

5.2. Algae and bacterial control

For algae and bacterial growth control, utilize a specific solution of household bleach (Sodium Hypochloride) to be dosed continuously into the make-up water to ensure the water remains clean and living organisms are unable to grow.

	Lime/calcium scale	For organic growth
Action	Household white vinegar (Acetic Acid – CH₃COOH) in ppm	Household bleach (Sodium Hypochloride – NaClO) in ppm
Shock, cleaning dose	250-260	5-7 ppm in sump/system water
Preventative dose	n/a	1 - 2 ppm in sump/system water

Note: Sump/reservoir water must have pH between 7.0 and 8.5 for the chemistry to work

6. Monthly maintenance needs

It is vital to ensure monthly maintenance activities are carried out. This preventative maintenance regimen ensures the well-being of your evaporative media and promotes longevity.

6.1. Water flow and distribution check

While the system's water distribution pump is running, check that:

- Water is being distributed evenly over the evaporative media
- Volume of water flow over the evaporative media is adequate to completely saturate the evaporative media
- The water distribution system is free of any restrictions
- The holes in the distribution header pipe are free and clear of obstruction

6.2. Filtration check

The water system should have a coarse filter/strainer on the inlet side of the pump to protect the pump. The system should also have a fine filter/strainer after the pump to remove additional debris and protect the holes in the distribution header pipe from blockages.

Be sure to clean these filters/strainers regularly by switching off the water distribution pump, then opening and cleaning the coarse pump filter/strainer and then the fine water distribution filter/strainer

6.3. Check for organic and calcium salt deposits

In order to prevent long-term, stubborn difficult-to-remove deposits, check the evaporative media regularly for algae growth and/or calcium deposits. These checks should be done weekly and can assist with planning for the next shutdown period.

6.4. Flushing the system and checking the water quality

Evaporative media is capable of filtering a large amount of dust in a two week period. In addition to the material filtered from the air, calcium salts will remain behind after the water is evaporated away with adequate washing. These materials will accumulate in the system's sump/reservoir.

The sump/reservoir water should be drained and refilled if water is dirty or if evaporative media is showing evidence of algae growth and scale deposits.

If your evaporative system has a flush valve to rinse the distribution header pipe for sediment that has settled out, open the valve and let the circulation water flush the pipe.

6.5. If water pH is high

Check the pH of the fresh water. If the pH level is above 8, it is recommended to conduct a thorough water analysis and investigate a dosing regimen for algae and scale control discussed in section five.

6.6. If the pH is neutral

If the pH is neutral – between 6.5 and 7.5 – simply dosing the water sump/reservoir with the required algae and scaling control chemicals recommended by Portacool, LLC in section 5 will suffice.

6.7. Shock dosing the water for scale and algae control

In extreme cases, a strong shock dose may be required to adequately control scale and algae growth.

- Ensure the system fans are shut down and air is not being pulled through the evaporative media.
- Ensure the sump water has been changed and the sump is clean.
- With a portable pH meter, ensure the pH of the sump/reservoir water is between 6.5 and 7.5 for the shock dosing as a preventative measure for scale and algae control. If the pH is out of this recommended range the chemicals added will be ineffective on scale and algae.

7. Treatment of old evaporative media - cleaning and maintenance

The following methods may be employed to remove organic growth and calcium salt deposits to rejuvenate older evaporative media.

7.1. Algae treatment

To remove old algae:

- Ensure the system fans are switched off and there is no air being pulled through the evaporative media.
- Follow the maintenance steps mentioned previously to ensure the system water, filters and distribution header pipes are clean.
- With the system sump/reservoir full with clean water, switch off the supply water.
- Using the information in section 5.2 or 11, select the proper shock-dose for your sump.
- Pour the selected quantity of household bleach (Sodium Hypochlorite – NaClO) into the system sump/reservoir taking care not to spill it on yourself or clothing. Refer to the SDS of the household bleach.
- **Do not overdose the system. Use only the recommended dosage.**
- Turn on the system water pump and allow the dosed water to flow over the evaporative media for a period of 6 hours. Ensure the fans remain off during this entire process.
- After six hours, switch off the pump. Flush the sump and refill with fresh water.
- Ensure the pump is turned **off** and no water is being distributed across the evaporative media, then turn the fans on to allow the evaporative media to completely dry during a hot day for two to three hours. This will allow the dead algae to lift and curl away from the evaporative media surface. Once the algae has dried, use a soft bristle brush to gently brush the surface of the evaporative media in a downwards direction, allowing the larger algae pieces to be brushed away.
- Turn the pump distribution valves to 'waste' in order to flush the system. Wet the evaporative media with a gentle flow of water from a hose and repeat the process of using the brush to brush away the smaller pieces of algae.
- With the media now clean, clean out the sump and water filters once more before using your system.

7.2. Treatment for scale/calcium deposit

The method of removing scale/calcium deposits can be done as follows:

- Ensure the system fans are switched off and there is no air being pulled through the media.
- Follow the maintenance steps mentioned previously to ensure the system water, filters and distribution header pipes are clean.
- With the system sump/reservoir full with clean water, switch off the supply water.
- Using the information in section 5.2 or 11, select the proper dosage amount to shock-dose your sump.
- Pour the selected quantity of household vinegar (Acetic Acid – CH_3COOH) into the system sump/reservoir taking care not to spill it on yourself or clothing.
- **Do not overdose the system. Use only the recommended dosage.**
- Turn on the system water pump and allow the dosed water to flow over the evaporative media for a period of 6 hours. Ensure the fans remain off during this process.
- After six hours, with the pump still on use a soft bristle brush to gently brush the surface of the evaporative media in a downwards direction, allowing the calcium scale crystals to dissolve with the flow of the water and the use of the soft brush. Continue brushing until all scale has been removed.
- Turn the pump distribution valves to 'waste' to flush the system. With the evaporative media wet, use a gentle flow of water from a hose and brush to wash off the any remaining small scale deposit pieces.
- With the evaporative media now clean, flush out the sump and water filters once more before using your system.

8. Aggressive, corrosive and toxic cleaning agents

Many chemicals available in the market to clean evaporative media are harmful to the evaporative media, as well as the environment.

Cleaning your Kuul Control™ evaporative media with a chemical not recommended by Portacool, LLC may seriously harm the longevity of the evaporative media, softening the evaporative media to the point of collapse. This weakening will lead to the evaporative media needing to be replaced.