HISTORICAL PERSPECITVE OF THE PHOSPHATE DETERGENT CONFLICT

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Introduction

In the mid 1960s, many of the nation's rivers and lakes were rapidly turning green and choking with aquatic plant growth. A primary reason for these deleterious changes in water quality was the high levels of phosphorus, one of several major plant nutrients, found in domestic and municipal sewage effluents. The principal source of effluent phosphorus was from phosphates used in laundry detergents. This paper discusses the dispute and eventual resolution of the general issue of whether phosphates should be banned from detergents, a debate most fiercely fought between 1970-72. The paper first provides background material including the nature of soaps, the development of phosphate detergents, and the environmental effects of surplus phosphorus on aquatic environments. The major players are then described, highlighting their positions and interests. The dispute is presented more or less in chronological fashion, and the scientific community's role in focussing the issues is documented. Finally, the aftermath of the dispute and current conditions are briefly discussed.

Soap and Synthethic Detergents

Soap has traditionally been the primary cleaning agent in the home. Ancient Romans knew well that heating a mixture of animal fat (organic) and wood ashes (inorganic) produced a water soluble substance (i.e., soap) capable of dissolving grease (Turk et al. 1972). However detergency, or the ability of soap to dissolve grease, is reduced in the presence of mineral ions. Minerals bind up the grease-soluble (organic) portion of the soap molecule and precipitate out of water. This precipitate creates a scum, which is why

washing in "hard" waters high in calcium and magnesium often results in a ring around the bathtub (as well as ring around the collar) (Turk et al. 1972).

Soon after World War II the soap industry began to develop synthetic detergents as a way to deal with the dual problems of 1) competing with the food and feed industries for a limited supply of natural fats and oils, and 2) poor cleaning performance in areas with hard waters (Chemical & Engineering News 1970). Typical synthetic laundry detergents consist of a surfactant, a builder, and other miscellaneous ingredients including brighteners, perfumes, antiredepositon agents and sometimes enzymes (Duthie 1972). The surfactant is a wetting agent, which floats dirt off fabric surfaces. In the 1950s alkyl benzene sulfonate (ABS) was the main surfactant ingredient (ReVelle and ReVelle 1988). Unfortunately, ABS was a branched chained molecule unresponsive to wastewater treatment. Release of ABS into streams and rivers resulted in floating flotillas of foam. Through public pressure, however, manufacturers changed to biodegradable linear alkyl sulfonates, thus correcting the foam problem (ReVelle and ReVelle 1988).

The builder in detergents serves to tie up polyvalent cations such as calcium and magnesium ions, which otherwise interfere the surfactant. The builder is particularly necessary in hard waters (Hammond 1971). Without builders, manufacturers would have to add more surfactants, which are relatively more expensive (ReVelle and ReVelle 1988).

Phosphates (compounds with phosphorus, oxygen and sometimes hydrogen) are excellent builders (Hammond 1971), and are often used as either sodium tripolyphosphate (dry detergents) or sodium/potassium phosphates (liquid detergents) (ReVelle and ReVelle 1988). These phosphates are capable of tying up calcium, magnesium, iron and manganese ions, thereby improving overall washing performance (Duthie 1972). Phosphates also help peptize and suspend certain types of particulate matter, and aid in killing germs (Duthie 1972). Phosphate detergents are generally safe to use with minimal toxicity problems. The major drawback is that secondary wasterwater treatment removes only a small percentage of phosphorus from the influent, so a considerable amount of phosphorus is released to streams, rivers, lakes and estuaries through wastewater effluent.

Natural Waters' Response to Nutrient Enrichment

Phytoplankton are microscopic, free-floating algae which live in all surface waters. Algae are plants which utilize sunlight together with soluble nutrients extracted from the water for their growth and reproduction (see generally Wetzel 1983). Algae require primarily carbon, nitrogen and phosphorus to grow. Following Leibig's Law of the Minimum, the rate of algal growth (i.e., productivity) is controlled/limited by the nutrient in least supply relative to the demand (Wetzel 1983). So although algae are about 50% carbon, the relative abundance of dissolved carbon dioxide and carbonates in natural waters rarely (arguably never) makes carbon the limiting nutrient. In most temperate fresh waters, phosphorus is the limiting nutrient even though algal cells are less than 1% phosphorus (Wetzel 1983). That is, the rate of algal growth is proportional to the supply or input of phosphorus.

