RELATIVE ABILITY OF SPILLFIX AND OTHER INDUSTRIAL ABSORBENTS TO SOLIDIFY GREASE TRAP WASTE

SpillFix®

Environmentally responsible solutions for a safer workplace

American Green Ventures (US), Inc
180 Towerview Court Cary,
North Carolina 27513
Tel; (919) 535-8278

SPILLFIX.COM

RELATIVE ABILITY OF SPILLFIX AND OTHER INDUSTRIAL ABSORBENTS TO SOLIDIFY GREASE TRAP WASTE

Background

Grease trap waste is a mixture of water, oils, fats and organic solids that have been removed from commercial kitchens and food processing plants drainage water. It is a foul smelling, greasy material.

Products Tested

- SpillFix Organic Absorbent®.
- SpillFix Organic Solidifier®.
- Wood Shavings.
- Bentonite Clay. (Kitty Litter)
- Water absorbing polymer crystals. (Polymer Gel)

Summary

- All products tested, except the polymer gel, rapidly solidified the grease trap waste.
- The volume of SpillFix and Bentonite Clay needed to solidify the waste was up to to 50% less than the volume of Wood Shavings required.
- The weight of Bentonite Clay required to solidify 100L of waste was up to 5 times more than the SpillFix or Wood Shavings.
- The volume of the solidified waste produced, was up to 50% less with SpillFix or Bentonite Clay compared with Wood Shavings.
- The weight of the solidified waste produced, was up to 5 times less with SpillFix or Wood Shavings compared with Bentonite Clay.

SpillFix
INDUSTRIAL ORGANIC ABSORBENT

Most grease trap waste goes to landfill. However, the cost of disposal is directly correlated with Volume and/or Weight of the solidified waste.

This report describes the findings from tests conducted to compare the effectiveness of SpillFix products with other common absorbent materials for solidifying grease trap waste.

Plate 1

From top left in a clockwise direction – Bentonite Clay, Wood Shavings, SpillFix Organic Absorbent®, SpillFix Organic Solidifier® and Polymer Gel in center.

Purpose

The study was designed to establish:

1. The minimum rate of each product needed to convert the waste into the spade-able form required for landfill.
2. The increase in volume and weight of the waste after treatment so that disposal costs can be calculated.

METHOD

Absorption

The following industrial absorbent materials were tested (Plate 1):

1. SpillFix Organic Absorbent®.
2. SpillFix Organic Solidifier®.
3. Wood Shavings.
4. Bentonite Clay. (Kitty Litter)
5. Water absorbing polymer crystals. (Polymer Gel)

Each product was added incrementally and mixed with 100mL of grease trap waste until all liquid had been absorbed. This was assessed visually by tilting the mixing container to encourage liquids to drain out of the absorbent material (Plate 2,).

FINDINGS

Absorption study

The Polymer Gel failed to absorb the liquid even after several days and when high rates were applied (Plate 3). It is possible that the polymer was able to absorb water but not the oil and fat. For this reason, no further testing was done on this product.

Plate 2

Light brown liquid can be seen in the base of the mixing container

Plate 3

Consistency of the waste amended with polymer gel

The volume and weight of the added absorbent and the final volume of the treated waste was recorded. The test was repeated 5 times.

The graphs presented in this report show the mean and standard deviation for the 5 replicates

The volume of absorbent required to convert 100L of waste into a solid form that could be moved with a shovel is shown (Figure 1).

The volume of SpillFix and Bentonite Clay needed to treat the waste was about half that needed when Wood Shavings were used. This is because the Wood Shavings have much larger particle sizes.

The weight of Bentonite Clay needed to absorb 100L of waste was around 5 times more than the other absorbents (Figure 2).

