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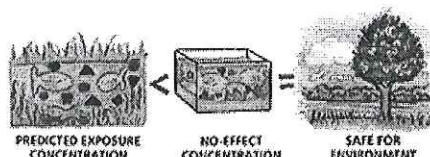
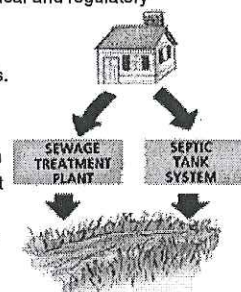
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## Soaps & Detergents: Environmental Safety



Most household cleaning products are formulated to be used with water and "go down the drain" into wastewater treatment systems (municipal sewage treatment plants or septic tank systems). To assure that products are safe for the environment, manufacturers evaluate the impacts of product ingredients in wastewater treatment systems, streams, rivers, lakes and estuaries. Scientific principles that are widely recognized by the technical and regulatory communities are used to assess the risk to the environment of these impacts.

Environmental risk assessment considers the exposure concentrations and effects of individual ingredients. Two sets of information are used in these assessments. One set enables industry scientists to predict the concentration of the ingredient from all sources, including cleaning products, at various locations in the environment (the *predicted exposure concentration*). The other set is used to find the highest concentration of the ingredient at which no harm will occur to animals, plants or microorganisms living in the environment (the *no-effect concentration*). Comparing the predicted exposure concentration and the no-effect concentration enables scientists to determine whether the use of an ingredient is *safe for the environment*. The planned use of a cleaning product ingredient is acceptable if the predicted exposure concentration is lower than the concentration that would harm animals, plants or microorganisms.



This information applies to ingredients processed through household septic tank systems as well as municipal treatment plants. Two basic steps occur in the treatment of wastewater in both systems. The first step, called primary treatment, consists of the removal of solid material, such as grit or grease, from the wastewater by physical means, i.e., settling and flotation in tanks.

The second step, called secondary treatment, removes the dissolved material by *biological* means, i.e., consumption by microorganisms.

It is in the secondary treatment stage where the most important process in reducing the exposure concentration of detergent ingredients occurs. This is called *biodegradation*. Biodegradation describes how organic (carbon-containing) detergent ingredients, like surfactants, enzymes and fragrances, are broken down into carbon dioxide, water and minerals by the action of microorganisms such as bacteria. At this stage, biodegradation reduces the amount of detergent ingredients discharged into the environment to levels that do not present a risk to fish or other aquatic life. Any small amounts of chemicals which are not biodegraded or removed during sewage treatment are diluted in surface waters, soil and the ocean. They continue to biodegrade or be removed from water by attaching to solids, a process known as

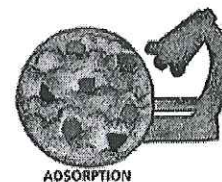
*adsorption*.

Some inorganic (not carbon-containing) detergent ingredients, such as phosphates, zeolites and some dyes, also attach to solids, and are further treated during processing of the biosolids (sludge) produced in primary and secondary treatment. Biosolids are often used as fertilizers and soil conditioners.

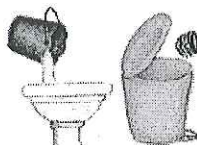
Because of modern treatment methods, only an insignificant amount of the ingredients used to clean clothes, dishes, home and workplace surfaces actually reaches the environment. And that amount is at such levels as to not cause any adverse effects.

## Improving Environmental Quality

The soap and detergent industry is committed to understanding the impact of its products and packages on the environment. With this understanding comes the ability to reduce their impact and improve their environmental quality.

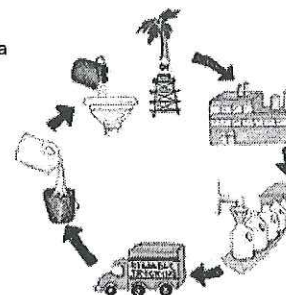


Manufacturers of cleaning products have been leaders in reducing packaging waste and encouraging sound waste disposal practices. Advances in technology have resulted in products that are more concentrated, products that combine two functions in one, products with refill packages and packages that use recycled materials. Concentrated products need less energy to manufacture and transport, and require less packaging. Multifunctional products eliminate the need for separate packages. Refill packages allow consumers to reuse primary packages many times, decreasing the amount of packaging used and the volume of trash generated. Plastic and paperboard that would otherwise be thrown away become usable materials through recycling.



Through education and community programs, the soap and detergent industry helps consumers learn how to reduce waste and how best to dispose of it. Consumers are reminded that the environmentally wise way of handling any household cleaning product is to buy only the amount that can be used; to use it all up or give it away; and, if it must be disposed, to dispose of it properly. As a rule of thumb, products designed for use with water should be disposed of by pouring down the drain; solid products such as scouring pads should be put into the trash.

A promising method under development for improving the environmental quality of a product is life cycle assessment (LCA). LCA describes a "cradle-to-grave" look at all the environmental impacts of a product and its package, from acquiring raw materials through manufacture and distribution to consumer use and disposal. One advantage of LCA is that it can determine whether reducing an environmental impact in one area, such as manufacturing, shifts the impact to another, such as disposal. LCA also helps to identify where environmental improvement efforts should be focused.



Sound scientific information provides the foundation for the soap and detergent industry's commitment to safety. The industry maintains this commitment without compromising product performance, convenience or cost-effectiveness.

[Continued...](#)

### Soaps & Detergents

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