Lakes naturally receive carbon, nitrogen, phosphorus and other algal nutrients from rainfall, runoff and seepage. Over time, as lakes receive more nutrients they will naturally become more productive. Eventually lakes will fill in with organic matter, turn into bogs, and develop into dry land. This natural process of nutrient enrichment, or eutrophication, can easily take tens of thousands of years (Congressional Report HR 91-1004 April 14, 1970). In the 1960s the term "cultural eutrophication" was coined to describe the accelerated nutrient enrichment of lakes and rivers from man-made origins, including industrial, agricultural and municipal sources (Vollenweider 1968, Hutchinson 1969).

There are many detrimental effects when a lake goes from pristine clear to pea soup green. If the lake serves as a source of drinking water, excessive algal growth clogs intakes, makes filtration more expensive, increases corrosion of pipes, and can often cause taste and odor problems (Vollenweider 1968, ReVelle and ReVelle 1988). Algae removal also increases filtration costs for industries using eutrophic waters. When algae die they settle to the bottom and decompose, stripping bottom waters of dissolved oxygen and destroying deep-water fisheries. Anoxic bottom waters in turn produce hydrogen sulphide, releasing a rotten egg odor and negatively impacting recreational use of the water (Congressional Report HR 91-1004 April 14, 1970). One is also more likely to get "swimmer's itch" from swimming in eutrophic waters (Vollenweider 1968). And finally, people in general find clear waters more aesthetically pleasing than green, turbid waters with scum on the shores.

The Brewing Conflict

By 1959 essentially all laundry detergents in the U.S. contained between 30 - 50% phosphate builders, or about 7 - 12% phosphorus gross dry weight (Vollenweider 1968). In 1967 detergents averaged about 9.4% phosphorus, and in 1969 "enzyme pre-soak" detergents ranged from 15% to 17% phosphorus (Turk et al. 1972). By 1983 well over 2 million tons of phosphorus was used annually in the US for detergents alone (Wetzel 1983). Since one pound of phosphorus can grow 700 pounds of algae (Beeton 1971), the damage caused by excessive phosphorus inputs was tremendous.

By the late 1960s, nearly 10,000 public lakes had been effected by excessive nutrient enrichment by human activities (ReVelle and ReVelle 1988). Lake Erie's deteriorating condition was of particular concern, and it had been said that it had aged 15,000 years in the last 50 (Congressional Report HR 91-1004 April 14, 1970). The approximately 20,000 lbs of phosphorus per day going into the lake resulted in about a 2,600 square-mile area of the lake with no oxygen within ten feet of the bottom (Beeton 1971). As of 1967, mats of attached algae covered Lake Erie's shoreline, and desirable fish such as whitefish, blue pike and walleye had either severely declined or disappeared altogether (Congressional Report HR 91-1004 April 14, 1970).

The general feeling around the late 1960s was that the nation's lakes and streams were getting more polluted each day, and phosphate detergents were the primary reason. Half the phosphorus input to Lakes Erie and Ontario came from municipal and industrial sources, of which 50% to 70% came from detergents. Over half of the phosphorus input to the Potomac estuary also came from detergents in municipal and industrial effluents (Congressional Report HR 91-1004 April 14, 1970). It was generally agreed that detergents accounted for about 50% of the wastewater phosphorus nationwide (Hammond 1971). There was a growing public consensus that in order to save lakes (like Lake Erie), phosphates must be banned from detergents.

The Battle Lines are Drawn

The scientific community made the first real effort to understand the eutrophication process and problem. In April 1965 the National Academy of Sciences (NAS) and National Research Council (NRC) appointed a Planning Committee on Eutrophication in recognition of growing public concern over eutrophication of lakes, streams and estuaries. This committee recommended an international symposium, which was held at the University of Wisconsin on June 11-15, 1967 and attended by almost 600 persons representing the U.S. and 11 foreign countries. In addition to the NAS and NRC, the symposium was sponsored by the US Atomic Energy Commission, the U.S. Dept. of Interior, the National Science Foundation, the Office of Naval Research and the U.S. Dept. of the Navy. Proceedings were published in *Eutrophication: Causes,*

Consequences, Correctives in 1969 by the NAS.

