the human or animal body may lead to death, and the essential role of water in the industry, and that's why most industries focus on water sources, and for the production of one ton of steel or copper or synthetic rubber or paper need to between 300-2100m³ of water and the water-known role in agriculture, where necessary between 300 and 800kg of water to produce one kilogram of dry manure, and needs farms to 250's of water for the production of grain, enough to make one loaf of bread.

Sources of water pollution

I knew the problem of water pollution for a long time, one of the first historical evidence of what was described on the waters of the Nile turning to red in certain periods of the year, such as the pollution caused by the proliferation of a particular style of microorganisms at high rates and then spread over large areas, and earns some water Luna red, water is considered polluted when installing components changed or their status changed directly or indirectly, as well as what occurs to the chemical and biological characteristics that make the water unfit for drinking or for domestic consumption. So, we can conclude total pollutants water resulting from human activities as

Thermal pollution: Thermal pollution of water occurs as a result of used cooling water tossed in the electric power and plants, factories, etc., in water bodies which result in changing the physical properties of water and affected all aquatic organisms activities, and this is reflected in the animal organisms that live in the water and thus human.

Oil pollution: The phenomenon of water oil pollution is a recent phenomenon known only in the second half of the last century, and the most important of multiple causes that lead to water contamination are, oil tanker accidents, investment oil at sea, waste and oil residues that through down from oil tankers, oil refineries. And the effect of oil pollution on the water shows through the formation of an insulating layer hinder gaseous exchange between the air and the water, which makes the process of oxygen saturation difficult process affecting the life of the animal and plant organisms.

Industrial waste pollution: Water is different materials resulting from multiple industries and one of the most troubling problems faced by human pollution, and come through this dangerous.

- i. The large number of such harmful substances.
- ii. A large number of these are subject to the accumulation of substances in the bodies of living organisms.
- iii. These pollutants, especially soluble or suspended in the water adversely affect the growth and reproduction of most aquatic plant and animal organisms. These could accumulate of copper (Cu) and lead (Pb) in their bodies, which in the end will be eaten by human.

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Pesticide contamination: Despite the high-risk for the use of pesticides on trees and vegetables, especially systemic than on humans, they also began to reach the water by irrigation of agricultural soil containing pesticide residues that leaks in irrigation water.

Pollution with sewage: Accompanied by dumping sewage into water increase pollutants in this water and then the contamination of soil and groundwater as well as the negative impact on living organisms and the incidence of medical problems so preferably not exceeding sewage received in rivers from one part of the wastewater for each ratio (70) part of the river water, and this ratio can be reduced to one for each (40) If the sewage has been treated.

Pollution of fertilizer: When the use of agricultural fertilizers in random manner, a portion of this fertilizer stays in the soil and when soil containing excess fertilizers was irrigated, this section is dissolved in water and it eventually up into the groundwater and contaminated especially with cadmium (Cd). So, pollution especially Environmental by toxic metals occurs globally through industrial and agricultural processes and waste disposal.¹ The toxic HM's could also gradually accumulate in human body through food chain and cause damage to human health.²

Phosphorus contamination: The phosphorus compounds are considered as an important vehicles that pollute waterways water, it's a stable chemically compounds and keep their effects in the soil for a long time. It cannot be disposed of easily, and is characterized by its impact poison on both human and animal. Also caused increasing of the proportion of phosphorus compounds in the lake, the occurrence of algae overgrowth and other aquatic plants, as is the case of any lake can be affected by pollutants as a result of fertilizer plants, as well as any agricultural land with too much use of fertilizers.

Nitrate contamination: The presence of nitrate compounds in drinking water or in the human food could be dangerous to public health, and the pollution comes either from excessive use of fertilizers containing nitrogen or the presence of a high proportion in some plants that are used in human food. So, it's necessary to prevent water pollution through a group of measurements to keep the water in the chemical, physical and biological case so as not to cause damage to

humans and animals as well as plants. However, there are a number of tools can be used to remove such HM's, one of them was chitosan. Chitosan is largely used as a non-toxic flocculent in the treatment of organic polluted wastewater and as a chelating agent for the removal of toxic heavy and reactive metals from industrial waste water.³ Its derivative has reactive amino groups which are responsible for complex formation between metal ions and the polymer chain.

Jayathilakan et al.⁴ cited that one of the important applications of chitosan is the removal of proteinaceous matter in the food industry; its positive charge can be used for coagulation and recovery of proteinaceous materials present in such food processing operations.⁴ Pectins which can be obtained from sugar-beet pulp (SBP), as a residue of the sugar processing industry or other sources, like citrus, apple and sunflower pectins. SBP is used as animal feed at very low prices. Most of the pectins present in the SBP are high in methoxyl group and have more than 50% of methoxylated residues. Therefore, the main functional groups of pectin are: hydroxyl, carboxyl, amide and methoxyl. These functional groups have been traditionally associated to heavy metal binding, especially carboxyl groups with a great bio sorption and heavy metal removal potential.⁵ Many by-products rich in pectin such as apple waste, SBP and citrus peels have been studied for their metal binding capability (bio sorption).⁶ One other tool is Vitamin C has been reported to act as a chelating agent of Pb, with a similar potency to that of EDTA.⁷ El-Sokkary & Awadalla⁸ cited that vitamin C; in large doses could acts as a chelating agent. Also, it helps to protect animals from HM's.⁸ Also, can be used to protect animal from the environmental pollution effect and is a free radical fighter as well.

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Conflict of interest

Author declares that there is no conflict of interest.

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