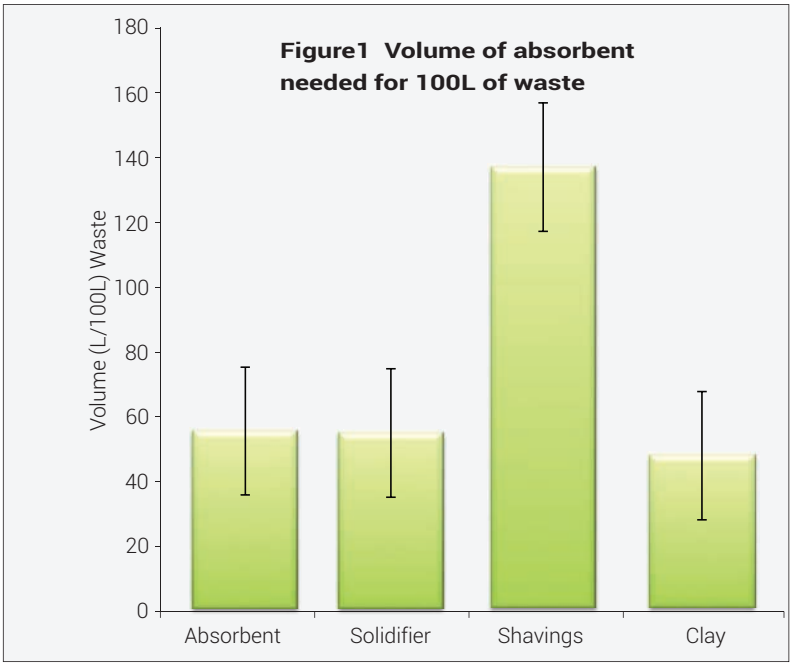

Figure1

Volume of absorbent needed for 100L of waste

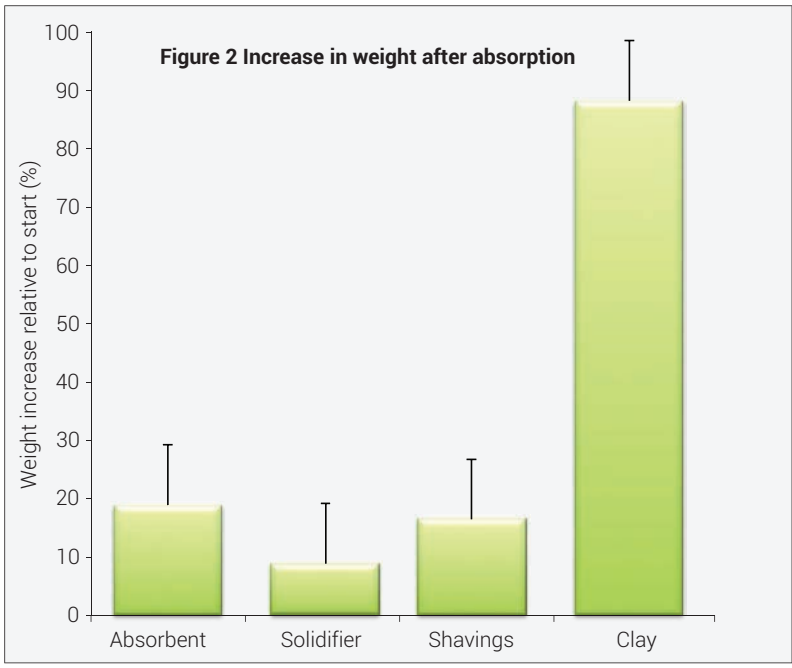

Figure 2

Increase in weight after absorption

Figure 3

The final volume of the treated waste was found to vary between absorbents (Figure 3). The most marked difference was between the wood shavings and the other products.