Many speakers at the NAS-NRC symposium recommended phosphorus reduction in wastewater through use of nonphosphate detergents. Among specific recommendations listed in the proceeding's Introduction were 1) preparation of an authoritative booklet showing the legal, governmental, social, recreational, conservational, scientific and economic implications of eutrophication, 2) educational leaflets and videotapes for schools, civic organizations, magazines, newspapers, television and radio, 3) summer institutes, summer workshops, adult education and extension services to the public on problems of eutrophication, and 4) selection of seven experts on eutrophication to testify before congressional subcommittees. An important goal was to inform the general public, government agencies at all levels, and business and professional groups concerned with land and water management.

The public got involved at the local, state and federal levels. Local organizations sprung up in communities near bodies of water, particularly around the Great Lakes. Citizen action groups such as "Student Council on Pollution and Environment" and the Buffalo, N.Y. group "Housewives to End Pollution" were common (Congressional Report HR 92-918, March 15, 1972). Community and state governments, particularly in Michigan, New York and Florida, actively pushed for phosphate legislation. At the national level the Environmental Protection Agency (EPA), Federal Trade Commission (FTC), Council on Environmental Quality (CEQ), and the Federal Water Quality Administration (FWQA) all became active in trying to resolve the eutrophication problem.

Another proponent of environmental action in the U.S. was Canada. Based on studies conducted from 1965-69 Canada enacted in 1970 the Canada Water Act, which called for an immediate reduction to 8.7% phosphorus (= 20% phosphorus-pentoxide) in laundry detergent, with a further reduction to 2.2% phosphorus (= 5% phosphorus-pentoxide) by the end of 1971 (Congressional Report HR 92-918 March 15, 1972). They hoped that their legislation would stimulate the U.S. to do the same.

On the other side were the big three detergent manufacturers of Procter & Gamble, Lever Brothers, and Colgate-Palmolive, who accounted for about 80% of the total U.S. detergent market (Hammond 1971). Early on the detergent industry (the "Industry") took a very cooperative posture. Mr. H.J. Morgens, then president of Proctor & Gamble, said in 1970 "We recognize that the public wants phosphates out of laundry detergents and we intend to take them out. Our job is to make certain that we remove them as rapidly as we can do in a thoroughly reasonable manner. This we are doing." (quoted in Duthie 1972).

Mr. Morgens' statement reflected the Industry's concerted efforts since 1964 to substitute phosphate with sodium nitrilotriacetate (NTA) as the binder in detergents. As of May 1970 Procter & Gamble had spent $11 million on NTA research, $6.8 million in modifications to their facilities accommodating NTA substitution, and had placed orders for NTA valued at $167 million (Hamilton 1972). By then Procter & Gamble had spent several million dollars on researching NTA's environmental effects (Duthie 1972), and other studies had shown NTA to be biodegradable and environmentally safe (e.g., Swisher et al. 1969). Nevertheless, on December 18, 1970 the Surgeon General "requested" that detergent manufacturers discontinue the use of NTA until further testing (Duthie 1972). Primary concerns were the carcinogenicity of NTA degradation products, potential toxic and teratogenic effects of NTA:metal complexes, corrosion properties, and NTA decomposition under anoxic conditions (Congressional Report HR 91-1004 April 14, 1970, Hamilton 1972). It was not until 1980, after years of extensive risk assessment on NTA in drinking water supplies, that the EPA declared NTA's cancer risk of two in a million too small to pursue regulatory action regarding inclusion into laundry detergents (Cross 1986).

Conflict Chronology

Against this back drop the Industry fought against any out right prohibition of phosphate in detergents. There was also particular concern that diverse local regulations would create a patchwork of maximum phosphate standards among communities and states. The Industry tried to avoid any conflict by voluntarily agreeing to reduce detergent phosphorus concentrations to 8.7% in 1970 (Duthie 1972). This was considered only a first step by the general public. The Industry tried to prevent (or at least deter until an adequate phosphate-substitute was identified) legislation against phosphates in detergents more or less simultaneously on 1) a national level arguing scientific and policy grounds, and 2) on more local levels arguing against the legality of municipal and state phosphate bans or restrictions.

