

Reduction of Odours in Carpet by using Expel Ag-Scent Product.

Introduction:

Historically, when dealing with pet or human waste in carpet, people were required to manually clean the soiled area. This involved scrubbing with a chemical cleaner and wiping up the residual moisture. The result was a stain that appeared to be gone, but still smelled like urine, because residual urine was left in the carpet and pad. Strong perfumes in the cleaning product might temporarily cover up the odour, but after the perfume dissipated, the urine smell would still be present. And even worse, when the temperature or humidity was high, or the carpet was moistened by a spill. The smell from the soiled area was reactivated, causing a strong ammonia odour. Many times, carpet and pad had to be removed and replaced to eliminate the smell from a residual stain or stains.

With these problems in mind, Expel Laboratories developed a product that eliminates odours by biologically removing residual organic waste and neutralizing the residual odour components through the process of destructive elimination. The biological removal of the organic waste is accomplished by the application of Ag-Scents non-odour-causing bacteria to the stain. Ag-Scent's bacteria and neutralization system, when applied, utilize the organic waste (in this study urea, the major component of urine) for growth and consume residual organic waste not removed from the carpet or pad. Ag-Scent's bacteria are naturally occurring (isolated from the environment) and are non-pathogenic.

Experimental Design and Rationale:

An experiment was initiated to test the effectiveness of the biological product at removing stains and odours from carpet and pad. A protocol developed by Expel and our testing Laboratories in conjunction with a leading carpet care company was used for the study. Cat urine was used to saturate the carpet and pad. After 24 hours, Ag-Scent's biological product was added to the dry stain, and bacterial growth was monitored over time. Odour reduction was determined in a panel test in which over 70 people rated the degree of odour removal. In a second test the bacterial agent was combined with a powerful odour neutralizer and immediate odour neutralization was achieved. After the odours were neutralized the bacterial agents went to work to remove the balance of the proteins in the cat urine. The numbers of bacteria were monitored using standard microbiological techniques. The bacteria and odour neutralizers in Ag-Scent's biological product enzymatically digest cat urine. The digested cat urine is then consumed by the bacteria for growth.

Results:

The data are shown graphically in Figure 1. As Figure 1 demonstrates, within 16 hours of application of Ag-Scent's bacteria to the carpet with a cat urine stain, the number of bacteria in the carpet increased from 30 million to 300 million. The same trend can be seen in the carpet pad, where within 48 hours, the population increased to over 100 million bacteria. Only a small portion of bacteria (37-55%) that are applied to the carpet are readily recoverable. This is not uncommon in that bacteria can bind tightly to the carpet and pad. With this in mind, the number of bacteria shown in Figure 1 would be greater if all of the bacteria could be recovered. All recovered or not, there are billions of bacteria working on eliminating the source of the odour.

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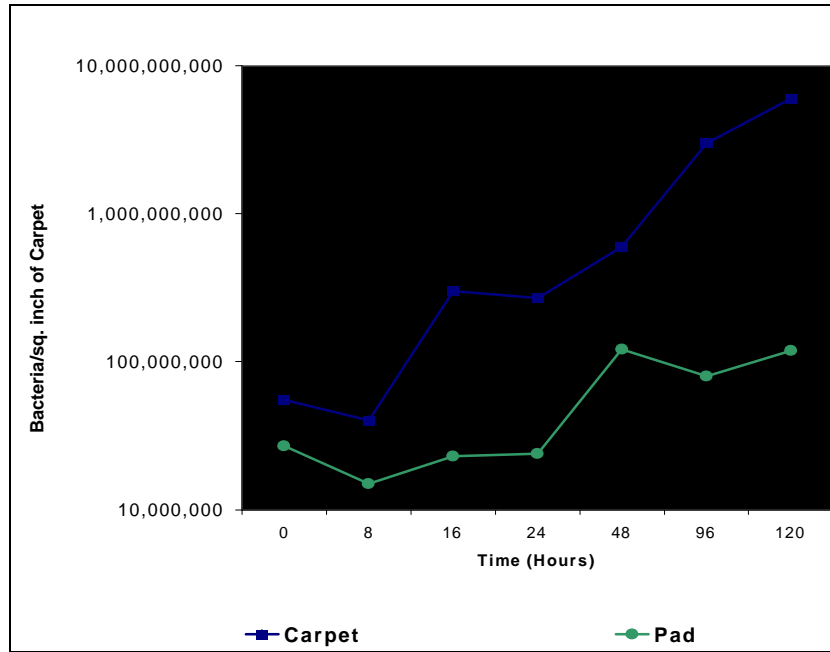


Table 1. Growth of Ag-Scents's Bacteria In Carpet and Pad

Discussion:

The results in this experiment are consistent with accepted literature stating that Ag-Scents's bacteria can utilize urea as a growth substrate by the production of an enzyme (Urease). These results also demonstrate the large number of viable bacteria that Ag-Scents's products produce. A test panel of 73 people agreed that Ag-Scents's bacteria significantly reduced or eliminated odour in a treated sample, as compared to an untreated sample. Large numbers of bacteria represent billions of cells working through enzyme production to break down and consume animal and human waste in the carpet and pad. Separate tests of the combined odour neutralization / bacterial system have removed 100% of all odours and aided in stain removal; on every job site there was 100% satisfaction.