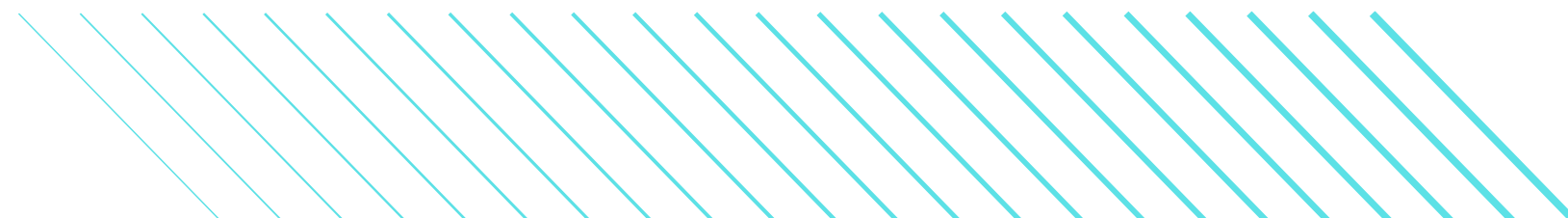
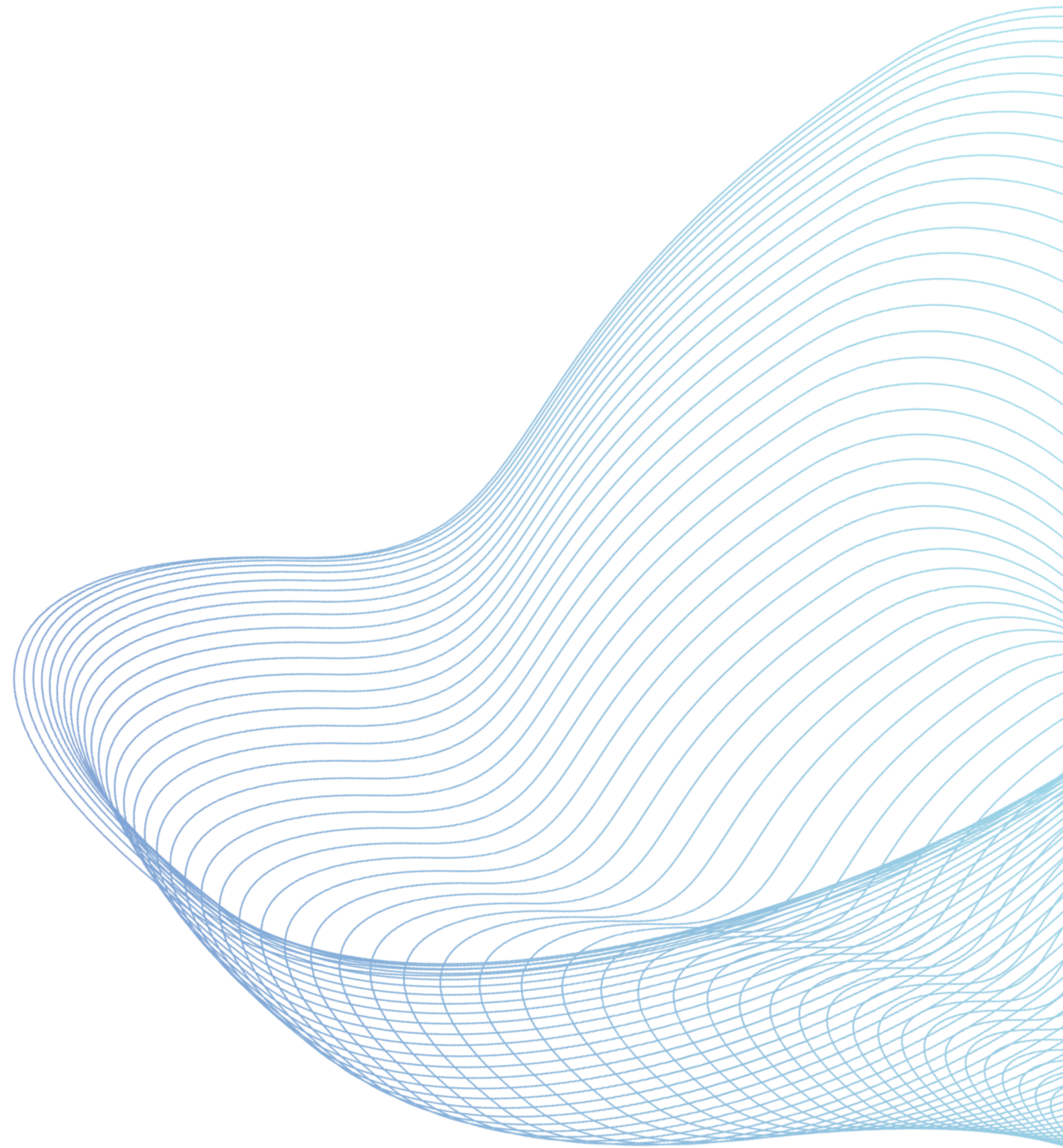