By late 1969 limnologists (freshwater scientists) and other ecologists had testified before congressional and senate subcommittees, discussing the rapid eutrophication of many lakes nationwide with particular emphasis on the Great Lakes (Congressional Report HR 91-1004, April 14, 1970). The above cited Congressional report emphasized the need for immediate action, and strongly recommended the elimination of phosphates from detergents. This recommendation was in light of their understanding that about 60% of the phosphorus in wastewater came from detergents, NTA represented (at least at the time) an available technology for phosphate substitution, and tertiary treatment of wastewater for more complete phosphorus removal was an expensive remedy still several years away. The Soap and Detergent Association (SDA), representing the Industry, questioned whether phosphorus was indeed the principal cause of eutrophication and cited studies suggesting carbon, nitrogen or micronutrients could be controlling algal growth (e.g., Ferguson 1968). Nevertheless, the Congressional report recommended the:

× immediate reduction, and eventual elimination, of phosphates in detergents;

× education of consumers to choose washing products with the least amount of polluting ingredients; and

× prompt promulgation of regulations by the FTC requiring on detergent packages or labels a listing of the ingredients and information about use of detergents in soft and hard water.

By September of 1970, eutrophication had been identified by the CEQ and the FWQA as perhaps the single most difficult water pollution in the nation (Congressional Report HR 92-918, March 15, 1972). But the SDA had raised the serious scientific issue of whether algal production in most U.S. lakes was in fact limited or controlled by the rate/amount of phosphorus input. It was common knowledge that discharge of municipal wastes into rivers and lakes nearly always resulted in eutrophic conditions. But the role of phosphorus in the eutrophication process was not universally agreed upon, even among limnologists.

In response to this confusion the American Society of Limnology and Oceanography sponsored on 11 and 12 February 1971 a symposium on "Nutrients and Eutrophication: The Limiting-Nutrient Controversy" (Likens, ed. 1972). The symposium was attended by university and government scientists, as well as representatives from the Industry (e.g., J.R. Duthie from Procter & Gamble). The consensus from the symposium was that the rate of phosphorus input did control the rate of algal growth in most rivers and lakes.

The Industry's concern about prohibitive phosphate legislation increased with the Surgeon General's request on December 18, 1970 that detergent manufacturers discontinue the use of NTA until further testing (Duthie 1972). Procter & Gamble had been using NTA since 1966 in their laundry products "Cheer" and "Gain", and by May 1970 had replaced 25% of the phosphorus with NTA in a third of their detergents with hopes of replacing 300,000,000 lbs of phosphorus per year by 1972 (Congressional Report HR 92-918, March 15, 1972).

By 1971 municipalities in several states (Connecticut, Florida, Indiana, Maine, Michigan and New York) had enacted laws limiting detergent phosphorus content to 8.7% (ReVelle and ReVelle 1988). This was the same upper level that detergent manufacturers had voluntarily agreed to maintain. What concerned the Industry more, however, were municipalities in Indiana, Michigan, Minnesota, New York, Vermont and Wisconsin which passed legislation completely banning phosphates from detergents (ReVelle and ReVelle 1988).

The Industry tried, usually in vain, to minimize the phosphate problem. A major boost to their cause was a report by Ryther and Dunstan (1971) from Woods Hole Oceanographic Institution determining that coastal marine waters tend to be nitrogen limited, so phosphate reduction would have little effect on coastal eutrophication. Since coastal waters received the domestic sewage of about half the U.S. population, imposing national standards made little sense. Another consideration was that phosphorus also enters fresh waters from non-point sources such as rainfall and natural watershed sources, urban runoff, and cultivated farm land. Of total sources, and depending on locality, phosphorus from wastewater accounted for about 30% of total phosphorus input into the nation's fresh waters (Ferguson 1968).

