THE MAIN SOURCES OF WATER POLLUTION AND THE MOST EFFECTIVE METHODS OF PURIFICATION
ОСНОВНЫЕ ИСТОЧНИКИ ЗАГРЯЗНЕНИЯ ВОДЫ И НАИБОЛЕЕ ЭФФЕКТИВНЫЕ МЕТОДЫ ЕЕ ОЧИСТКИ

Kenzhibaeva Gulmira Sovetovna - South Kazakhstan State University named after M. Auezov. Shymkent city, Kazakhstan

Abduazizov Begzod Tursunkulovich -Jizzakh Polytechnic Institute. Djizak city, Uzbekistan

Кенжебаева Гульмира Советовна - Южно-Казахстанский государственный университет им. М. Ауэзова. Город Шымкент, Казакстан

Абдуазизов Бегзод Турсункулович - Джизакский политехнический институт. Город Джизак , Узбекистан

Annotation. Environmentalists never tire of drawing public attention to the problems associated with water pollution. Industrial and domestic wastewater, agricultural chemicals poison the water, and drinking it without preliminary preparation is simply dangerous.

Keywords: Environmental pollution, natural resources, water, industry, physico-chemical properties, cleaning wastewater.

Аннотация. Экологи не устают привлекать внимание общественности к проблемам, связанным с загрязнением воды. Промышленные и бытовые сточные воды, сельскохозяйственные химикаты отравляют воду, и пить ее без предварительной подготовки просто опасно.

Ключевые слова: загрязнение окружающей среды, природные ресурсы, вода, промышленность, физико-химические свойства, очистка сточных вод.

Water purification methods are improving every year, and tap water is becoming safer for citizens. However, we must also take into account the emergence of new materials: they contain micro- and nanoparticles that are not captured by porous filtration systems.

Here it is necessary to mention where the waste water comes from. According to the information presented in the literature until now, wastewater is divided into three groups, mainly from domestic utilities (houses where people live, sanitary facilities, administrative and other buildings), production (industries and enterprises, agricultural and others) and is formed as a result of atmospheric precipitation. It should also be noted that sudden natural phenomena (strong winds, earthquakes, landslides, spills of toxic chemicals into open water bodies during production accidents, especially at NPPs) pollution of fresh water also occurs as a result of future explosions, testing of atomic and bacteriological weapons, various cataclysms occurring on the earth and in the atmosphere, etc.

Chemical pollution. Waters are polluted mainly in two ways - organic and inorganic. The main sources of organic pollution are sewage-fecal discharges of residential areas, oil wells, oil platforms in the open sea, spillage of oil and oil products into water due to accidents during the transportation of oil and oil products, livestock farm effluents, including beer and cheese making, dairy and sugar production effluents, as well as effluents contaminated with household waste. Sources of inorganic pollution include industrial waste water, water transport, snow and precipitation water, as well as water produced during irrigation of agricultural land, containing various chemical substances and fertilizers. It includes sewage, as well as water that is formed as a result of the natural washing of chemical compounds from the atmosphere. Water pollution with chemical compounds (organic and inorganic) is different from other types of pollution. Therefore, we will fully consider chemical pollution of waters. All water bodies and water sources are closely related to the environment. Various natural changes, industry, production, communal construction, transport, economy and human activities affect the generation and formation of wastewater. As a result, new, non-specific additives to the water environment that lead to deterioration of water quality (inorganic additives - mineral salts,

acid, alkali, clay particles, arsenic, cadmium, mercury, chromium, copper, fluorine compounds , organic additives - oil, oil products, organic residues, surfactants, pesticides, biogenic elements) are added. As a result, the composition of fresh and sea water changes and causes their pollution. Inorganic substances are diverse and have toxic properties. Heavy metal ions are absorbed by phytoplankton in the water and pass through the food chain to higher organized organisms. 16 mln. per year from irrigated land. Tons of salt are being washed away, polluting clean water bodies. According to the data, 300-380 mln. tons of organic matter are removed.

