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WATER- THE SOURCE OF LIFE OR RISK FACTOR

"Water has been given the power to become the source of life on Earth."

-Leonardo da Vinci

Water hardness is a problem the population of Gura Humorului is facing because it contributes to the appearance of cholelithiasis and nephrolithiasis. For various reasons, people use unauthorized sources of drinking water such as springs and wells. These sources of water do not present a problem of water content, but the problem we are dealing with is the water contamination when it springs to surface because of sources being undeveloped.

Gura Humorului is located in the eastern part of the Eastern Carpathians, in the intermountain valley with the same name, developed at the confluence of the Moldova River with the Humor creek, at an altitude of 490 m, in an area where nature has been preserved in an undeniable state of originality.

1. Sources of water in Gura Humorului

The territory of Gura Humorului area belongs entirely to the river basin of the Moldova River.

The hydrographic network is relatively dense and the highest flows of the rivers are recorded at the end of the spring and early summer.

Underground waters are used to supply drinking water of the city and settlements in the area and are characterized by a low degree of mineralization. Groundwater depends, largely, on climatic conditions and the petrographic composition of the relief.



In Gura Humorului, the water is collected from the Moldova through a pump system at a depth of 30-50 meters. There is a rainwater collection and wastewater network covering the entire habitable area of the city. The water quality assessment in Gura Humorului (from fountains, springs, tap, Moldova) revealed the following aspects:

- tap water, well water and the one from Obor spring falls within the permissible values for drinking water;
- The water from Brusturosul spring can be considered drinkable, with the indication that it has an intense sulphur odour;
- The water from the Moldova contains a small amount of nitrites in winter, and its quantity increases during the summer;
- All sources of spring water have the total hardness of over 12 (hard water);
- The concentration of organic substances is much higher in Moldova's water and in the snow than in drinking water.

No.	Source of water	Ph	Organic substances mg/l	Chlorides mg/l	Nitrites mg/l	Ammonia mg/l	Fe ³⁺ mg/l	Total hardness	Temp.	Odour	Colour
1	Tap water	7	1,58	17,02	Lack	Lack	0,06	14,02	9	Lack	colourless
2	Obor Spring	7.1	1,89	17.02	Lack	Lack	0.05	13.01	8.5	Lack	colourless
3	Brusturosul Spring	7.2	1.72	17.01	Lack	Lack	0.04	12.04	10	Sulphur odour	colourless
4	Moldova River	7.3	4.42	14.18	0.01	Lack	0.15	11.22	1	Lack	colourless
5	Snow from the school yard	10	28.44	21.27	Lack	Lack	-	Lack	10	Lack	colourless
6	Water from the well	7	1,89	17,02	Lack	Lack	0,06	14,02	11	Lack	colourless

2. The quality of water in the wells

In Gura Humorului, 15% of the population is not connected to the centralized water supply system, which is why the nitrites, hardness, carbonates and chlorides were tested and the ways of placement and construction of the wells were analysed.

Fountains can be contaminated with bacteria that can get into water due to contamination with human and animal faeces, nitrates and pesticides. For good water quality, it is recommended that when a well is being built, its walls must be either watertight to prevent water from entering the

outside, be fitted with a lid, a bucket of its own and, if possible, a roof, a concrete enclosure, tiles or gravel. The fountain shall be located at a distance of 15-30 m from any source of contamination (latrine, manure) on a land that does not favour pouring water around it.



Low risk well



High risk well

3. Water pollution sources in the town of Gura Humorului

Gura Humorului is crossed by Humor creek, which generally has clean, crystalline water and has a beneficial effect on the area, contributing to the well-known tourist resort. The Moldavia has very clean water and excellent quality - according to STAS 4706/91 for surface waters. Sources of surface water pollution are household waste, not properly stored, especially in the Boureni and Voroneț districts. Another source of pollution is the uncontrolled storage of sawdust along the Moldova by enterprises in the wood processing industry.

The main causes of pollution are:

- lack of necessary protection measures to the economic units that discharge the pollutants directly into the surface waters or the sewage system;
- Inappropriate location of industrial units in the city;
- Inappropriate storage of household waste and sawdust;
- Lack of green protection curtains between the sources of pollution and the living areas;

4. Proposed solutions to combat water polluters

To stop water pollution, we should primarily build more garbage collection centres for better sanitation, offering some money to people who bring recycling garbage. Collecting waste from the banks and building deep-fence landings to limit water contact with waste could limit the pollution of the area's waters.

It is not too late to realize, it is not too late to understand. We are water. What do we do to save water? Shall we wait and continue to follow the monotonous course of life, taking the

risks. Is it worthwhile to provide safety in exchange for risk? So, when you open the tap next time, just imagine that there is the last drop of life that the light of your eyes will ever enjoy again. Dive into the immaculate reflection in the mirror and ask yourself this: as long as life gives us the time to express ourselves: who should I be: the problem or the solution?



Images of the Moldova River