The Industry tried to minimize its role in eutrophication process in part because they were reluctant to begin a new search for a phosphate substitute having invested so much time and money on NTA (Congressional Report HR 91-1004 April 14, 1970). Meanwhile, small companies started producing nonphosphate detergents which used a surfactant that did not require the sequestering properties of phosphate. Among the various types included those with high levels of silicates and carbonates, which raised water pH to 11 and were considered caustic (Committee on Government Operations 1970). The Industry claimed that nonphosphate detergents were inferior both in terms of clogging machines with parcipitates and getting clothes clean (Congressional Report HR 91-1004 April 14, 1970, Duthie 1972). Consumer Reports (1971), however, found that the nonphosphate detergents tested "...did the work every bit as well as the best-selling high- phosphate detergents." Church & Dwight, a producer of baking soda, also took advantage of the public sentiment against phosphate detergents by producing such advertisements as "At last, something you can do about water pollution. [By using baking soda] you will be helping save our nation's waters because phosphates promote algae pollution - killing fish, stagnating water, and turning lakes into swamps." (Chemical & Engineering News 1970).

But the Industry was not yet ready to throw in the towel. In April 1970 President Nixon by executive order created the National Industrial Pollution Control Council (NIPCC). The NIPCC was formed in the wake of the National Environmental Protection Act to reassure the corporate community regarding impending waves of environmental regulation, and allow direct communication between businessmen and both the CEQ and the President (Percival 1991). Through the NIPCC, which operated in secrecy, the Industry was able to engineer a major governmental policy reversal in September 1971 (Rogers 1972).

On September 15, 1971, at the requests of NIPCC's Detergent Sub-council, the EPA, CEQ and the Surgeon General held a press conference urging:

× the FTC not to implement proposed labelling regulations;

× local communities to reconsider efforts to ban phosphates from detergents; and

× consumers to use phosphate detergents because they are safe for human health (as opposed to highly alkaline caustic nonphosphate detergents).

They added that phosphorus limitation was limited to just a few areas and bans would have little effect - it would be better to build tertiary wastewater treatment facilities (Congressional Report HR 92-918 March

15, 1972). If these pronouncements had not confused the public enough, on the very next day (September 16, 1971) the *New York Times* published a Food and Drug Administration ("FDA") study that some phosphate detergents were as hazardous to human health as some nonphosphate detergents. But that did not seem to phase the Industry. Lever Brothers soon ran the advertisement "Are you concerned about detergents? The Surgeon General of the U.S. says 'My advice to the housewife is to use phosphate detergents.'" (Congressional Report HR 92-918 March 15, 1972).

Within weeks of the press conference Congress again began holding hearings, which resulted in the report entitled "Phosphates in Detergents: Government Action and Public Confusion" (Congressional Report HR 92-918. March 15, 1972). (The following discussion comes from that report.) EPA Director Russel Train testified that the press statement was based on a concern for NTA and the caustic nonphosphate detergents, implying that all nonphosphate detergents were caustic. After getting the EPA and the Surgeon General to admit that only a small percentage of the nonphosphate detergents were caustic, and most were no dangerous to human health than phosphate detergents, several congressmen accused them of creating the false issue of making the public choose between polluting the waters versus injuring children. The Industry brought in Daniel Okun of the University of North Carolina to testify that only 15% of the U.S. population contributes to eutrophication of lakes and rivers. But further testimony revealed that 32 of 50 states had eutrophication problems, and tertiary treatment for phosphorus removal from wastewater would cost up to $12 billion for the next 20 years. Congress also noted the success story of Lake Washington's reversal of eutrophication after Seattle's municipal wastewater had been totally diverted by 1967 (see Edmondson 1972). All three major detergent companies favored federal regulation of 8.7% phosphorus limit if it would preempt states and municipalities from passing more restrictive laws - they still feared a patchwork of local laws. In conclusion, the report recommended:

× rapid analysis and risk assessment of NTA;

× immediate reduction to 8.7% phosphorus of all detergents;

× further reduction to 2.2% phosphorus (like Canada's laws) by Dec. 31, 1972; and

× identification of water susceptible to eutrophication.

The report also suggested, much to the chagrin of the Industry, that state and local jurisdictions should take further measures they feel are necessary.

