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Strategic Filtration:

OPTIMIZING HEALTHCARE WATER SAFETY AND REGULATORY COMPLIANCE

Point-of-use (POU) filters play a key role in water management solutions, as recommended by current standards and guidelines.

There is no single technical solution to control and reduce the risk of bacterial development in healthcare facilities because water supply systems are so complex.

Various regulatory bodies such as ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers), CDC (Centers for Disease Control and Prevention), CMS (Centers for Medicare & Medicaid Services) and the Joint Commission, strongly recommend combining solutions (water flushing, secondary disinfection, POU filtration, etc.) to reduce the health risks related to waterborne bacteria.

Some solutions, such as secondary disinfection, may be effective against bacteria like *Legionella*, but if used continuously, can lead to bacterial resistance (Cervero-Aragó S. et al. *PLoS One*. 2015.10(8).10.971). In some cases, they can create favorable conditions for the development of other pathogenic microorganisms including Non-Tuberculous Mycobacteria (NTM).

For these reasons POU filters are strongly recommended to protect at-risk populations. When placed at the terminal position on taps and showers, they act as a final physical barrier against bacteria before the water is used. POU filters guarantee bacteria-free water that it is safe for the most vulnerable patients to use.

BEST PRACTICES – USE OF POINT-OF-USE FILTERS

When strategically installed in high-risk units and critical areas, POU filters efficiently safeguard vulnerable patients and staff. This focused approach allows facility managers to maximize the benefits of POU filtration while optimizing resource allocation. In addition to routine use in priority areas, POU filters provide valuable flexibility for rapid deployment during *Legionella* alerts or in environments requiring extra monitoring, ensuring comprehensive water safety management across the facility.

1. Where and Why to Install Point-of-Use filters

→ Oncology Units

- Immunocompromised patients, particularly those undergoing chemotherapy, are at increased risk of infections caused by bacteria like *Pseudomonas* and *Legionella*.
- The mortality rate for Legionnaires' disease in cancer patients is high; reported as high as 53% in one study (DOI: [10.1002/mpo.2950140205](https://doi.org/10.1002/mpo.2950140205)). These figures emphasize the need for a rapid diagnosis and to provide effective treatment urgently for this population.

→ Neonatal Units

- Because of their immature immune systems, neonates are vulnerable to infections when exposed to even

low levels of pathogenic bacteria in tap water.

- Pathogens like *Pseudomonas* that survive on surfaces can be spread while cleaning and rinsing infant care equipment with tap water.

→ Burns Units and Wound Care

- Because burns disrupt the protective skin layer, burn patients are highly susceptible to diseases caused by waterborne infections. Bacteria-free water is indispensable to reduce this risk.

→ Sterilizing department (CPD - Central Processing Department) – Medical Device Rinsing Stations

- Bacteria free water from POU filters can be used for Pre-rinsing medical devices to comply with standard ST 108.
- POU filtered water can be used to rinse non-critical devices to comply with standard ST 108.

→ Intensive Care Units and Surgery Units

- Due to their compromised immune systems, ICU patients are vulnerable to waterborne pathogens. Bacteria like *Legionella* can be inadvertently aspirated from drinking water or inhaled from mists. Bacteria like *Pseudomonas* can survive and be transported on hands and equipment. Bacteria free water from POU filters can prevent these waterborne pathogens from entering the environment through taps and showers resulting in a significant reduction of HAI's.

In addition to their protective role, POU filters have a comfortable flow rate, with no splashing. This soft, full water flow is ideal for neonatal units, burns units and sterilizing departments.

2. Which areas and which equipment should have in-line filters installed?

In healthcare settings, in-line filters are strategically maintaining the quality and safety of water used in certain essential equipment installations such as:

- Ice Machines: they guarantee the water quality used to produce ice and reduce the risk of spreading bacteria.
- Water Fountains: they protect against bacterial contamination without changing the taste of the water.
- Pre-filtration for Medical Equipment: they protect dialysis machines and other equipment that is vulnerable to particles and microorganisms.

A MULTI STAGE FILTER APPROACH CAN ASSURE WATER QUALITY:

Anti-bacterial pre-filters are recommended for ice machines and water fountains. They play a critical role in ensuring water safety and quality. These filters also protect the equipment from the damage caused by contaminants such as particles and bacteria in the water supply. They have a comprehensive filtration system which protects patients and extends equipment lifespan.

This system typically includes:

- Sediment filters: to remove solid particles.
- Hollow fiber filters: to remove bacteria and other pathogens.
- Active carbon filters (if requested): to remove chlorine, unpleasant tastes and odors and chlorine.

The benefits of multi-stage filtration are:

- Improved patient safety: to reduce the risk of waterborne infection, especially for vulnerable groups of people.
- Extended equipment lifespan: to provide protection against fouling and premature wear from contaminants.
- Improved water quality: water is free from bacteria and undesirable tastes or smells.

Note: When active carbon filters are used, anti-bacterial filters must also be installed. This is because carbon filters eliminate chlorine, leaving an environment where bacteria can develop. Anti-bacterial filters provide an additional safeguard to ensure the water remains free from harmful microorganisms.

CONCLUSION

In conclusion, 0.2 µm point-of-use (POU) filters are a critical component of comprehensive water management programs in healthcare facilities. They provide an essential final barrier against waterborne pathogens, particularly in high-risk areas and for vulnerable patient populations.

The strategic implementation of POU filters in priority areas such as oncology units, neonatal care, burns units, intensive care units, and sterilization departments offers an effective and resource-efficient approach to water safety management.

Furthermore, the use of in-line filters for equipment like ice machines, water fountains, and medical devices adds an extra layer of protection, ensuring the safety of water used in various healthcare applications.

This multi-faceted approach to water filtration not only enhances patient safety but also contributes to equipment longevity and overall water quality improvement. By adopting these best practices in POU and in-line filtration, healthcare facilities can significantly reduce the risk of waterborne infections, comply with regulatory standards, and provide a safer environment for patients, staff, and visitors.



About AQUATOOLS

AQUATOOLS is a French company specializing in the production of advanced solutions for water hygiene, in particular anti-legionella point-of-use filters for healthcare facilities and non-medical establishments open to the public (hotels, accommodation, campsites, etc.).

Thanks to sustained investments in Research and Development and close collaboration with scientific experts, AQUATOOLS has quickly established itself as a key player in the point-of-use filtration sector.

The exceptional quality and performance of our filters position us as a market leader in France and a leading player on the international scene, with subsidiaries opening in the United States in 2017, in the United Kingdom in 2023, and in Germany in 2024. Committed to sustainability, we are determined to develop responsible practices that reflect our deep commitment to social responsibility and the environment, as evidenced by our recent distinction with the EcoVadis platinum medal.