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Episode 54 Keeping It Salty Residential

In the podcast "It's Your Water," hosts Mike and Denise Urbans delve into the critical role of brine tanks in water softening systems. They cover various topics, emphasizing the tank's importance, common misconceptions, and detailed technical aspects.

Overview of Brine Tanks

Brine tanks, often called salt bins or brine makers, play an essential role in water softening systems. Despite their importance, they are sometimes mistaken for trash cans, especially when lids are missing. This can lead to misuse in commercial settings like restaurants.

Significance of Proper Brine Management

Brine making is described as the lifeblood of water softening. Incorrect brine preparation can lead to problematic consequences:

- Excessive chlorides can harm septic systems and attract penalties from municipal authorities.
- Insufficient brine causes bed fouling and short runs, leading to dissatisfied customers.
- Given the high cost of modern softeners, failing to manage brine properly can lead to higher costs, unhappy customers, and negative reviews on social media.

Technical Discussion on Brine Tanks

The discussion extends into the technicalities of brine tanks:

- Brine tanks typically come in standard sizes, such as 18, 24, and 30 inches, which simplifies calculations for maintenance and setup (e.g., 1 gallon per inch for an 18-inch diameter tank; 2 gallons per inch for a 24-inch tanks and 3 gallons per inch for a 30-inch tank).
- A crucial factor in brine making is the salt-to-water ratio; one gallon of water dissolves about 3 pounds of salt. This ratio is pivotal for effective water softening, because the systems are designed to recycle soft water back into the brine tank.

Problems with Water Level and Float Mechanism

- Excessive Water in Small Tanks: When systems are too large for their brine tanks, they can inadvertently return too much water to the tank. This excess water can rise above the level of salt and reach the float mechanism too soon. This is problematic because it can lead to the float shutting off before the brine is properly mixed, resulting in poor regeneration cycles.

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- Use of Grids and Platforms: To manage the levels of salt and water more effectively, grids or platforms are placed within the tank. These platforms act as a false bottom, creating a physical separation between the bulk of the salt and the water layer beneath. This setup helps in maintaining a more consistent brine concentration by preventing the salt from coming into direct contact with too much water, which could dissolve it prematurely.
- Adjustable Grids: In commercial setups, these grids can often be adjusted in height—using feet that can vary in length (e.g., 24-inch or 30-inch grids with adjustable feet). This allows for better control over the salt-to-water ratio, important for systems that undergo frequent regeneration.
- Grid Heights in Residential Tanks: Residential tanks typically have fixed grid heights, which do not offer flexibility in adjusting to varying water levels or salt amounts. This can lead to issues in maintaining optimal brine concentrations.

Addressing Float Mechanism Issues

- Importance of the Float: The float in a brine tank ensures the brine tank does not overflow and that the brine concentration is maintained. A malfunctioning or incorrectly set float can lead to either under or over-saturation of brine and affect the efficiency of the water softening process.
- Setting the Float: The float should be set to a height that prevents overflow while ensuring enough brine is produced for regeneration. It's important that the float level is checked and adjusted according to the specific needs of the system.
- Mike mentions that older systems often did not include a float, which led to frequent overflows and operational issues. Modern systems include floats**.**

System Design Considerations

- Proper Installation: The brine tank should be level and in a suitable location, away from potential contaminants or physical obstructions that could impact the tank's integrity.

Maintenance and Troubleshooting

- Salt Bridging: This occurs when regenerations are infrequent, a vacation home, or with an improperly placed grid.
- Regular Maintenance: Regular checks are necessary to make sure the float mechanism and grid system are functioning properly. This includes adjusting the float and cleaning the tank.
- Regular Cleaning: Over time, brine tanks can accumulate residues depending on the type of salt used, necessitating periodic cleaning to prevent clogging and proper efficiency.
- Checking System Components: It's important to inspect and replace components such as the float mechanism.

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Installation and Setup Considerations

- **Physical Setup:** Care must be taken during the installation to ensure the tank is stable, level, and the floor is free of debris to prevent damage and leaks.
- **Distance Considerations:** The placement relative to the water softener is crucial, as the length of the brine line can affect the system's efficiency. Generally, brine lines should not exceed 6 feet to maintain effective suction and system functionality. Extending brine line may result in weak brine draw.

WQRF Water Contaminant Map

https://www.wqrf.org/map.html

USGS Water Data Map

https://dashboard.waterdata.usgs.gov/app/nwd/?region=lower48&aoi=default

WQA National Convention

https://www.wqa.org/convention

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