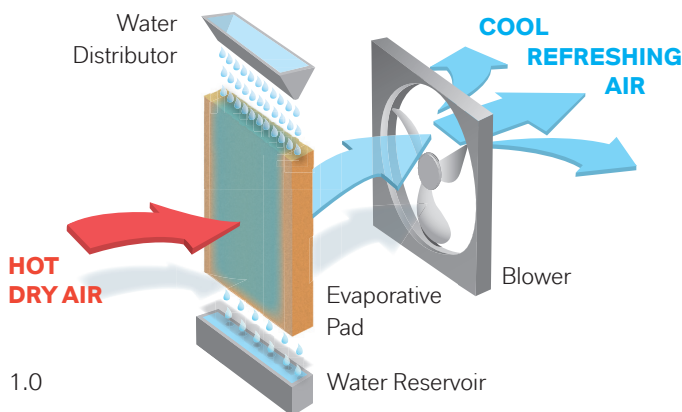


Evaporative Cooling

Introduction

Evaporative cooling systems are used to reduce the indoor air temperature within animal housing during periods of warm weather.

An evaporative cooling system works by pumping water from a reservoir tank to a feed pipe situated across the top of a corrugated cool cell pad. The water flows slowly downward wetting the entire pad as a large fan, situated on the inside, draws air through it and into the building, see diagram 1.0. As the air passes through the core of the system, it is cooled by the continuous flow of water over the cells, thereby reducing the ambient temperature within the livestock housing.



Pathogen challenges & mineral deposits

The warm temperatures outside and wet conditions within the cool cell pads provide the ideal environment in which algae and bacteria can grow, increasing the potential for disease-causing organisms to be introduced into the house.

Dust particles being drawn into the building can also be considered a possible source



of infection as their surface has the potential to transport disease-causing organisms from one place to another.

This can be particularly true during times of challenge when fields are being harvested or nearby houses are being cleaned. During harvest season dust particles that may be potentially contaminated can be spread through the air. Similarly when nearby houses are cleaned through pressure washing, particulates including feces and other organic materials become atomized into the air and can easily travel hundreds of meters downwind to other houses.

Reported transmission distances of bio-aerosols emitted from livestock buildings¹

Component	Distance (m)	Reference
Dust particles	50	Schmidt and Hoy (1996)
	115	Hartung <i>et al.</i> (1998)
Bacteria	50	Platz <i>et al.</i> (1995)
	100	Sarikas (1976)
	200	Köllner and Heller (2005)
	200-300	Müller and Wieser (1987)

With water constantly passing over the cool cell pads, mineral scale and dust particles can block the corrugated openings, restricting air flow and decreasing the efficiency of the cooling system. As a result, the fans need to work harder to achieve the same amount of air flow into the building, which in turn will increase energy costs and required maintenance for the cooling system.

- Reduces scale build-up & mineral deposits

- Compatible with cool cell pad materials

Proven reduction in hard water scale build-up

By its nature, the oxidative chemistry of Virkon™ S combined with the high level of sequestrant within its formulation helps to keep minerals in solution, thus mitigating the build-up of scale deposits on the cool cell pads.

Proven materials compatibility

Virkon™ S does not have any detrimental effect on the integrity of the materials used in the construction of cool cell pads, especially the adhesive.

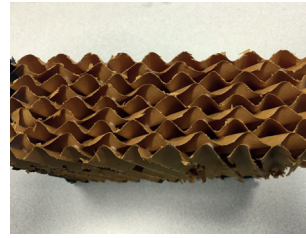
In a practical use study, sections of cool cell pads (approximately 8" x 3" x 3") were immersed in a 2% Virkon™ S solution for three weeks, with no adverse effects, as documented in the diagrams. The adhesive and structural integrity of the cool cell pads remained intact. The recommended application rate of Virkon™ S solution for continuous cool cell pad disinfection is 1:200 or 0.5% (once the pads have been cleaned initially).

How to apply Virkon™ S

At the start of the warm weather season, use Virkon™ S to clean and remove mineral deposits from the cool cell pads. (Virkon™ S is not approved for use in evaporative cooling systems in California).

At the start of the season prepare a 1% solution (1:100 dilution rate) to disinfect evaporative coolers by adding 1.3oz of the concentrate per gallon of water for the total volume of the reservoir/sump. This may lead to excess foam so be sure to flush well with fresh water.

As maintenance, monitor the cool cell pads on a weekly basis for algae and mineral deposit build-up. When build-



up is visible treat reservoir water with a dilution of 1:200 or 0.5% of Virkon™ S for every gallon of water. During harvesting or nearby farm clean out dose 1:200 or 0.5% two to three times per week.

Make Virkon™ S your one step for cleaning and disinfecting your evaporative coolers, while decreasing your energy costs and improving maintenance of your cooling system.

As with any product, use of the products mentioned in this publication in a given application must be tested (including field testing, etc.) by the user in advance to determine suitability.

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¹ Risk caused by bio-aerosols in animal housing

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