

HOW CLEAN IS YOUR STORED RO PERMEATE?

SILVER BULLET'S WATER TREATMENT KEEPS PERMEATE CLEANER, LONGER

Reverse osmosis results in some of the cleanest water available to cultivators. However, it doesn't stay that way forever and without proper measures, it can become a breeding ground for microbial contamination.

Advancements in Reverse Osmosis (RO) water treatment processes have made it an attractive option for many cultivators.

On-demand systems are often large and expensive, and most operators opt for batch storage tanks that allow for smaller RO systems. Several questions often arise around the topic of RO permeate and associated storage:

- **WHAT IS RO PERMEATE?**

RO permeate is the product of reverse osmosis treatment processes. RO works by forcing pressurized water through a semipermeable membrane that traps various solids and contaminants. The resulting "permeate" water is of low TDS/conductivity and minimal contaminants.

- **IF RO PERMEATE STARTS SO CLEAN, WHY IS IT IMPORTANT TO TREAT IT?**

There are no biological voids in nature and even though RO water starts very clean, it doesn't take long before microbes may proliferate and cause major problems to your cultivation process.

- **WHAT RO PERMEATE TREATMENT OPTIONS ARE AVAILABLE?**

Available treatment processes include Silver Bullet AOP gas, UV disinfection and Silver Bullet SMART dosing technology with liquid chemistries such as hydrogen peroxide.

- **WHY IS IT IMPORTANT TO TEST MY RO PERMEATE?**

As with any water stream, the associated chemistry and make-up can rapidly change with environmental contaminants and microbes. By testing regularly changes can be observed, treatment efficacy can be monitored, and optimizations can be made.



What's left in RO permeate after everything has been removed?

It's true that a properly run RO system can remove the majority of commonly encountered contaminants from water. However, as soon as the permeate leave the RO system it is susceptible to contamination.

- The low TDS content of permeate allows the water to absorb gaseous contaminants such as volatile organics and CO₂, which also tends to lower its pH.
- Contact with piping surfaces, tanks and environmental contaminants such as dust and debris, can elevate organic levels.
- Low TDS waters are corrosive and will tend to corrode metal ions into solution if susceptible metal surfaces are contacted.
- Biofilms and pathogens can proliferate & spread, feeding on organic contaminants.



ASK THE EXPERTS! *Getting the most out of your production system is complex and challenging. Silver Bullet's expert staff specializes in holistic water treatment and process optimization for modern indoor and greenhouse cultivation facilities. When in doubt, or to learn more about water management innovations, reach out to the Silver Bullet Water Treatment professionals at info@silverbulletcorp.com.*



TREATING WATER. **BETTER.**

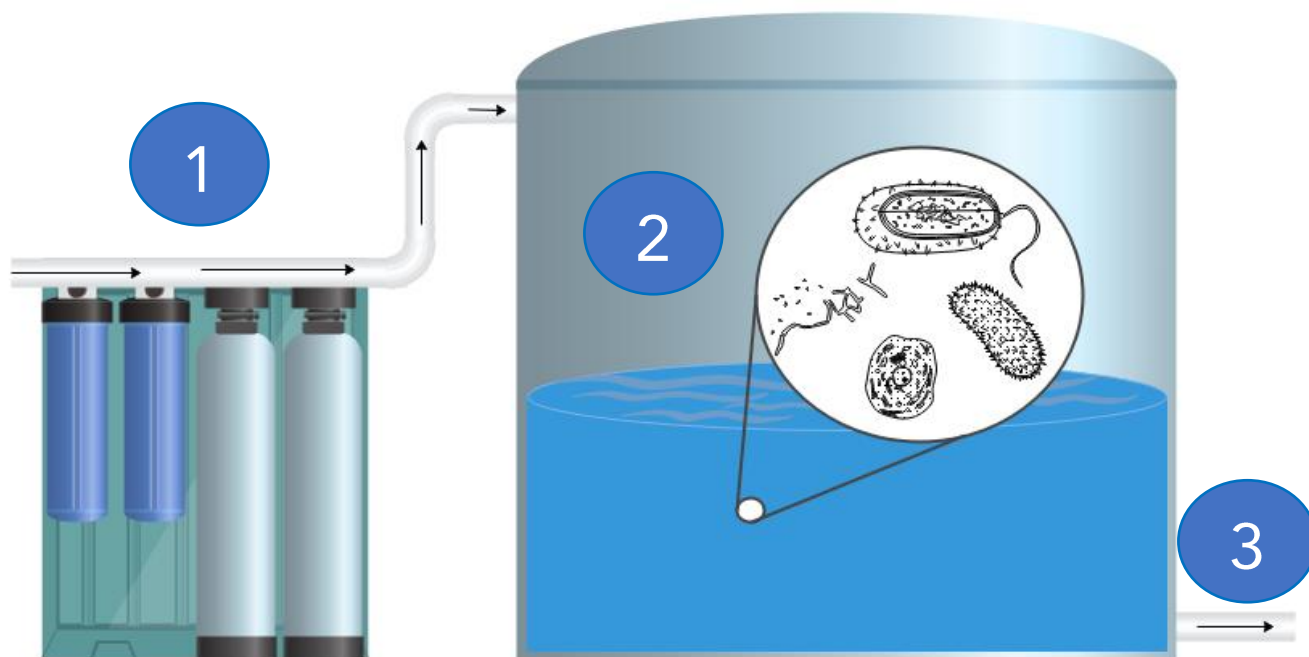
ANATOMY OF THE RO PERMEATE CONTAMINATION PROCESS ADDRESS CONTAMINATION BEFORE IT BECOMES AN ISSUE

Refer to the diagram below for stages of the RO water cycle:

1. Feed water is passed through the RO system and exits as clean permeate.
2. Permeate is stored where it contacts piping, tank walls and environmental contaminants. Tanks and piping can be breeding grounds for microbes which can in turn, reduce dissolved oxygen (DO) levels, excrete toxins and acids and produce slime and films.
3. Permeate water leaves storage for downstream use – is it still as clean as you expect??

Additional benefits to treatment:

- Microbe levels are kept in check
- Water is recirculated, preventing stagnate and anaerobic zones
- DO levels can be maintained
- Piping & tanks remain clean



EXPERT ADVICE! *Treatment prior to make-up water use is recommended to condition the RO permeate and to ensure water system stability over time to prevent potential treatment and operational challenges that could otherwise arise. The extent & type of treatment varies based on specific water challenges and end goals. Baseline and routine subsequent water testing and monitoring is key to maintain a proactive approach to water management.*

Maximizing process efficiencies can improve production, limit waste, and save costs!

WANT MORE INFO?

Silver Bullet has the resources and knowledge to be able to consult with cultivators on their specific situations.

CALL TO LEARN MORE!

(303) 552-2383



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