CLEANING EVOLUTION

How dishwashing detergents have changed with the times

By Patricia Briere

Look at any advertisement for a liquid dishwashing detergent—whether the product is for home, commercial, or institutional use—and you will invariably see two words used over and over again: Grease cutting. It's not hard to understand why manufacturers of dishwashing liquids place such an emphasis on these words. Cooking grease and oils are tough to remove from pots, pans and utensils, so consumers as well as those who wash dishes in commercial locations welcome all the help they can get.

At-home cooks may try to get around the problem by using nonstick pans, which have a special coating that doesn't allow grease and oil to stick to the pan. Such pans also make it possible to cook without adding any oil or butter. However, commercial and institutional kitchens tend to stay away from such pans because they can cost more, are inadequate for some cooking methods, and typically cannot hold up to the heavy-duty workload of a commercial kitchen.

During cooking, fats and oils build up on pans, cooking utensils, cooking surfaces, as well as plates and utensils used to serve the food. This often cooked-on, baked-on grease is hard to remove, and that is when we turn to grease-cutting dish detergents.

You might wonder why pure tap water doesn't remove this grease. It comes down to basic science: Water and oil do not mix. They won't have anything to do with each other unless a third element is brought into the picture, such as some type of detergent acting as an emulsifier. Once a detergent is introduced, we then have the potential for some real grease-cutting action, but more about that later.

HISTORY OF DETERGENTS

There really were not any type of synthetic (man-made) detergents until World War I. Due to shortages of animal and vegetable fats, which had traditionally been used to make soaps, substitutes using a variety of chemical ingredients and raw materials were developed. This resulted in the production of a limited number of household detergents, including dishwashing detergents, but things did not really take off until after World War II.

Due to shortages once again, researchers and manufacturers returned to the drawing board to develop dishwashing and laundry detergents, and a big breakthrough came in 1946, when the first official detergent containing a surfactant-builder combination was introduced in North America.

As explained by the American Cleaning Institute, "The surfactant is a detergent product's basic cleaning ingredient, while the builder helps the surfactant to work more efficiently. Phosphate compounds used as builders in these detergents vastly improved performance, making them suitable for cleaning heavily soiled [items]."

From 1946 to the present day, dishwashing detergents have become more effective, less expensive, easier to use, and much better grease cutters. But the essence of them and how they work is the same. Dishwashing detergents contain surfactants. These surfactants lower the surface tension of water so that not only does the surfactant help the water to mix and interact with grease and oil, but it also makes it easier for the water to remove the grease and oil.

A CLOSER LOOK AT HOW DETERGENTS WORK

First, the easy part. We mentioned that dish detergents have improved considerably over the years. This is because other ingredients have been added to them, including enzymes that help degrade protein-based stains; bleaches to help remove the colour of stains on plates and pans and add a little more cleaning power; as well as dyes to help prevent the yellowing of plates and pans.

Some detergents may also contain petrochemicals and oleochemicals (those derived from animal or plant oils and fats); oxidizers, which are compounds that stimulate chemical reactions; as well as alkalis, which also promote chemical reactions.

But detergents are also made up of hydrophobic, or water-repelling, hydrocarbons and hydrophilic, or water-attracting, hydrocarbons. Let's look at how these two hydrocarbons work together and why they are so important when it comes to creating grease-cutting dish detergents.

On one end of a molecule in the dish detergent are hydrophobic hydrocarbons,

which are repelled by water but attracted to the grease and oil on the pan. On the other end of the same molecule are hydrophilic hydrocarbons, which are attracted to water but repelled by grease and oil.

If these two hydrocarbons just sit there on the greasy pan, nothing happens. But, bring in agitation and heat, and the grease and oil become loosened, begin to melt, and can be washed away. While there are cold-water detergents, in general hot water detergents are more effective in helping to melt grease and oils, making them easier to remove from surfaces.

One other significant change over the past few years is that the rinse dish detergents have been proven safer for people (users), and the planet. This is due to certification with UL Ecologo and GREENGUARD Gold cleaning products available on the market.

So, as you can see, dishwashing detergents are far more complicated than many of us may have realized. It took a lot of time and technology to get them to work as effectively as they do. So the next time you hear a manufacturer of a dishwashing liquid say that its product "goes to work on dirty dishes, pots, and utensils with powerful grease cutters, leaving them spotless and squeaky clean," you might want to tip your hat and show your gratitude for this wonderfully helpful product.

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WHAT'S NEW IN DISHWASHING AND CLEANING

Canadian Restaurant & Foodservice News recently asked two leading suppliers about the latest developments in dishwashing and cleaning supplies for commercial foodservice. Here is what Patricia Briere, account manager with Avmor and Tara Fuller, Marketing Manager, Institutional, at Ecolab, had to say. . .

What are some of the major trends and developments when it comes to dishwashing and cleaning supplies in Canada?

Patricia Briere: There were a lot of years in this industry that were static in terms of development and that's finally changing for the better. The product efficacy has improved with proven safer products, such as UL Ecologo certification and GREENGUARD Gold Certification. Also, technology advancement has allowed the industry to evolve such as the world of IoT (Internet of Things) and its ability to improve the customer experience by allowing suppliers and technicians to pro-actively engage with the end user and their needs.

Tara Fuller: There has been a dramatic shift in water consumption of dish machines. The industry has moved from 5.7 litres of fresh water used per dish rack to a norm of 2.3 l off fresh water. Some conveyor machines are rated as low as 1.25 l of fresh water per rack. At the same time, food soil concentration is dramatically higher. Protein soil re-deposition is an industry challenge. Ecolab continually advances systems to improve results with new chemistries designed to handle higher protein diets while using less water. This reduces the amount of rewash, lowers utility costs and helps protect equipment. In 2017, Ecolab will be announcing Smartpower™, our latest innovation backed by customer testing at 280 locations.

What are the biggest benefits of these trends for restaurant operators?

PB: With development of new products, there is a higher level of clean which leads to better sanitation control. With products that are safer for the user, with green certifications such as UL Ecologo and GREENGUARD Gold, the users and the customers are safer and healthier, which in turn has economic benefits for the foodservice industry.

TF: Using the latest technology is significant because operators are finding 71-75 per cent improvement in items that are ready for serving to customers versus a variety of current product. Upon surveying over 200 foodservice locations globally, secondary reprocessing is common (rewashing, hand-polishing). Using the latest innovations dramatically reduces secondary processing.

What should restaurant operators keep in mind when buying dishwashing and/or cleaning supplies?

PB: While safety of the public and employees should always be of paramount concern when planning a cleaning and sanitation solution, the long term operational costs associated with your operation should not be overlooked. Far too often, emphasis is given to the upfront costs, which in comparison to the long-term operational costs are marginal. A well-planned cleaning and sanitation process can also save thousands of dollars in labour and maintenance.

TF: Ecolab recommends restaurant owners and operators focus upon cleaner, healthier, and safer solutions when deciding upon dishwashing and cleaning supplies. Foodservice operations can get the latest training on WHMIS 2015/GHS by partnering with industry leading suppliers. Ask for a survey from suppliers to demonstrate how a dishwashing and all-round kitchen hygiene program can actually save an operation on total cost due to energy and water savings benefits compared to a current program.