# **WATER DECONTAMINATION WITH UV RAYS**

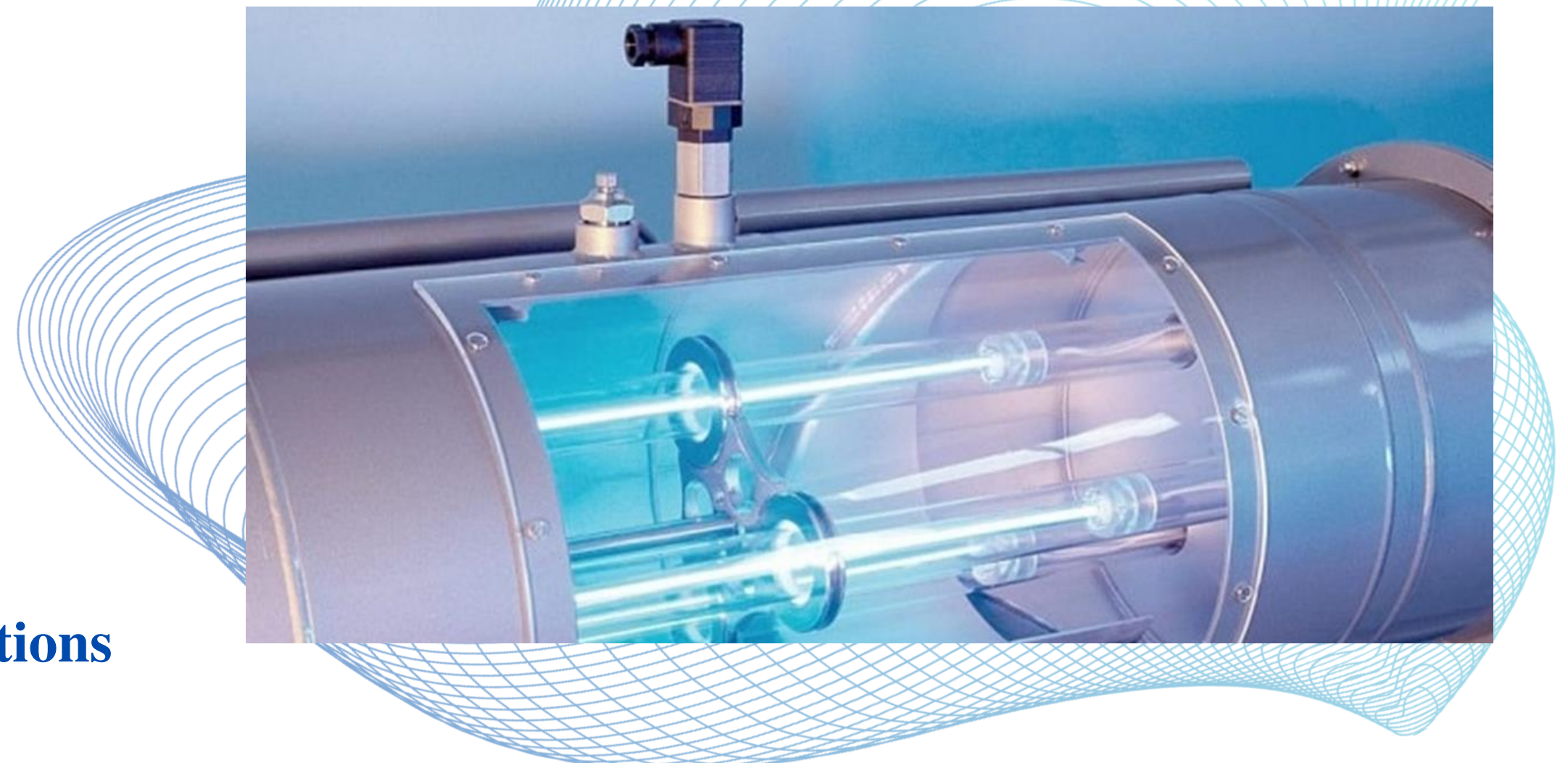
**Equip: ENGINECO**





**The purpose of the proposed solution:** The use of new technologies, especially the use of UV rays, as a treatment in the decontamination of water polluted by pathogenic microorganisms.

**Motivation:** We chose this Tech solution for the environment, because the quality of drinking water does not always meet hygienic-sanitary norms, so the study of methods to reduce the degree of microbial contamination of water is current today.





## INTRODUCTION, TOPICALITY OF THE PROBLEM

**Drinking water** is pure, clear, colorless, odorless natural water, which contains as little total number of microorganisms as possible, is free of pathogenic microorganisms and which can be consumed by man, directly or indirectly, for a long time without harming his health.

Permissible number of microorganisms:

- Total number of bacteria – **up to 300 CFU/cm<sup>3</sup>**;
- Total coliform count – **up to 10 sheets/dm<sup>3</sup>**.





# BACTERIAL INFECTIONS

**Microorganisms** present in water can cause a variety of diseases and conditions when consumed or come into contact with the human body. Here are some of the common diseases caused by microorganisms in water:

## Colibacteriosis:

Caused by bacteria of the genus *Escherichia coli* (E. coli), this infection can cause symptoms such as severe diarrhea, abdominal cramps, and fever.

## Salmonellosis:

*Salmonella* bacteria can cause food poisoning, and contaminated water can be a source of infection. Symptoms include diarrhea, vomiting, fever and abdominal pain.

## Shigellosis:

*Shigella* bacteria can cause intestinal infections, with symptoms such as bloody diarrhea, fever and abdominal cramps.

# Legislation

Law of the Republic of Moldova nr. 272 of 10.02.1999 on drinking water.

Responsible for controlling the quality of drinking water are the district public health centers within the National Public Health Agency of the Republic of Moldova

