

Some Equine Arena Dust Control Measures

Some dust control recommendations from Eileen Wheeler's Book: Horse Stable and Riding Arena Design, Blackwell publishing, 2006

Dust Control

Developing an effective dust control program involves several steps. While a number of materials old and new are on the market, many of these give rise to environmental concerns regarding their use as palliatives. The Arizona Department of Environmental Quality discussed the following materials:

Calcium Chloride

Considered non-toxic but may be toxic to some plants, could become concentrated in groundwater or wells. Care should be taken to avoid contact with eyes or prolonged contact with skin.

Tends to be corrosive to equipment and can create slick areas when surface is wet.

Magnesium Chloride

Same as above but less corrosive.

Lignosulfonates (a byproduct of the wood pulp industry)

Can be moderately toxic to rainbow trout and many cause skin and eye irritations. Creates a slick and a hard surface.

Petroleum-based Products

May be injurious to skin and eyes

Surfactants and Enzymes

Generally considered non-toxic; however, they could have a drying effect on the skin and be severely irritating to the eyes...."

"Dealing with Dust"

If you have a dust problem, there is insufficient moisture in the footing. This doesn't mean all the arena is dry, for when as little as ten percent of the surface is dry, dust will be produced. The bigger the area, the more severe the problem. Insufficient moisture to prevent dust formation can result from several causes:

- ❖ Poor water coverage from sprinklers
- ❖ Duration of application insufficient to allow moisture to penetrate the footing
- ❖ High evaporation rate of applied water. Some of this occurs before the water hits the ground in arid climates.
- ❖ Hydrophobic conditions of footing (resistance to wetting). In severe cases, watering for a longer time just creates puddles on the surface.
- ❖ Optimum moisture conditions can only come about by checking the moisture level before you start watering and periodically thereafter until you reach a moist (but never wet) condition through most of the footing thickness.

If at all possible, watering should be done in the evening so as to reduce water losses from evaporation due to wind and lower humidity usually found during midday. In addition, water applied in the evening has time to penetrate before the traffic starts. Also, by avoiding high moisture levels at the surface, the tendency for compaction problems are reduced...

MANAGEMENT PRACTICES

The application of water is the single most frequently used tool for the control of dust. The degree of success that you may have in applying water comes back to two basic considerations:

1. How fast will the water enter the footing?
2. How long will it be retained by the footing?

As mentioned above, some soils have a resistance to wetting...

...One of the indoor arenas at Colorado State University, having an initial sand footing analyzed at 96% sand, no silt, and 4% clay, after one year of use was found to contain settled dust with a composition of 26% sand, 47% silt and 27% clay. This illustrates the abrasive effect created by the horses and the maintenance equipment on the footing. The material was airborne before being deposited, making it a candidate for inhalation by horse, rider and spectator...

...One of the benefits of using crumb rubber in a sand footing is that it reduces the abrasion between sand particles. However, this is only a benefit when the analysis on the sand shows little abrasion has started. Any footing that is already in a degraded state, with a high content of very fine and fine sand plus a significant amount of silt and clay, will not show any real improvement from adding rubber or any dust palliative..."