

Heavy metals

Heavy metals are all metals with a density of more than 5 g / cm^3 , and less so called light metals.



Some of these minerals play an important role in the life and biological effectiveness of biology. Iron has a known importance in the composition of blood and enzymes. Manganese, zinc and copper are enzymatic catalysts, but they are toxic and dangerous in certain concentrations. The most dangerous of these minerals in the environment is that they can not be analyzed by bacteria and other natural processes as well as their provenness, which enables them to propagate far from their source sites or sources. Perhaps the most dangerous is due to the ability of some to bioaccumulate the tissues and organs of living organisms in the environment Water or land. Some heavy metals have radioactive properties, that is, they act as radioactive isotopes, so these metals will pose double risks to the environment in terms of being toxic and radioactive at the same time, as in radioactive zinc 65 and uranium 235 .

The soil is contaminated by heavy metals such as lead, mercury and cadmium, which reach the soil with waste buried in the soil, with contaminated irrigation water, or as a result of the airborne residues of these metals, which are highly toxic and highly concentrated in the tissues of plants and fruits, As it passes through the human food chain.

Radioactive pollution:

The problem of contamination of radioactive materials began to emerge after the discovery of radioactivity at the beginning of the century. The problem emerged only after 1945 when man was able to detonate nuclear bombs and hydrogen bombs. The elements of a single nuclear bomb are estimated at about 200 radiant elements. Usually to several kilometers and then fall on the ground or spread in the air and soon the atomic dust somehow leaks into the groundwater, rivers and seas . In the case of massive explosions of more than 50 megawatts (ie, the detonation force is equivalent to the detonation of 50 million tons of TNT), the resulting atomic dust may rotate several times around the Earth before all of it reaches the Earth's surface. The signing of the treaty banning nuclear explosions in the air in 1963, but it does not prevent explosions in the ground.

Pollution with pesticides:

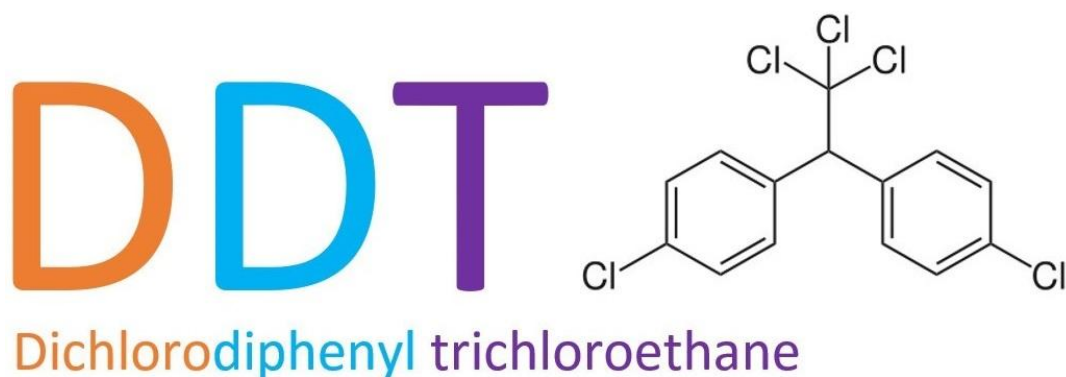
Pesticides are chemical compounds of varying toxicity injected into the biosphere to treat imbalances that have been solved. Soil without other environmental media is the main part of these toxic substances, which are used to resist agricultural pests, most important of which are insects, grasses, fungi and some other organisms Which inhabit the soil.

The ideal pesticide is the selective insecticide that affects only the pest that is used to control it without affecting its enemies from beneficial insects, which is easily decomposed in a relatively short time to non-toxic substances that are not concentrated in the food chain. In contrast, it is considered a dangerous pollutant to the environment. In fact, most pesticides are not selective in their work [15]. The danger of chemical pesticides lies in their soil survival for several years and their cumulative effect, or bioaccumulation, i.e. the transmission of toxic elements and their accumulation by the food chain. The continued use of pesticides leads to an increase in the concentration of toxic elements in the tissues of plants and agricultural crops, which are transmitted in turn to animals (cows and sheep), which feed on these crops, and then transmitted to humans by eating vegetables, fruits, meat and fish all lead to physiological damage to the organism [16]. Rain may carry these pesticides from soil to watercourses, causing extensive damage to living organisms in these environments. In some cases, these pesticides are sprayed in the fields by aircraft from the air. This method not only pollutes the soil but also leads to significant air pollution, sometimes up to 50% of the pesticide used. Excessive use of pesticides leads to loss of natural balance between pests and their natural enemies. Human beings are also affected by these pesticides. The workers working in the factories of these pesticides are affected directly by either contact, or by inhalation of their fumes, and the workers who spray these pesticides in the fields are exposed to this danger. Examples of this are many: In India, pesticide poisoning cases reached about 100 in 1958, in Syria, about 1,500 in the early 1960s, and 336 in Japan for several years. The problem with the use of pesticides is compounded by the fact that pest resistance to pesticides has increased to the extent that the pests

have acquired immunity against these types of pesticides and thus no longer die in doses that were previously lethal to them.



