

Get Control of Arena Dust

Make your summer riding more enjoyable with some of these suggestions to help you keep the dust down.

Have you ever entered an arena and felt like you were riding headlong into a sandstorm? A dusty arena is unpleasant for riders, trainers and spectators alike, and it's not great for neighbor relations, either. Not only that, but frequent exposure to dust may pose significant health risks for you and your horse, as well as compromise his performance.

But unless you can afford a high-tech polymer-fused sand footing — such as Terra 2000 or Equation, which guarantee a dust-free arena — you're going to have to accept some dust as a fact of life. How much dust do you have to put up with? Not that much, if you find the right prevention and control strategies.

Let's start with a look at some of the factors that are responsible for creating dust. Then, we'll consider various dust-suppression options.



Dust isn't just caused by hot, dry days. As horses pound the footing, they break it down into smaller particles. The smaller the particles, the easier it is for them to become suspended in the air, causing dust.

Not Just Dry Weather

Dust consists of fine particles that become airborne. The particles can be clay, silt, pulverized sand or organics — any substance that's small enough for air to suspend it. Of course, knowing what dust is doesn't necessarily tell you where it's coming from, and a lot of misconceptions exist about what actually creates it.

Base issues. The first thing to look at is your base. A properly compacted base is essential to combating dust problems because it prevents the native soil from working its way to the surface. Native soil is full of “fines,” and if they get through the base and mix with your footing, your dust woes will escalate in a hurry.

A sufficiently compacted base will contribute a small amount of dust through the action of the footing material grinding against it, but it generally won't wear down more than one-eighth inch in a year. In low-traffic situations, dust from the base won't even be measurable.

By contrast, a base that wasn't well compacted can be a huge dust producer. If the base fails and begins to break apart, it's going to wind up as dust. And if it loses its effectiveness as a barrier, it will allow the soil fines to come up to the surface and compound the problem.

Dust Management

- If a base isn't properly compacted, it will create dust problems.
- Make sure the tines of your harrow are set high enough to avoid tearing up the base.
- Additives such as crumb rubber can help prevent footing breakdown, but only add it to fresh footing, not worn, already-dusty material.
- Be conservative when treating your arena with a dust-control agent. Apply a little and see how it works before adding more.
- Water is an effective dust suppressant — but only if you water deeply, at least two inches into the footing.

It's important to address any issues with your base before you tackle other potential sources of dust. Otherwise, you're always going to be battling dust, no matter what additional measures you take.

Footing issues. Let's assume you have a sound base, but you still have dust. Now it's time to evaluate your arena footing to see how it might be contributing to the dust situation.

To turn into dust, footing materials need to become suspended in the air. That's why fresh, clean sand isn't dusty: The particles are too large and heavy to become airborne. Unfortunately, sand breaks down with use, and when it becomes fine enough, it will become a problem.

If you have a sand footing, you can slow the breakdown process somewhat by adding a buffering material, such as crumb rubber or wood. Such additives help reduce friction between sand particles and add some cushioning so they are less likely to be ground up. Even so, some of your sand will inevitably be pulverized into fines.

If you bring in an unwashed sand, which may contain from 10 to 30% clay and silt particles — or you add dirt to a sand footing — you'll have dust from the get-go. This composition is the footing of choice for many western events, as well as for some dressage and hunter/jumper arenas, because it can provide more stability than clean sand. Just bear in mind that clay and silt are fines, so they tend to get into the air.

On the other hand, clay is one of nature's best sponges. If it's well watered, it can actually improve your dust situation by holding moisture in the footing. Specialized clay additives, such as bentonite, are even used for dust suppression.

The other types of primary footing materials — stone dust and wood — are also dust producers. Stone dust consists of extremely fine particles, and moisture is needed to keep them out of the air. Wood breaks down into dust when it's allowed to dry out. (We're not counting polymer-coated sand, although it's a primary footing material, too. As we noted earlier, it's guaranteed not to produce dust.)

