

## Safer Detergents: Using More Environmentally Friendly Cleaning Agents

The Environmental Protection Agency (EPA) is strongly urging the use of safer surfactants (detergents). Safer surfactants break down quickly to non-polluting compounds and help protect aquatic life in both fresh and salt water. Nonylphenol ethoxylates, commonly referred to as NPEs, are an example of a surfactant class that does not meet the definition of a safer surfactant.

NPEs are used extensively in the U.S. (estimates of U.S. consumption reach 370 million pounds/year) because of their excellent surfactant properties, meaning it allows the chemicals to penetrate and absorb solids, dirt and oils. They are used in soaps, industrial laundry detergents, degreasers, cleaners, dry cleaning aids, indoor pesticides, cosmetics, paints and coatings, dust control agents, emulsifiers and adhesives, to name a few.

NPE enters the aquatic environment through wastewater treatment effluent discharges into the rivers. These cleaning agents are used in homes and industries across America, where wastewater from washing clothes and cleaning goes down the drain and into a sewer. Most of the time, this water is then transported to a wastewater treatment plant, where it undergoes treatment before it is discharged into our waterways. Unfortunately, wastewater treatment plants are not equipped to treat all of the chemicals that flow into sewers – most plants are unable to fully degrade NPEs. As a result, aquatic organisms are exposed to NPE daily as some of these chemical compounds pass through wastewater treatment plants and enter our waterways.

NPEs take longer to degrade than any other cleaning agent. Their persistence in the aquatic ecosystem increases the amount of time organisms are exposed to these toxic chemicals. NPEs are the only high-volume cleaning agents that become *more* toxic as they degrade. Even at levels often found in America's waterways, NPEs may hinder the reproduction, growth, and survival of organisms. Extensive research indicates that NPE disrupts the endocrine system and interferes with the hormones of fish and shellfish. Exposure to NPE causes organisms to develop both male and female sex organs, increases mortality and damage to the liver and kidney, decreases testicular growth and sperm counts in male fish, and disrupts normal male to female sex-ratios, metabolism, development, growth and reproduction.

In addition, NPE that sticks to sewage sludge can enter the terrestrial environment by agricultural spreading. Large quantities of wastewater treatment plant sludge are spread on agricultural land as fertilizer for crops. Although this NPE will usually stick to soil, there is potential for it to leach into groundwater and potentially contaminate drinking water supplies.

The EPA's Design for the Environment Program has identified safer alternative surfactants through partnerships with industry and environmental advocates. These safer alternatives are comparable in cost and are readily available. The EPA has an online resource for finding safer surfactants (visit [www.epa.gov/dfe/pubs/projects/formulat/formpart.htm#98](http://www.epa.gov/dfe/pubs/projects/formulat/formpart.htm#98)). To easily find safer surfactants in your local stores, simply look for this label:

If you have any questions, please contact the City of Modesto Environmental Compliance Section at (209) 577-6377.

