



Wisconsin Institute for Sustainable Technology  
College of Natural Resources  
**University of Wisconsin-Stevens Point**

# Removal of Fat Deposits in Water

GREASEZILLA STUDY



**Justin Hall**

Project Specialist

University of Wisconsin-Stevens Point

[Justin.Hall@uwsp.edu](mailto:Justin.Hall@uwsp.edu)

715-346-4036



## Study Summary

Wisconsin Institute for Sustainable Technology at UW Stevens Point conducted a study of FOG (fat, oil, and grease) control by GreaseZilla versus a major competitor.

Products were tested on butter, coconut oil, lard, a combination of those three, and an active lift station grease sample. The lift station chosen is a municipal station that primarily receives fast food restaurant waste.

- Products were tested against each other and a control
- The municipal system that primarily receives fast food waste, where the restaurant grease sample was taken, then volunteered to replicate this study in the field. Their results confirmed our data.
- GreaseZilla worked 20-63% better than the competitor in every sample area

Within  
**1 Hour**  
Greasezilla  
Removed  
**76.4%**  
Of Fat in a Lift  
Station Sample

**VS.**  
The Competitor  
Product Seeing  
**0%**  
Fat Removal

**In all tested sources,  
the addition of  
GreaseZilla aided in  
the removal fat.**

## Abstract

The presence of fats, oils, and greases (FOG) is a major concern for the municipal and industrial wastewater industry. Presence of FOGs in wastewater treatment systems can lead to buildups which can cause blockages and ineffective wastewater treatment. This is especially true in lift stations, where buildups of FOGs can impede sewage flow. The point of entry can be from numerous sources such as; industry, restaurants and homeowners. Regardless of the source, once it enters the sewage pipes it can become problematic.

The objective of this study was to determine the effectiveness of GreaseZilla biocatalyst, a wastewater additive developed and produced by Aquafix Inc. According to product labeling the addition of this GreaseZilla biocatalyst to areas prone to buildups of fat deposits will aid in 'breaking-up' these deposits so they can flow through the treatment system.

This study was completed at the Wisconsin Institute for Sustainable Technology (WIST) located within the University of Wisconsin – Stevens Point. Five different fat samples were tested including butter, coconut oil, lard, a field sample, and a composite of butter, lard and coconut oil. The Aquafix GreaseZilla biocatalyst was also compared against a competitor's product.

## Experimental Conditions

All experiments were carried out in a temperature controlled shaker table at 25°C. Shaker speed was set at 130RPM. Testing was performed on 5 different fat samples: Butter, lard, coconut oil, a field sample, and a composite of butter, lard, and coconut oil.

## Test Methods

Experiments were done in 250 mL beakers. To each beaker 3 mL of fat was added. Prior to adding the fat, it was first melted on a hot plate. Beakers containing the fat were then placed in an incubator set at 70°C for 4 days to remove any residual water. After the 4 days the beakers were weighed to find the initial mass of the fat.

The beakers were allowed to sit at room temperature until the fat fully solidified. Then 3 mL of either the GreaseZilla or the competitor's product was added to each beaker. The beakers were placed in a temperature controlled shaker table for 1, 5, 10, 20, 30 and 60-minute periods. Once the beakers were removed, they were washed once with 20 mL of distilled water, swirling vigorously for 30 seconds. The beakers were washed three additional times with 10 mL of distilled water.

The beakers were placed in the incubator at 70°C for an additional 4 days to remove all the water. Once dry and cooled samples were weighed, and the mass loss was calculated.

All experiments were completed in triplicate.