This, in turn, affects the natural state of water bodies and causes the death of microorganisms involved in self-cleaning. Also, surface-active substances, oils and lubricants form a thin film on the surface of water, reducing the process of gas exchange between water and atmospheric air, which, in turn, reduces water saturation with oxygen. In addition, water bodies are polluted with organic waste, causing the growth of pathogenic (disease-causing) bacteria. Physical contamination. The main reason for the physical pollution of waters is the effect of radiation on the biosphere. This, in turn, leads to a change in the natural state of the environment. Water pollution by physical means mainly occurs as a result of cooling reactors of nuclear power plants and water exposure to radiation as a result of accidents. rays are also polluted by heat, electromagnetic field and noise. As a result of heat and radioactive effects, water and atmospheric pollution are more likely to occur.

Physical pollution mainly results from the operation of thermal and nuclear power plants, as well as the noise of the city infrastructure, which affects the environment and leads to the deterioration of the ecological situation. In particular, exposure to radiation of water used for cooling nuclear power plant reactors causes radioactive damage to open water bodies.

Physical water disinfection includes boiling, sterilization, ultraviolet light, strong noise, high current, and gamma rays.

Boil water. Boiling water is not only a simple method, but also a very reliable means of water disinfection. The vegetative type of pathogenic microbes dies in 20-40 seconds at a temperature of 80 degrees. Therefore, water boiled for 3-5 minutes is considered completely neutralized. Boiling water for 30 minutes removes most spores. In this case, the water is almost sterilized, and the botulism toxin is destroyed. However, it is impossible to use this method due to lack of economic opportunity and time to boil water for mass consumption.

Sterilization of water. When sterilizing water, all types of bacteria and its spores are destroyed. One of the disadvantages of this method is that it cannot neutralize a large amount of water, moreover, during the sterilization process, the salts in the water disappear and have a negative effect on the organoleptic properties of the water, therefore, sterilized water is used in medical practice and in some enterprises.

Biological pollution. The main sources of biological water pollution include waste water from factories and enterprises, wool washing factories and medical institutions. As a result of standing water and wastewater for a certain period of time, disease-causing bacteria and viruses appear, quickly develop and multiply. This, in turn, includes bacterial contamination, which is a type of biological contamination.

The types of biological pollution are those of plant origin (vegetables, dried fruits, paper waste), animal origin (products of human and animal activities), and chemical substances (petroleum products, pesticides, and various industrial products).

It should be mentioned once again that when we described the modern methods of wastewater treatment, we asked you to pay close attention to the sequence of wastewater treatment, although the traditional methods were somewhat limited, because nowadays the methods of wastewater treatment are similar to the old traditional methods. in spite of its compactness, complexity,

expensive devices, it is characterized by high cleaning efficiency, energy efficiency and low negative consequences for the environment.

To sum up, the disinfection of waste water using ultraviolet rays requires less capital than the ozonation method, and the operating costs are reduced by 5 times. This is because 3-5 times less electricity is consumed compared to ozonation technology. Also, the advantages of this method include the fact that it does not require special-class service personnel, there is no need to organize safety measures, the composition of recycled wastewater does not change compared to oxidizing technologies, and the disinfection process of this method is correct. If it is carried out not linearly, but in an exponential direction, that is, when leaving the volume of wastewater unchanged and slightly increasing the power of ultraviolet radiation, the level of decontamination increases several times. A number of conducted studies show that radiation affecting wastewater does not cause negative consequences or changes.

REFERENCES:

1. Richard O., Mines Jr.Environmental engenering prinseples end practice. Willey Blaskwell. USA 2014.-p.667.

2. A.handbook of industiat ekologiy/edidey by Robert U.Ayres and Lesle W/Ayres.Great Britain.Cornwall.2002.

3. Environmental Enginering: Water, Wastevater Sjil and Groundvater Treatmet and Remedation Sixth Edition//Editeyby Nelson L.Nemerov, Franklin J.Agardiy, Patrick Sullivan,and Joseph A.Salvato.Nev Jersey: John Willey&Sons,2009.395p.

4. Frank Wodard.Industrial vaste treatmen handbook/USA, Butterworth-Heinemann, 2001.

5. Fundamentalals of Biologikal Wastewater Treatment. Udo Wesmann,ln Su Choi, Eva-varia Dombrowski, WILLEY-VCH Verlag Gmb H&Co. KGaA, Wtinheim.2007.-392p.