

# **Comparison of Two Brands of Cleaners Incorporating Bacteria**

**AN ARTICLE PREPARED FOR  
MCES**

**BY**

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In spite of the many advances in medical science infectious diseases, according to the World Health Organisation (WHO), remain the major cause of death worldwide. The microorganisms causing these diseases spread from person to person and within a short space of time can travel the globe.

One of the main ways microorganisms spread is through hand and other contact surfaces. Even for so called “respiratory diseases such as colds and flu, an estimated 40% are acquired by touching surfaces. Norovirus, possibly the world’s most infectious organism and the greatest cause of stomach upsets, spreads rapidly via communal surfaces e.g. contaminated upholstery, floors and equipment in closed and semi closed communities such as schools, hospitals and hotels. However, the home can also be a location for acquiring infectious diseases. It has been said in the past that “cleanliness was next to godliness” in importance and this could even be more applicable in today’s world with “superbugs” and “emerging pathogens.”

Cleaning is the removal of soil – defined as matter out of place – including dirt, waste food residues, etc. Disinfection on the other hand is the destruction or removal of undesirable or harmful microorganisms and to be effectively performed requires the surface to be clean. Apart from the spread of disease, cleaning is important for many other reasons. Clean equipment lasts longer, works more effectively and requires less maintenance. Premises that are clean are less likely to attract pests but are more likely to attract customers. Many surveys have shown that consumers prefer a clean environment and they are less likely to visit /revisit visually unclean businesses.

Many scientific and technological advances have improved the chemicals used in cleaning, one of which is the advent of cleaning agents containing harmless bacteria or bacterial enzymes. These help to dissolve and then remove soil but are not designed to act as disinfectants. Historically common in washing powders similar technology is now being used in a wide variety of other cleaners. In a way this is another example of science copying nature. Bacteria and the enzymes they produce are an important part of the normal “self-cleaning” processes of decomposition and decay that occur in nature. Over the past three decades scientists have identified and then isolated the bacteria that are best able to breakdown unwanted soil.

The bacteria most commonly used are non-pathogenic (harmless), spore formers usually belonging to the Genus *Bacillus*. These are of natural origin, and provide highly effective agents for use in cleaners to get rid of / remove specific types of organic residues and soils. The enzymes produced by these bacteria are usually far more effective and less toxic than many of the harsher detergents commonly used. As such they provide a more eco-friendly approach to cleaning especially as they work at lower temperatures saving energy.

However, as with most things in life, not all cleaners containing bacteria are equal or the same. Some perform much better than others and some of the important factors for formulating cleaners containing bacteria are presented in Table 1.

Table 1. Factors Important in Formulating Cleaners Containing Bacteria

- Adequate numbers of viable bacteria
- Consistent concentration of bacteria
- Use of efficient and effective strains
- Correct chemical formulation to promote bacterial survival
- Correct formulation to promote bacterial enzyme production /function

Clearly one of the most important properties of cleaners incorporating bacteria is that they contain a large number of vegetative cells (or spores) enabling them to be effective in a shorter space of time, provide greater economy and allowing more dilute solutions to be used for cleaning. Many poorly performing products contain lower concentrations of inferior quality bacterial strains. Table 2 compares the numbers of bacterial spores in two leading brands of cleaners containing bacteria. In tests carried out by the CSIR, one of the best known laboratories in South Africa, MCES brands, one of the market leaders, proved to have more spores and with a greater concentration consistency than the other brand examined. (Innu Science) The tests in the report, based on between three to nine triplicate counts to ensure accuracy and precision, measured the colony forming units (cfu) in the two leading brands. In this case the higher the cfu count the better. The term cfu is one used by microbiologists to describe the number of viable organisms/spores in a sample. The term  $10^6$  is the microbiologist's way of writing one million, with  $10^7$  being 10 million and  $10^8$  being 100 million. Therefore a product with  $10^8$  in has 90 million more spores than one containing  $10^7$  and 99 million more than one with  $10^6$ . Products with higher counts are likely to work more quickly and efficiently. Consistency of spore levels is also important to give consistent results when cleaning. The MCES products consistently had much higher levels of the desirable Bacillus spores than the Innu Science brand. Table 2(column F) also shows that far less of the MCES cleaning products would be needed to achieve the same spore concentration. It is important to note that the dilutions used in the tests were ready to use (RTU), Diluting a product with an already lower spore count beyond the "normal" use concentration would make them too dilute and ineffective and waste money. In order to make an informed decision it is advisable to find out, either from the label or other sources, what the spore concentration in this type of cleaner is and its consistency. With the advent of the new Consumer Protection Act putting this type of information on the label commits the manufacturer to supplying a product of known efficacy and consistency.

Table two illustrates what many people know already when buying products. Cutting corners or buying an inferior product is unlikely to be the best option or offer the best value for money

Table 2. Comparison of Spore Counts in Two Brands of Bacterial Cleaners

A	B	C	D	F
MCES Product Name	Spore Count cfu/ml*	Innu Science Product	Spore Count cfu/ml*	Quantity of RTU MCES Product Equivalent to 1L (1000ml) of RTU Brand X
Novo Mac 10 x FF	$8.0 \times 10^8$	New Smell Plus	$1.2 \times 10^7$	15 ml
Novo Deep Clean Conc.	$1.5 \times 10^8$	New Bio Scrub	$2.0 \times 10^4$	0.13 ml
Novo Mac 10 x FF	$8.0 \times 10^8$	New Kleen Smell	$2.8 \times 10^7$	35 ml
Novo Deep Clean Conc.	$1.5 \times 10^8$	Nu Grip Plus	$9.3 \times 10^6$	62 ml
Novo Mac 10 x FF	$8.0 \times 10^8$	New Action 3	$1.2 \times 10^7$	15 ml

RTU = Ready to Use. All Products Tested at Ready to Use Concentrations.  
 \*Higher the cfu/ml reading the greater concentration of bacteria in the cleaner