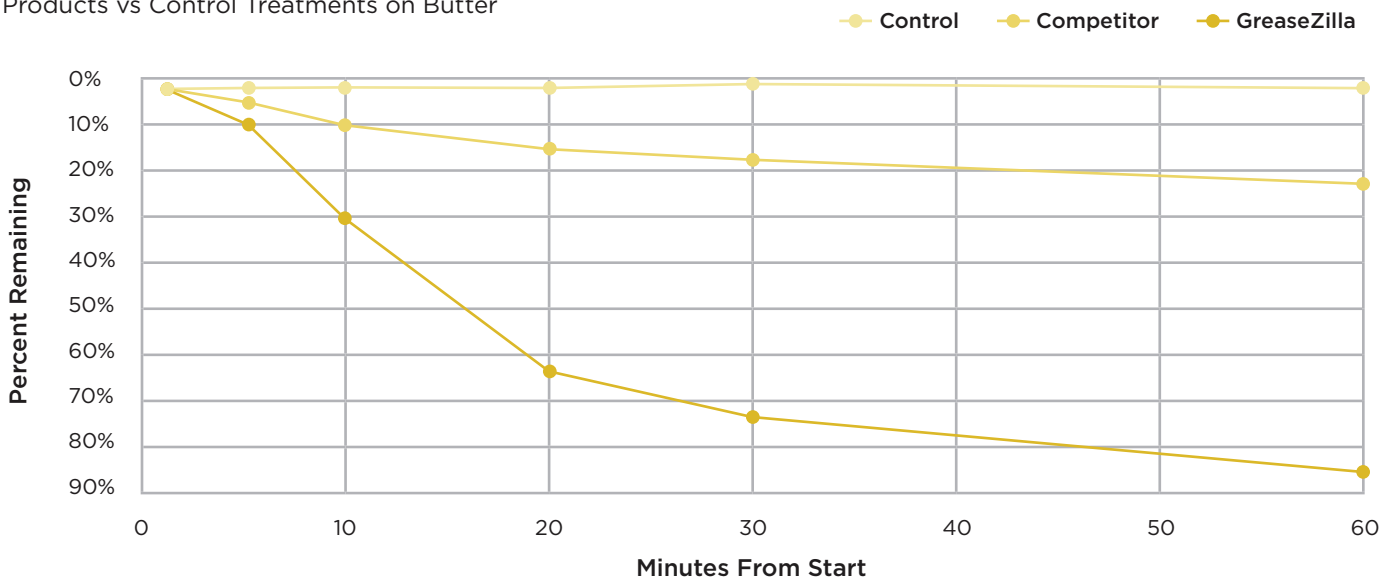
## Results

The following section contains the results for the experiments completed using the two products. A blank run, using distilled water in lieu of the products was also done.

Below in Figure 1 is shown the removal of butter over a period of 60 minutes comparing a blank, GreaseZilla and a competitor's product. A maximum removal of 85.2% of the butter was observed at 60 minutes with butter treated with GreaseZilla.

