

It's Stall Fresh By A Nose In Deodorizers

We *reduced odors* and *saved bedding* —
what more could you ask for?

Most of us take pride in having a clean barn and pat ourselves on the back that there's no offensive odor—at least to fellow horsemen. However, you may not realize that even though you can't actually "smell" anything, there's a constant release of gases from manure and urine that can assault your horse's lungs.

Most studies implicate fine particulate matter and endotoxins in the air as the primary factors, and they are indeed important. However, ammonia concentrations at the floor level are much higher than in the barn air in general, and the horse will get a concentrated dose when down sleeping or resting. That's where stall

Consider This . . .

- It's the release of gases from manure and urine that irritates your horse's lungs.
- We were able to reduce the amount of bedding we used with some of these products.
- Barn/garden lime isn't toxic, except that any fine powder can irritate the respiratory tract and eyes.
- Excessive dietary protein will increase stall odors, and protein is the most expensive ingredient in your horse's diet.



You can choose between liquid or powder stall deodorizing products.

fresheners and deodorizers truly have a place in wise barn management. It's simply a matter of good health.

HOW DO THEY WORK?

Step one for a fresh, healthy barn is plain old stall cleaning. That means keeping stalls well picked out and the removal of soaked bedding and pooled urine. Good ventilation is also extremely important. However, that still won't completely eliminate ammonia.

Ammonia is produced by bacterial breakdown of urea in urine and unabsorbed protein in manure. Stall-freshener products are designed to give you extra ammonia control.

Simply absorbing urine helps reduce ammonia by making the urea less available to bacteria. For example, stalls with paper-based beddings have less ammonia than stalls with straw. Diatomaceous earth is also highly absorbent.

Stall fresheners go one step further when they're mineral-based. Zeolites, montmorillonite and Bentonite (which is primarily montmorillonite)

clays actually chemically bind ammonia molecules. This binding process is called adsorption.

Montmorillonite can bind both urea and ammonia, but binds them irreversibly. Zeolite binds only ammonia (urea isn't the odor problem), but can release it again so it acts as a slow nitrogen fertilizer for soil. Of the two, our testers thought the zeolite gave better ammonia odor control, but montmorillonite absorbed more moisture.

Yucca saponins have been proven to reduce ammonia production, although the exact mechanism is unclear. Natural-source adsorbents and adsorbents from plants may also be used.

Since the production of ammonia depends on bacteria, a variety of approaches gear ingredients toward the bacteria. Stall Dry Plus contains a chemical antimicrobial.

Two spray-on products take the opposite approach by supplying live bacteria that will breakdown ammonia and other organic waste products. Surfactants also disrupt bacteria. Enzymes may be added to help breakdown of ammonia and other malodorous wastes in manure.

Mucking stalls releases ammonia and stirs up dust, mites and mold



Stall Fresh helped us save bedding and reduced odor and wetness.

spores. Finely ground stall fresheners are also potentially irritating to you and your horse. Try to remove your horse from his stall during stall cleaning, if possible, especially if you're using a powdered deodorizer, and keep the barn well-ventilated.