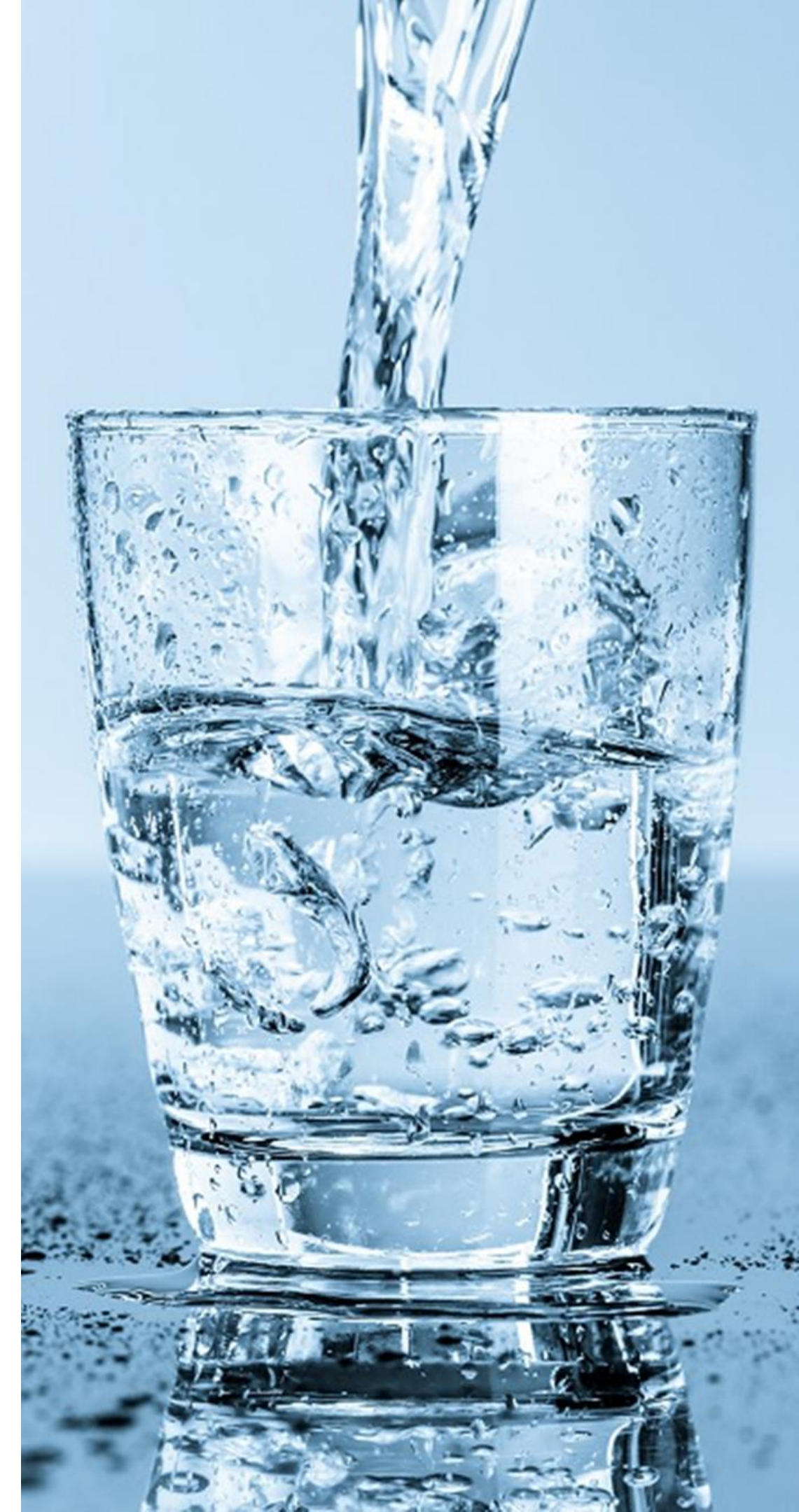




# DECONTAMINATION OF WATER WITH ULTRAVIOLET RAYS

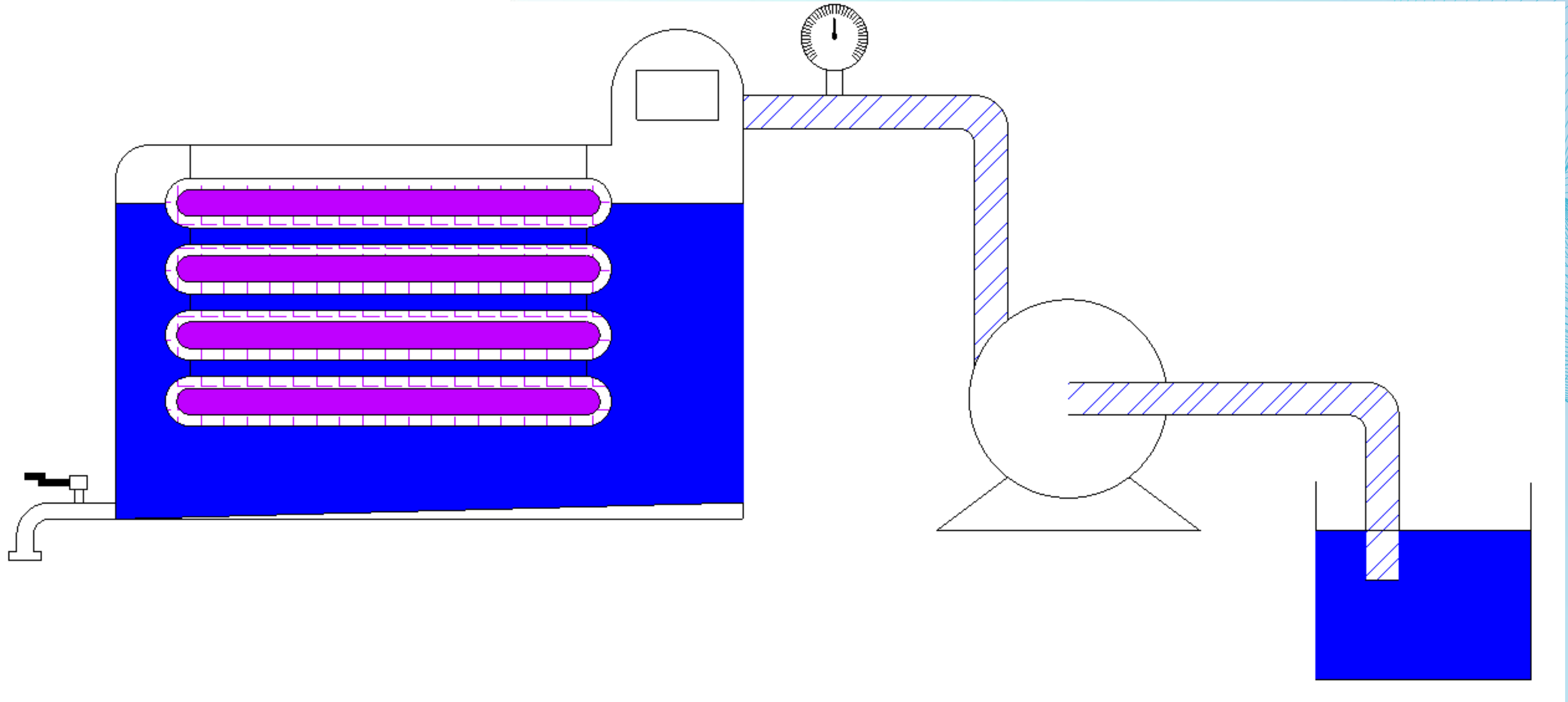
Purification and disinfection of high-quality water is essential for human health.

Decontamination of water with ultraviolet (UV) rays is an effective method of exposing water to UV radiation to inactivate or destroy pathogenic microorganisms present in the water. This process is based on the fact that UV radiation, especially in the range of wavelengths known as UV-C (between 200 and 300 nanometers), has the ability to affect the genetic material of microorganisms such as bacteria, viruses and algae.





**Fig.1 Prototype of UV water decontamination installation at wells  
(2D AutoCad)**



# ADVANTAGES OF UV RAY DECONTAMINATION

- Environmental friendliness and safety.
- Efficiency.
- Preservation of structure and does not influence the smell and taste of water.
- Easy control over the operation of the installation.
- It does not form toxic residues, as in chlorination decontamination.
- No need for additional tanks.
- High treatment speed.





# CONCLUSION

Ultraviolet decontamination is an effective and environmentally friendly method, since it does not involve the use of chemicals and does not leave chemical residues in the water.





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