



## Quality Water for Idaho

# Phosphates in Detergents

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### **Powdered laundry detergents**

The discussion over the use of phosphates in powdered laundry products has continued since the 1960s. In the 1990s, as environmental concerns become more and more intense, this discussion will continue among environmentally conscious consumers and manufacturers.

### ***What are phosphates and why are they important in powdered laundry detergents?***

Phosphate is a natural form of the element phosphorus. Some phosphate comes from rock phosphate mines in southeastern Idaho.

Phosphates are added to laundry detergents to improve or "build" their cleaning power. The most commonly used phosphate is sodium tripolyphosphate.

Phosphates:

- Suspend dirt particles away from fabrics
- Emulsify oil and grease
- Inactivate minerals that make water hard and interfere with cleaning
- Make water alkaline enough for thorough cleaning
- Hold dissolved iron in suspension, preventing it from discoloring fabrics

Phosphates are a popular ingredient in detergents because they are effective, reasonable in cost, and safe to use on appliances, fabrics, and humans.

### ***Why the controversy?***

Together with other naturally occurring nutrients such as carbon, nitrogen, and potassium, phospho-

rus nourishes algae and plants in lakes and streams. Phosphorus in the form of phosphate causes trouble when high levels lead to too many plants. Excessive plant growth in some waters has become a nuisance for boaters, lakeshore property owners, and others.

Abundant plant growth can also lead to low levels of oxygen in the water, which can threaten the welfare of fish. Not all heavy plant growth is due to phosphates, but in many Northwest waters phosphorus is the most important nutrient controlling plant growth.

About 25 to 30 percent of the phosphorus in household wastewater comes from detergents. The rest comes from human waste and food waste. Detergents contribute 3 percent of the phosphorus entering United States surface waters annually.

### ***Phosphate bans and restrictions***

One way legislators have dealt with local problems of plant growth in lakes and streams is to ban or restrict the amount of phosphate in laundry detergents. No federal regulation in the United States bans or restricts the levels of phosphate in laundry detergents. However, statewide bans are in place in Georgia, Indiana, Maryland, Michigan, Minnesota, New York, North Carolina, Pennsylvania, Vermont, Virginia, and Wisconsin. In addition, some counties in Ohio, Montana, and Idaho have banned phosphate detergents. Municipalities and smaller communities have also banned phosphate detergents. Restrictions limiting the use of phosphorus in the form of phosphate in detergent to 8.7 percent and/or 7 grams per use are in effect in Maine, Connecticut, and Florida.

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## ***What is the laundry-detergent industry doing about phosphates?***

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The detergent industry has voluntarily reduced the level of phosphates in powdered detergents since 1970. The phosphate content of powdered detergents appears on the side panel in percentage and/or gram form. Some companies use codes to express phosphate content: O = no phosphate, L = limited phosphate, and P = high phosphate.

In addition, recent technology has provided improved phosphate-free laundry products. For example, liquid laundry detergents contain no phosphates. They now have half of the market in some areas.

## **Automatic dishwashing detergents**

Because automatic dishwashing detergents get daily use and perform their tasks so well, consumers take them for granted. The soap and detergent industries, however, are continually evaluating how much phosphate needs to be in these detergents.

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## ***Why use phosphates in automatic dishwashing detergents?***

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Phosphates:

- Remove food deposits that harbor bacteria
- Keep food particles suspended in dishwasher
- Reduce bacteria levels on glass and plastic
- Keep hard water minerals from depositing on dishes and leaving a cloudy film
- Keep hard water minerals from interfering with cleaning

Residual food and mineral films left on dishes after dishwashing can cause food spoilage and illness.

Phosphates have an unsurpassed human safety record. The lower the temperature, the more phosphate is required to achieve adequate cleaning.

The amount of phosphorus in the form of phosphate used in automatic dishwashing detergents has decreased in the past 10 years from about 14 to 16 percent by weight to 8.7 percent or less today. The newest automatic dishwashing products (liquids and gels) can contain a lower percentage of phosphate by weight than the powders. However, they deliver similar amounts of phosphate to the dishwasher during each use.

To date, no state has banned phosphates in automatic dishwashing detergents. Where phosphates are regulated, the amount allowed is generally 8.7 percent phosphorus.

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## ***Why are there no phosphate-free dishwashing detergents?***

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Scientists have been unable to find an acceptable substitute for phosphates in automatic dishwashing detergents. A phosphate substitute must not only be effective at reasonable cost, it must be safe for home use, safe for crawling infants who might get detergent out of dishwasher dispensers (if doors are left open), and safe for the environment. Satisfying these objectives makes the job difficult. Current research is focusing on organic builders, polymers, enzymes, and oxygen-bleaching systems.

The soap and detergent industry will continue to search for alternatives to phosphates. However, any legislation that would arbitrarily force unrealistic limits on phosphates in automatic dishwashing products is not in the public interest.



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