Once you determine what's causing the dust in your arena, it becomes easier to evaluate your options to control it. We'll consider the pros and cons of various approaches next.

Dust suppressants vary considerably, but their goal is the same: To make the dust too heavy to become airborne. They accomplish this by coating dust particles, by making them stick together or both.



If your arena seems extraordinarily dusty, you might check the base to see that it's properly compacted. With a good base, the native soil won't work its way to the surface to cause additional dust.

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Water

The most prevalent means of controlling dust is by watering the arena. Watering coats particles and makes them stick together, and if done properly, it manages dust nicely. Unfortunately, many people water superficially, losing the benefit.

Wayne Gregory, general manager of **Footings Unlimited**, says the biggest mistake people make when watering an arena is that they don't water enough. "If you water lightly, the water's going to sit in the top inch," he said. "As soon as you go out and ride, you're going to bring up all that dry stuff. You want to water heavy and seldom."

Salts

After water, the next most common dust suppressant is salt — either calcium chloride or magnesium chloride. Both are humectants, chemicals that attract moisture from their surroundings. And if enough humidity is present, both are quite effective at combating dust.

However, calcium chloride, in particular, has significant downsides, and some experts advise against its use. For one thing, it can corrode the metal inside an arena and has a drying effect on tack and on horses' hooves. If it's concentrated enough, it may also produce fumes when it dries out.

Magnesium chloride is widely used and is much less caustic, although it can still dry out your horse's hooves. The general recommendation is to hose off his legs and feet and brush off your boots if you ride in a ring that has magnesium chloride in the footing.

Salt is readily available and relatively cheap — you might spend \$1,000 a year for a 10,000-square-foot arena. It can be applied as a granule or a liquid.

Because it will eventually wash away in the rain, it will last longer in an indoor arena. You'll typically need two to four ounces of granular salt per square foot, and one application should last roughly six to eight months. Salt also lowers the freezing point, so you can water your arena at lower temperatures than you otherwise could.

Magnesium chloride is available from such companies as Cargill, North American Salt Company and Dow Chemical.

Wood and Fiber Additives

You can make dust particles too heavy to become airborne by adding something to your footing that helps it retain moisture. One choice is wood — shavings, chips or a product such as Fibar. We mentioned that wood can act as a buffer to slow the breakdown of sand, but it will also boost the moisture-retention capacity of your footing. On the downside, wood is pretty soft, and as it gets ground against sand and hooves, it will break down. So unless you keep it moist, you'll wind up with a new batch of dusty fines.

WATER MEASUREMENT TIP

Watering too shallowly is not going to do the trick when it comes to suppressing dust. But how do you know when you've watered deeply enough without going overboard and creating a swamp? You could keep digging down to check while you run your hose or sprinklers. However, **Wayne Gregory of Footings Unlimited** suggests this simple alternative:

Set up a rain gauge in an area of the arena that you're going to water. As you water, periodically check the footing to see how far the water has penetrated. When it reaches the desired level — at least two inches — see how much water is in the rain gauge. This will tell you how full the gauge will be when you've adequately watered the ring. Now whenever you water, just set out the gauge and then stop watering when it's filled to that level.

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How Much Control Do You Need?

Figuring out the optimum application rate for a dust-control product is tricky. In fact, even the product manufacturer's standard recommendation is merely an estimate, because the amount of product you need to apply depends on the surface area of the particles in your arena.

For instance, if you have brand new sand, you might need an ounce per square foot. But a year down the road, after each particle has broken into four pieces, you'll have four times more surface area to coat, so you might need three ounces.

The best approach is to make dust control an iterative process, says Footing Unlimited's Wayne Gregory. "If you apply too much, it's a mess, whether it's water or vegetable oil or mineral oil or wax. Start with a little, add a little, and just keep stepping it up until you get it where you want it."

and canola oil. These substances are safe and biodegradable, assuming you buy products that are properly refined and not previously used. However, they also evaporate quickly, so they might last only a few months even in an indoor arena.