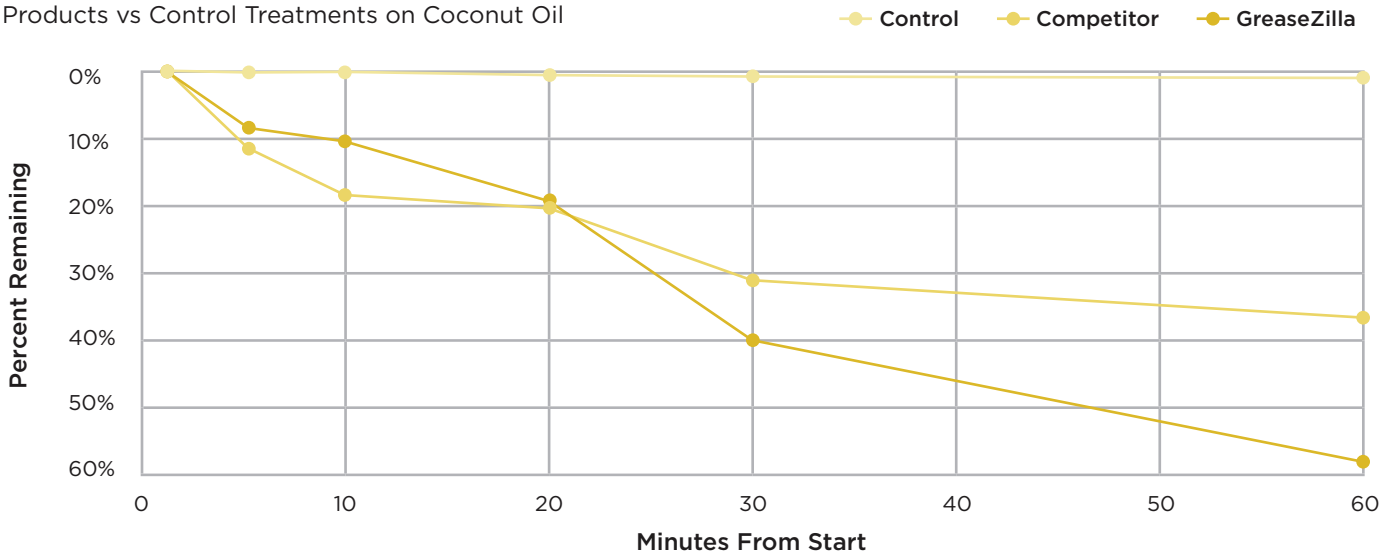
**Figure 1:**

Products vs Control Treatments on Butter



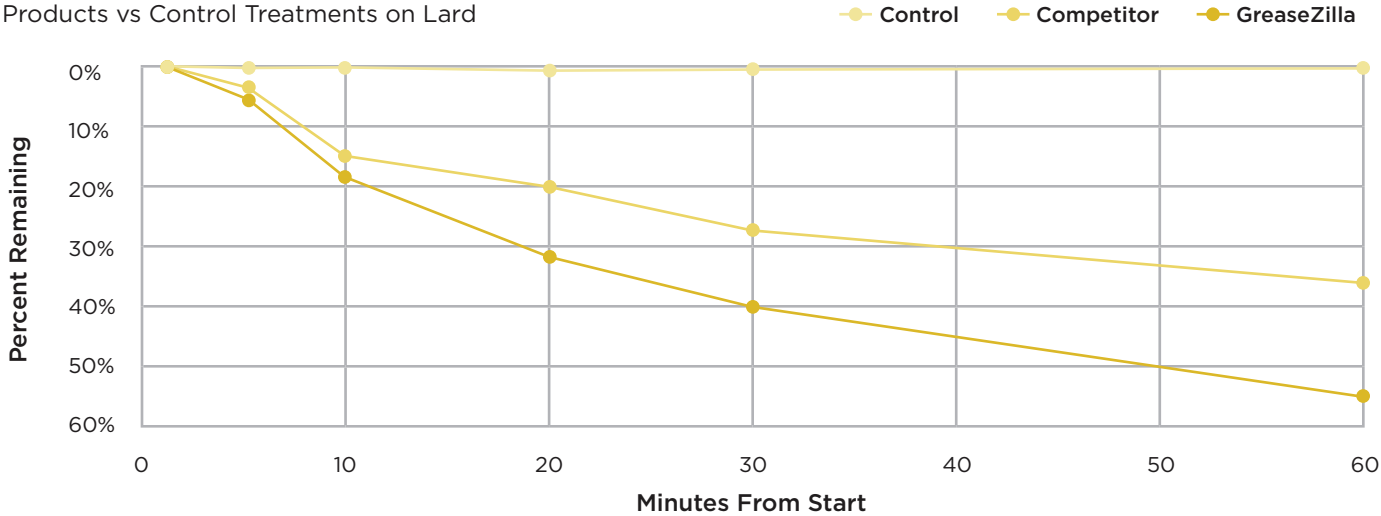
**Figure 2:**

Products vs Control Treatments on Coconut Oil



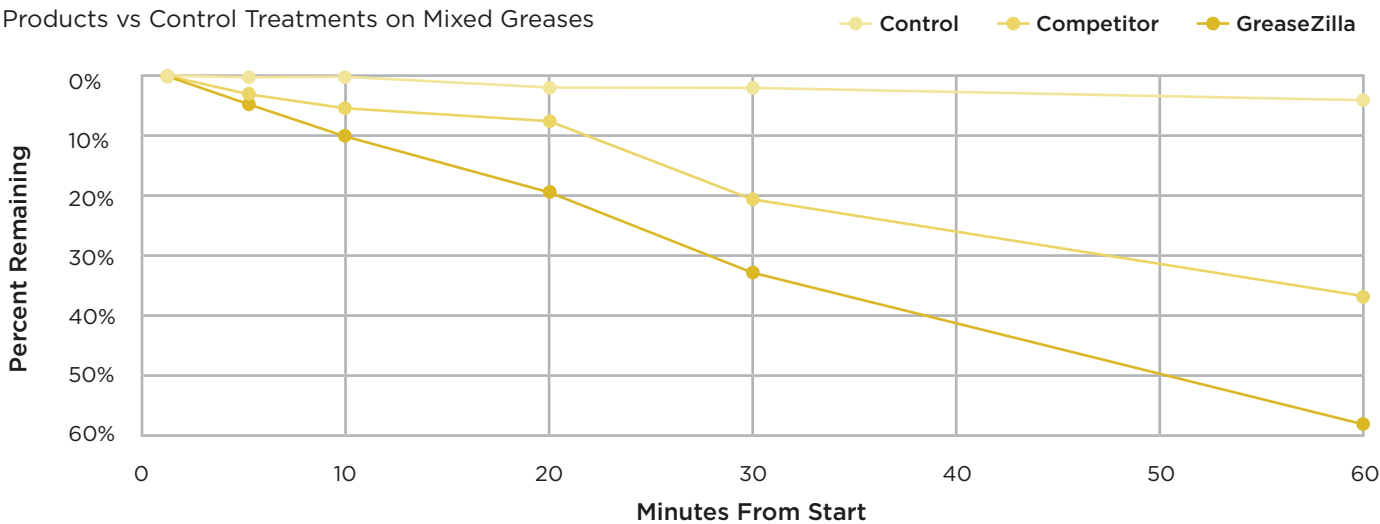
**Figure 3:**

Products vs Control Treatments on Lard



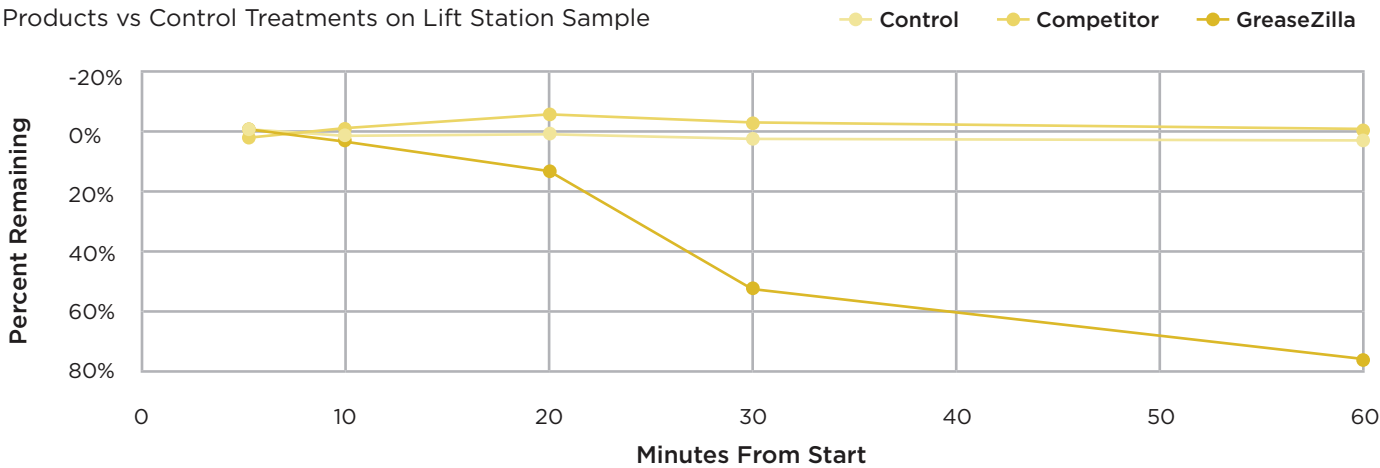
**Figure 4:**

Products vs Control Treatments on Mixed Greases



**Figure 5:**

Products vs Control Treatments on Lift Station Sample



# Conclusion

Shown in Figure 6 is the percent removal of a fat at 60 minutes. With all three sources of fat the GreaseZilla treated samples had the greatest reduction. Treating with only distilled water showed little to no reduction in mass. This would support the claim that the biocatalyst treatment is aiding in the breaking up of the fat deposits.

**Figure 6:**

Percent Fat Removal at 60 Minutes

	Butter	Coconut Oil	Lard	Composite Grease	Lift Station Sample
Control	1.3%	1.5%	0.7%	1.0%	2.2%
Competitor	22.5%	36.1%	36.0%	37.3%	-0.5%
GreaseZilla	85.2%	56.4%	55.0%	58.6%	76.4%



Study crafted and completed by the  
**Wisconsin Institute for  
Sustainable Technology**

Product provided by



[www.teamaquafix.com](http://www.teamaquafix.com) | [info@teamaquafix.com](mailto:info@teamaquafix.com)