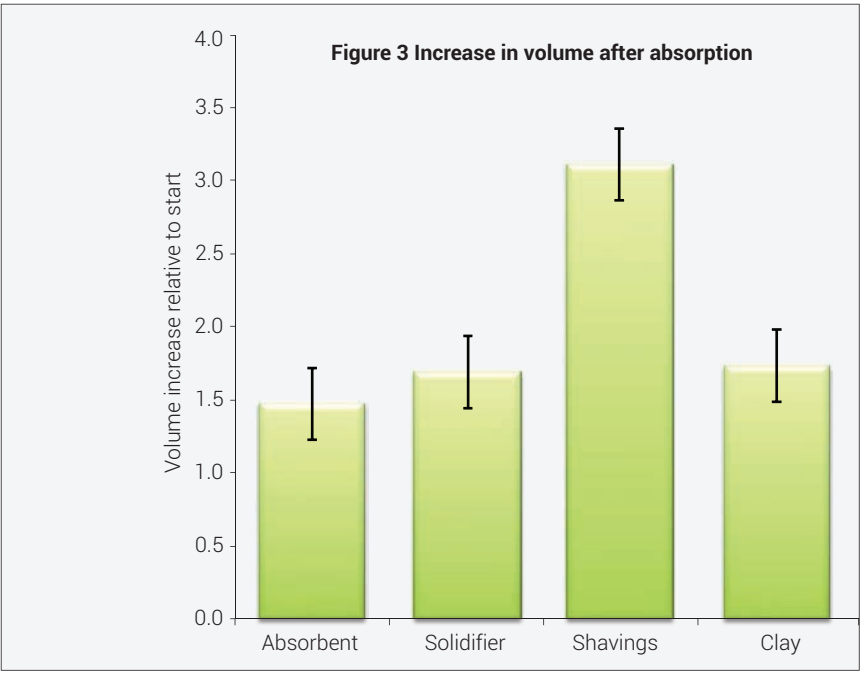

Figure 3

Increase in volume after absorption

Plate 4

From top left in a clockwise direction – Bentonite Clay, SpillFix Organic Solidifier®, SpillFix Organic Absorbent® and Wood Shavings.

When SpillFix or clay were used, the volume of the waste increased by half. However, when wood shavings were used the volume increased by 3 times. In other words, 100L of waste became 150L when treated with SpillFix or clay and 300L when treated with wood shavings. This difference is a consequence of the low bulk density of the shavings and the difficulty of compressing the treated waste (Plate 4).

Observations

- None of the absorbents reduced the odor of the waste to an acceptable level.
- The Bentonite Clay quickly absorbed all liquids including oils and fats but the resulting mass was heavy, tended to smear (Plate 5) when swept and was not flowable which would make spreading or injection on agricultural land difficult.

Figure 3

Smearing caused by bentonite clay seen in top left of the photo.

- SpillFix rapidly absorbed all liquids including oils and fats. The treated waste had a crumbly, light texture and left very little residue when removed from a surface.
- The open structure of the wood shavings and the SpillFix waste should speed up biological decomposition of the organic compounds by allowing air to enter the material. By comparison, the clay treated waste had very little air filled porosity, which would encourage anaerobic odor forming conditions. The SpillFix Organic Solidifier® produced waste with a more open structure than the SpillFix Organic Absorbent®.
- The fibrous nature of the Wood Shavings would possibly cause tangling problems with machinery used to inject or spread the waste on agricultural land.

Conclusions

SpillFix Organic Solidifier® appears to offer significant cost savings over wood shavings for solidifying grease trap waste because less material is required and because less waste volume is generated.

The physical properties of the SpillFix treated waste make it more suited to agricultural use than the waste generated by other absorbents. Increasing the rate of addition would also improve the products flowability and ease of application to soil.

The SpillFix Organic Solidifier® produces a more porous waste and this structure should allow for a degree of aerobic decomposition and so minimize odors. The SpillFix Organic Solidifier® also has a very large surface area to volume ratio, a property known to support strong biological activity and to minimize odor production.

Further work is needed to develop a grease trap waste product that provides a commercial benefit to farmers. Further processing will be necessary to reduce odor, overcome water repellency and increase the nutrient content of the waste. In the short term, adding the treated material to a compost would have less technical impediments.