Depending on where you live, these products might run \$2,000 to \$5,000 a year. You can buy such oils and apply them yourself, although at least in the Midwest, many companies will come and spray them on your arena for you. Products in this category include Dustkill, ArenaPro and Equestrian SoyL.

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Fiber additives offer the same benefits as wood, but they're more durable and take longer to break down. Fiber additive options include SandTies, Eurofelt and FibreSand.

Petroleum-based Products

Many dust-control products on the market contain petroleum derivatives such as mineral oil and Vaseline. Believe it or not, both come from highly refined crude oil. Such products are effective at suppressing dust, they're clean, and they're good for hooves (and even your boots). On the other hand, they evaporate and break down quickly, and they're costly. You could spend as much as \$10,000 a year to treat a dressage arena with a petroleum-based oil product.

Also in the petroleum category are waxes, which are sprayed onto the arena to form a bond with sand particles. In general, waxes can be pretty effective and may last five to 10 years in an indoor arena if you select a quality product with a good warranty. (Waxes are subject to evaporation, UV breakdown and melting, so a warranty is very important.)

Because of cost variances, you should look at wax you can apply yourself. A do-it-yourself wax coating, such as EuroWax, might cost around \$1.50 per square foot. If you pay a vendor to apply a wax product, you could be looking at up to \$5 or \$6 a square foot.

One word of caution: Avoid black wax products. They're cheaper, but not as purified as other waxes. They produce vapors and smell bad, and they may blacken your arena as well.

Vegetable Oils

A number of dust suppressants rely on familiar vegetable oil products, including soybean oil, cottonseed oil

KNOW WHAT YOU'RE GETTING

Sometimes it can be hard to tell exactly what's in a particular dust-control product. Terms such as "biodegradable liquid" or "synthetic organic fluid" aren't too illuminating. To get an idea of what the product contains:

- *Check out the product's ingredient label (although not all products will reveal their key ingredients).*
- *Ask for a material safety data sheet (MSDS). The MSDS will disclose any dangers you should be aware of with the product.*
- *Determine what type of warranty is available for the product.*

A note about oils: Petroleum-based and vegetable oils are effective when used on a footing that is all or mostly sand. Mixing oil with a footing that has a heavy concentration of silt and clay (or rubber) will produce a slick mess. When using oils, just lightly coat your sand. As with all dust-control products, you should start with a little and then add only what you need to get the results you're after.

Water-absorbing Polymers

Products such as ArenaMoist and Terra-Sorb consist of crystals that are designed to absorb and release water. You may have encountered similar products in your garden supply store because they were created for gardening and landscaping use. These products usually say that they will absorb 300 (or more) times their weight in water.

The problem with using them in an arena is that to get them to absorb that much water, you have to flood it. Because most people are reluctant to submerge their arenas, they often don't fully hydrate the product and get its true value.

Although these products can help reduce dust, they're somewhat expensive. And problems may arise because they're rendered ineffective by hard water and they're sensitive to UV sunlight. In addition, the material is likely to become slippery if it gets clumped together when it's wet. Ideally, it should be evenly distributed through several inches of footing, preventing that problem, but that's not always the reality.

Coating/Binding Products

Another category of dust suppressants consists of emulsions that are intended to coat the footing material and fight dust by making particles stick together. In this group are products such as Dustshield, Durasoil and Arena Rx.

As a general rule, these products have a cumulative effect on footing, so they require light maintenance applications to keep the treatment effective. For example, a first application of Arena Rx on a 10,000-square-foot arena might cost roughly \$1,200; a maintenance application a year later would run about half that much.

ADDITIONAL OPTIONS

Arena dust control is a tiny aspect of the enormous dust-control industry, and new products and approaches are being developed all the time. In fact, quite a few dust suppressants are available that aren't designed for arena use but that might be worth investigating. For instance, an assortment of plant-derived products are on the market, including sugar beet extracts, pine sap emulsion, lignins (a sticky wood pulp substance) and electrochemical treatments that condition soil and change its water-holding properties PH*