Stall Fresheners

✓ Horse Journal Editor's Choice
\$ Horse Journal Best Buy

Product	Ingredients	Comments
Stall Buster GETMicroSolutions getmicrosolutions.com 877-446-4276 \$19.99/22 oz. 82¢ per application 24.4 applications per bottle 35¢/day	Deionized water, nonpathogenic bacteria, stabilizing agents. Contains a mixture of ammonia degrading and other organic material degrading bacteria, 9.46 million cfu/qt.	Tea-colored liquid with a faint, almost yeast-like, odor. 0.9 oz. per 12x12 stall. We used a 1 pint spray bottle, but if you have some other type of sprayer use the volume needed to cover 144 square feet. Spray the stall floor, add bedding and spray the bedding to get maximum benefit from both odor reduction and more rapid rate of composting. Odor control is good. Need to reapply to any newly added bedding and to stall floor twice a week.
✓ Stall Dry Stall Dry Plus with Antimicrobial Absorbent Products Ltd www.wicp.com 800-667-0336 Average \$14.99/24.6 lbs. = initial set up and from 20 to 40 days use. 75¢ to \$1.50/day	Granules, composed of diatomaceous earth and montmorillonite clay. The Plus Formula also contains Myacide, 0.005%, an antimicrobial.	Instructions for initial set-up (repeat monthly) are to apply 4 to 6 lbs. to the floor of a stripped stall (10x10 stall). For daily maintenance, apply ½ to 1 lb. of product to the surface of all wet spots, allow to sit 12 to 15 minutes, then “fluff” bedding with a fork. The Stall Dry absorbs moisture, extending the life of the bedding, but it doesn't solve the problem of urine pooling under straw or shavings. We also had buildup in the bedding over time, which got onto the horse's coats. When used only applied to the floor of the stall after cleaning, it still extended bedding life significantly when used at the higher application rates. Odor control was better with the Myacide-treated Stall Dry. Saving in bedding about 25%. It claims to help with fly control due to the diatomaceous earth and damage to fly larvae. However, diatomaceous earth only works when dry. Note: Myacide AS (bronopol) is a bromine-based antibacterial and antifungal that's been used as an odor neutralizer in kitty litters, as a pesticide for plants and as an odor neutralizer for toilets.
✓ Stall Fresh Advanced Management Solutions www.stallfresh.com 715-284-3360 \$30/13 lbs. (about 40 days) 74¢/day at upper application rates, 37¢/day for odor-control (average daily cost at every other day application)	Montmorillonite clay-based, with seaweed concentrates, vegetal adsorbents (for sulfur odors), alginates (gums extracted from seaweed cell walls), essential oils.	Light brown powder, faint pleasant scent. Up to a 30% reduction in bedding added when used at the higher application rate, concentrated on urine spots. If odor control is the main objective, the lower application rates will work. Need for reapplication depends on how much urine the horse produces and how large the stall is but average was every other day for horses confined to stalls except when exercising, and bedded with liberal bedding of shavings or deep straw. The essential oil used is claimed to be an insect repellent. We could not check this under our trial conditions. Note: This company's Trailer Fresh product is the same material in a smaller container.
\$✓ Stall Power Kaeco Group www.kaeco.com 800-228-1211 \$17.95/10 lbs. 28¢/day when added to ammonia spots	Calcium carbonate, verxite granules, ferrous complex, selected natural proprietary saponins, diatomaceous earth, methyl saliylate.	Fine, pinkish-gray powder that tends to form small balls. Pungent, pleasant mint-like scent. Low airborne dust. Instructions are to apply 1 lb. every 7 to 10 days. However, with our stall-confined horses, we found we needed to add more to urine spots for best ammonia control, although the pungent aroma of the product does indeed last about 7 days. Low moisture absorbency overall, so we saw no change in amount of bedding used. But it had very good odor control. Highly fragrant so observe horses with sensitive respiratory tracts for any signs of irritation.
Su-Per Odor Eliminator Gateway Products www.buygpdirect.com 888-472-2825 \$8.33/qt. (makes 1.25 gallons) One qt. will last about 2 months, 14¢/day	Blend of aerobic, anaerobic and facultative ammonia and organic-matter utilizing bacteria, including strains for more rapid breakdown of plant fibrous material. 165 billion cfu bacteria per qt.	Whitish liquid, with a faint minty/soapy odor. Dilute 1 part product with 5 parts water to apply. Apply to stall floor and a light coat on top of bedding. Takes about a pint of liquid to do one stall. Reapply at floor level weekly, and to all freshly added bedding. Regular use should speed composting. Good odor control.
Sweet PDZ Steelhead Specialty Minerals www.sweetpdz.com 800-367-1534 \$11.99/40 lbs. (average price, varies by area, granular may be slightly higher priced) 37¢ to 57¢/day	Clinoptilolite clay (a form of zeolite).	Available as both a granular form and a pellet. Odorless. Start with a stripped stall and apply liberally to all areas that usually become wet. Can apply daily lightly after removing saturated bedding, or use only “as needed,” when ammonia odors again are detected (usually every other day). Not as water-absorbent as some other choices, but the odor control is excellent. Saving in bedding was about 20%. Low-to-no dust with the granular form.

OUR TRIAL

We did our trial in winter, in a small barn of four to six horses that was closed up, except for traffic in and out. Horses were stall-confined except when being exercised. Products were used according to manufacturer's recommendations, with any modifi-

cations we found necessary for best results listed in the chart.

