

Health risks from water

Water can have a negative effect on human health:

- Microbially contaminated.
- Chemically contaminated.
- Long-term consumption with a low content of important substances.

Chemical Contaminants

Chemical contaminants can be in water:

1. Artificial.
2. Natural – high occurrence of some elements that get into the water when passing through individual layers of the subsoil.

The organoleptic properties of water (taste, smell, temperature and appearance) are considered insignificant for health. They are usually summarized under properties that can be evaluated by the senses, the quality of which should not prevent the normal use of water. Nevertheless, the smell and color of the water can signal its heavy pollution. Poisoning by toxic substances usually occurs only in major accidents.

- **NITRATES AND NITRITATES** - They are capable of causing alimentary methemoglobinemia in infants and can be precursors of nitrosamines and nitrosamides in other population groups. According to the decree, the MH for adults and infants is 50 mg/l. The water supply complies with the limits. For individual sources, higher values are mostly due to fecal pollution.
- **HEAVY METALS** (Pb, Hg, Cd, As, ...) – May be contained in water as a result of environmental chemicalization. However, they are mostly in very small subthreshold values and therefore do not cause health problems.
- **ORGANIC SUBSTANCES** - They also occur in very small concentrations as a result of the chemicalization of the environment (pesticides) or as a result of water chlorination (trichloromethane). Many of them have a known carcinogenic effect, but it has not been unequivocally proven in connection with the consumption of drinking water.

Microbial contamination

Microbial contamination of water is very important in terms of health risk. Due to faecal pollution, many pathogenic or conditionally pathogenic intestinal microorganisms excreted in urine or faeces enter the water.

Viruses

1. Enteroviruses
 - Polioviruses
 - Coxsackieviruses – clinically diverse diseases
 - Echoviruses – summer diarrhoea of children, respiratory diseases with digestive problems, etc.
2. Rotavirus – enteritis mainly in young children
3. Viruses hepatitis
4. Papillomaviruses
5. Adenoviruses
6. Reoviruses

Bacteria

a - The originators of intestinal infections:

1. Salmonella typhi, paratyphi, enteritidis
2. Shigella dysenteriae
3. Vibrio cholerae
4. Escherichia coli (EPEC)
5. Enterococcus faecalis
6. Campylobacter jejuni
7. Cyanobacteria

Factors affecting the development of intestinal disease:

- Infectious dose (ID) – Microorganisms are diluted in water.
- The ability of the organism to survive in the aquatic environment.
- The ability of the organism to reproduce in the aquatic environment.
- Resistance to common disinfection procedures.
- Health status of the affected person.
- Age of the affected person.

b - Originators of extraintestinal infections:

1. Staphylococci and micrococci - including conjunctivitis, mild urinary and genital tract infections
2. Mycobacterium tuberculosis - the causative agent of tuberculosis
3. Francisella tularensis - the causative agent of tularemia
4. Leptospira icterohaemorrhagica - Weil's disease
5. Legionella pneumophila - the causative agent of legionnaire's disease

Parasites

1. Money changers
 - Naegleria fowleri - Cause of primary amoebic meningoencephalitis. It is often found in swimming pools and ponds, and enters a person through the nasal mucosa when swimming.
 - Entamoeba histolytica
 - Acanthamoeba - causative agent of corneal ulceration, keratitis. The affected group mainly includes immunosuppressed patients and alcoholics.
2. Vičíkovci
 - Giardia lamblia - the causative agent of giardiasis (diarrhea alternates with constipation and is accompanied by loss of appetite).
3. Helminths (Worms)
 - Trematoda (flukes) - parasites of waterfowl, fish and snails. Their developmental stages (cercariae) cause dermatitis, so-called swimmer's itch.
 - Schistosomes - the causative agents of Schistosomiasis
4. Nematode (Nematodes)
 - Ascaris lumbricoides - migrating larvae can cause liver or lung damage.
 - Enterobius vermicularis - disease mainly of children, causes persistent perianal itching, which occurs mainly in the evening and at night, when the females lay their eggs around the anal opening.
 - Ancylostoma duodenale - the causative agent of "tunnel disease" - the most widespread parasitic disease in the world, fatigue, colitis, anemia and cachexia in larger infestations. It feeds on blood in the small intestine.

Sewage waste water

This type of polluted water threatens human health especially when it is not properly or sufficiently diluted when discharged into another stream. Favorable conditions for putrefactive processes create a suitable environment for microbiological contamination.

Industrial wastewater

The dominant factor of these waters is their great diversity in quantity and composition. In general, however, it can be said that their main risk lies in the high content of organic substances and the presence of toxic substances. Their danger is often compounded by their considerable salinity, high temperature, sudden discharge and some other properties. They often contain organic substances that are not easily biodegradable.

Links

Related Articles

- Health hazards from soil
- Major water pollutants

References