Insecticides include: D.D.T, the most famous and most widely known insecticide to date. DDT is chemically known as dichlorodiphenylchloroethane and was used in the Second World War as an insecticide. It has been banned in many countries such as America, Canada and Sweden because it contains toxic chlorine compounds. It is said that there is a proportion of this pesticide in the body of every human being on Earth, no matter how small.



Pollution with chemical fertilizers:



The old man used fertilizer in agriculture because it has a good effect on soil fertility and thus increase in yield. The fertilizers were of the old type of organic (ie animal residues and plant residues), which slowly decompose soil by microorganisms, resulting in soluble soluble materials , In quantities that meet the needs of the plant, and by increasing the population and expanding the agricultural area, farmers resorted to the use of chemical fertilizers containing phosphate compounds and nitrates to increase soil fertility and increase the production of agricultural crops. The excessive use of these fertilizers in excess of the actual plant needs (especially the increase in nitrogen fertilizers), a large part of these fertilizers remain in the soil, which is the part that exceeds the need of the plant. This residual part is economically prohibitive and is one of the factors of soil pollution. When irrigating this soil, part of these nitrogenous fertilizers dissolves into irrigation water until eventually reaching groundwater in the ground, which leads to many damages, including:

1 - lead to poisoning of animals that feed on plants containing excess nitrogen.

2 - The conservation of plants in the silos leads to fermentation, and thus the rise of H₂O, which affects the health of workers.

3. Nitrogen increase leads to an increase in the number of harmful bacteria in the soil, which convert the nitrogenous materials found in fertilizers into nitrates and thus increase nitrate contamination.

4. Water with more than 10 ppm of nitrate is not suitable for drinking. In case of human consumption, the bacteria in the digestive system reduce nitrate to nitrite, which in turn moves to the blood and combines with hemoglobin. Hemoglobin loses its natural ability to absorb gas Oxygen, and transferred to cells. This condition is called the case of septicemia, a serious condition that prevents the arrival of oxygen gas to the cells. These cells die, leading to the death of the organism [19] [20]

5. It has been observed that the concentration of nitrates in watercourses is increasing day by day, and in some lakes it is about to reach alarming levels. A number of lakes have lost their capacity to take drinking water and become vulnerable to nutrient saturation. Phosphate compounds in transforming such lakes into marshes where there is no life.

6. Nitrates may reach humans through canned foods, as few nitrate and nitrite compounds are used to protect them from corruption and damage, as these compounds have antimicrobial properties [21].

The increase in phosphate compounds (or phosphorus compounds) in groundwater underground has an impact on watercourses, and the increase in their proportion in these streams is affecting the lives of many living organisms living in different watercourses.

Phosphate compounds are chemically stable compounds, so their effects remain in the soil for a long time and can not be easily disposed of. These compounds also have a toxic effect on both animals and humans, and therefore their increase in waterways or groundwater from which drinking water is taken is considered unhealthy. The increase in the percentage of phosphate compounds in the lake water leads to the occurrence of a tiger plus algae and some other aquatic plants, which leads to the arrival of these lakes to the state of saturation of food, a phenomenon occurs for many lakes where the sewage, Oxygen free marshes, as well as completely devoid of fish and other living organisms.

It is clear from the above that there must be a balance between the needs of plants of these fertilizers and what is added to the soil so that the excess quantities of these fertilizers do not cause damage to the

elements surrounding the soil or the use of other substances less harmful to human health and other organisms

The risk of radioactive elements is cumulative, ie, it moves from the center to plant and animal organisms with increased concentration at each stage of its passage through the food chain. If the body or any of its members receive intermittent payments in which various damages have occurred, Radiation can affect one cell. If the affected cells are sex cells, a genetic defect can occur, which can be passed on to future generations, or the appearance of abnormalities in children born in regions that have been exposed to a source of radiation, as is the case In children Anyen who were born after the atomic bombs on Hiroshima and Nagasaki in 1945 .