YEAS AND NAYS OF EVAPORATIVE COOLING

By Doug Overhults

Evaporative cooling systems are a vital part of most poultry houses in Kentucky. They are a key factor in maintaining a high level of production through the summer, and they can prevent catastrophic bird mortality in periods of extreme heat. Time and money spent keeping the cooling system in good operating condition pays off in improved bird performance and longer equipment life. The following tips will help ensure maximum benefit from recirculating evaporative pad systems.

The “To Do” List

- Run the recommended amount of water (0.75 gal/min per linear foot of cooling pad) over the pads. For example, a 70-foot pad needs about 52.5 gal/min. Adequate water flow not only keeps the pads wet but it also flushes dirt and minerals off the pads.
- Supply the cleanest water with the lowest mineral content possible. Dirt and minerals in the water will accumulate on the pads.
- Clean or replace filters weekly or as needed. Clogged filters restrict the pump output and reduce water flow over the pads.
- Clean holes in distribution pipes & flush the pipes to remove debris. The pad should be completely wet without dry spots or streaks.
- Allow the pads to dry completely once every 24 hours. Drying limits algae growth.
- Bleed off water (about 1 gal/hr per linear foot of cooling pad) or dump & refill the system once a week. Adding dilution water reduces mineral concentrations and helps keep the water pH in the proper range (6 to 8). High pH makes the pads soft.

Keep the pump intake screen clean and make sure the floats are properly adjusted and working. A restricted pump intake reduces water supply to the pads.

Drain, clean, & disinfect the whole system quarterly. Regular cleaning helps avoid problems at critical times. Draining, cleaning, and disinfecting is a good way to limit algae growth problems.

Do not use harsh cleaners and water treatment chemicals on pads. Never use chlorine bleach or similar products. (see sidebar)

Do not try to clean pads with a high pressure washer or stiff brush. Those methods will damage the pads. Gentle brushing with soft bristle brushes and rinsing with a low pressure garden hose is best.

Do not use timers to cycle the pump on/off. Every wet/dry cycle reduces the life of the pads and every drying cycle adds to the mineral “crust” on the pads.

Do not allow pads to set in water when the system is not operating. Adjust troughs and floats so that water drains to the sump and is maintained at the proper level. Continuous wetting makes the pads soft and mushy and causes the whole pad to sink downward from the top. The resulting gap at the top allows air to bypass the cooling pad, reducing the overall cooling effect of the system.

Do not ignore leaks in the water collection or distribution system. Leaks may reduce water flow to the pads or cause excessive water use.
Do not operate the system without line strainers and/or filters. Trash & dirt in the water will accumulate on the pads and clog holes in the distribution pipe.

Do not blow grass clippings, dust, dirt, rocks or other materials toward the pads. The corrugated cardboard pads are easily damaged and any source of nutrients will promote algae growth on the pads.

Do not spray herbicides or other chemicals on the pads to kill algae. Cleaning and disinfecting the water distribution and collection system is the best approach. After cleaning, an algaecide (see sidebar) can be added to the water but must be replenished to compensate for make-up water that is added.

Most manufacturers have recommendations and guidelines for operation and maintenance of their evaporative cooling systems. They are also likely to have a list of cleaning and sanitizing products that they recommend for use on their pads and equipment. Ask your equipment supplier to help you obtain specific recommendations for your system.

Products & Chemicals for Cooling Pads

The following is a partial list of products that are often recommended for cleaning and algae control in evaporative cooling systems. Additional products that are equally effective may also be available. Consult manufacturers for specific recommendations.

Always read and follow label directions for all products. Do not use chemicals that are not labeled for use on cellulose evaporative cooling media.

Cleaning & Sanitizing

   Chemical groups: quaternary ammonia, detergents, mild acids, gluteraldehyde
   Example Products: Aqua Max XL, Cool-N-Klean, Virocid, CID-20

Algae Control

   Chemical groups: quaternary ammonia, quaternary amines, tributyltin oxide
   Example Products: Physan 20, Evap 100 Algicide, Triathlon, Green-Shield, Kool-N-Kleen

Note: Copper sulfate is an effective algae control product but is very corrosive in pure form and may damage pumps or other equipment. Do not use copper based products unless they have been specially formulated to prevent corrosion.

DO NOT USE

   Chemical groups: oxidizing agents, oxidizing biocides, caustic chemicals, strong acids, most swimming pool treatment chemicals
   [examples – chlorine bleach, chlorine dioxide, calcium hypochlorite (HTH tablets), hydrogen peroxide, sodium hydroxide, hydrochloric acid, sulfuric acid]
   Example Products: Clorox, Purex, Peraclean 5, Proxy-Clean, Muriatic Acid
Clogged pads restrict airflow and reducing cooling capacity.

A gentle spray from a garden hose is best for rinsing pads. Cellulose pads are easily damaged with a high pressure washer.