The products fell into two general categories, those that only addressed odor and those that also offered significant moisture absorption, which means less bedding needs to be removed. We tested using both shavings and straw. All

soaked bedding was removed daily and urine spots taken down to stall bottom.

You'll get more punch for your pennies if you use a stall freshener that is also highly absorbent. We found savings in bedding added up from 20 to 30% for Sweet PDZ, Stall Dry and Stall Fresh, respectively.



The liquid products did a good job on odor control.

BOTTOM LINE

All the products were effective in reducing ammonia odor. Gateway's Su-Per Odor Eliminator was a standout for price at 14¢/day and should help speed composting. However, the down side is that mixing and misting takes longer than sprinkling powder and you're working with live—although not harmful except perhaps on open wounds—bacteria. It's also good for freshening trailers between cleanings.

Sweet PDZ and Stall Dry Plus did somewhat better on



Kaeco's Stall Powder earned our Best Buy.

controlling ammonia, but we're not sure if the antimicrobial in Stall Dry Plus would interfere with composting (and the company representative didn't know either), if that's an issue for you.

Overall, it was close match between Stall Dry and Stall Fresh on bedding savings, but over a one-month period we used approximately 5% less bedding with Stall Fresh than Stall Dry and cost was better as well. Therefore, Stall Fresh gets the nod as our No. 1 choice.

Kaeco's Stall Power was the most economical of the powders if odor control is your main objective, earning our Best Buy. [E]

Worth The Cost?

Our winning product cost \$30 to use for 40 days and saved 30% over a month's time in how much bedding needed to be replaced. We went from using an average of 27 bales over the entire 40-day period to 19, a savings of 8 bales of straw at \$5/bale for a total savings of \$40 compared to \$30 for the product. Our annual savings would be \$91.25. Note: While many products instruct you to cover the entire stall floor, concentrating on urine spots works just as well and saves money.

Fly Reduction

Products that concentrate on control of ammonia/urea and claim to reduce fly populations may be pushing the envelope a bit. There's no evidence to suggest that flies are attracted to ammonia. They're attracted to decaying organic material (manure). Reducing fly populations has a lot more to do with manure removal than odors.

Kitty Litter

Out of curiosity, we tried two types of clay-based kitty litters. The plain kitty-litter product contained Fuller's earth, a blend of clays that had moderately good absorption but poor odor control. At between ½ and 1 lb. per day, concentrated on wet spots, it helped keep the stall drier. The clumping kitty-litter products cost more but offered better odor and moisture control, although wet kitty litter can be slippery.

If you try kitty litter, avoid "organic" clumping litters. Some are made from corn and wheat byproducts, which may be attractive to the horse and any mold-

ing would make them unsafe. Pine-based clumping litters are also available. Avoid fragrances for horses with touchy respiratory tracts. We found up to a 30% reduction in bedding added. Generic clay kitty litter cost us about 10¢ to 20¢/day, while the clumping products ran 31¢ to 62¢/day. If you don't mind scooping twice, a combination of barn lime and nonclumping kitty litter gives noticeable control of moisture for about one-quarter of the price of the stall products. The Bentonite/montmorillonite clay-based kitty litters performed the best, at half the price.

What About Lime?

There's lime—and then there's lime. "Lime" can refer to either slaked lime, which is calcium hydroxide (aka hydrated lime), or calcium carbonate, aka calcite, limestone or barn lime. Both are fine white powders and both contain calcium, but the similarity stops there.

Calcium hydroxide is used in white wash. Although it has disinfectant properties, it shouldn't be used in stalls, as it's an irritant to skin, eyes, respiratory tracts and the mouth/GI tract if the horse eats it.

Calcium carbonate (barn lime, garden lime) isn't toxic except that any fine powder can irritate the respiratory tract and eyes. It's so safe that it's also an approved calcium supplement. Calcium hydroxide is classified as toxic, while calcium carbonate is only a "nuisance dust." Fine calcium carbonate doesn't have the high moisture-absorbing capacity of clay, but it's a time-honored approach to odor control.

Be careful, though. Under very wet conditions, barn lime simply forms a slippery mud. However, if you're careful to soak up all pooled urine, it can help dry and deodorize wet spots. Lime's greatest advantage is price. You get noticeable moisture and odor control for about 5¢/day.