Many jurisdictions did decide that more restrictive measures were necessary, and the Industry took them to court. The purpose of the lawsuits was to prevent (or at least delay) enforcement until either NTA was approved, or a suitable phosphate substitute became available. By 1971 the scientific evidence was sufficiently credible and convincing to justify states and municipalities in passing laws reducing or out right banning phosphates from detergents. So the Industry challenged local laws in federal court claiming they violated the Commerce Clause of the Constitution (Article I, Section 8; Clause 3) by imposing impermissible burdens on interstate commerce (See e.g., *Soap & Detergent Ass'n v. Clark* 330 F. Supp. 1218 (S.D.Fla. 1971); *Soap & Detergent Ass'n v. Offutt,* 3 ERC 1117 (S.D.Ind. 1971); *Colgate-Palmolive Co. v. Erie County*, 327 N.Y.S.2d 488 (Sup. Ct. 1971); *Soap & Detergent Ass'n v. City of Chicago,* 357 F. Supp. 44, *rev'd*, 509 F.2d. 69 (7th Cir. 1975, *cert. denied*, May 19, 1975, 95 S.Ct. 1980)). The constitutional argument never washed, and these and other courts held that it was within state and local police powers (the state interest of clean waters for public health and welfare was sufficient) to regulate phosphate content in detergents as long as the laws did not discriminate based on state boundaries. Other constitutional arguments (e.g., lack of due process, lack of equal protection, and vagueness (based on the words "phosphate" and "sell") also had insufficient strength to defeat local and state statutes (Meyers

1974).

Aftermath and Conclusions

In the end, local needs for immediate action to curtail eutrophication coupled with scientific, judicial, and popular support resulted in the patchwork of legislation the Industry had feared. By 1985, jurisdictions which had enacted phosphate bans included New York, Michigan, Indiana, Vermont, Minnesota, Dade County, Florida, Akron, Ohio, and Chicago Illinois (footnote 257 in Fleming et al. 1986). Typical are state statutes which limit phosphate content for certain types of detergents and in certain areas. For example in Pennsylvania, the Water and Sewage Phosphate Detergent Act of 1989 and amended in 1992 (PA ST 35 P.S. §§ 722.1 - 722.3) affects "all counties partially or wholly within the Susquehanna River Watershed or in the Lake Erie Watershed." This Act prohibits the manufacture, sale or distribution of any cleaning agents containing any phosphate, except contained incidentally during manufacture. But excluded from this ban are cleaning agents used in dairy, beverage and food processing equipment, in hospitals and health care facilities, in agricultural production, by industries for metal cleaning, in biological and chemical research facilities, and those used in the household for cleaning windows, sinks, counters, stoves, tubs and other food preparation surfaces and plumbing fixtures. Dishwashing detergents are allowed to be up to 8.7% phosphorus by weight.

Nonphosphate detergents, which had once accounted for about 14% of the market was reduced to 3-4% by 1988 because of the lack of adequate substitutes (ReVelle and ReVelle 1988). The driving need (and public pressure) for nonphosphate detergents also lessened when more tertiary treatment facilities for domestic wastewater came on line. Continued enforcement of laws regulating phosphate concentrations in laundry detergents, however, probably reflect the facts that it still costs money to remove phosphorus from wastewater, and that a significant percentage of households use individual septic tanks which eventually leach into streams and lakes.

An examination of a box of "Tide" and a recent phone call (November 30, 1993) to Procter & Gamble probably reflect the current state of affairs in the detergent industry. There are two types of Tide. Boxes marked with an "0" have 0.0% phosphorus, while those with marked with a "P" contain 10.9% phosphorus (the box in Colorado has a "0"). These differences reflect Procter & Gamble's way of accommodating different state or local laws. Interestingly, the phosphate replacements in the "0" box were the same silicates and carbonates the Industry had testified in 1971 were harmful to human health. Procter & Gamble told me that they do not use NTA (in the U.S.) because it is banned in certain states.

Considering the times and the national (if not global) nature of the dispute, the resolution of the phosphate in detergent dispute between the Industry and nearly everyone else went reasonably smoothly. What environmental action groups existed in the late 1960s and early 1970s were still in their infancies. This dispute and concern for the pollution of America's waters, however, probably played a part in the environmental movement (Earth Day was April 22, 1970) rather than the other way around. Today, environmental disputes such as spotted owl habitats are instigated by focused environmental action groups. In contrast, the eutrophication issue was raised by the public and public officials. Because the scope of the problem was so large, congressional action was necessary and resulted in hearings to determine comprehensively what were the scientific bases for eutrophication and clear up (intentional and accidental) misconceptions.

The Industry was eventually forced to fight for its interests in the public forum, and in the end probably the best results were attained. Although states and communities may regulate phosphate concentrations as they deem necessary to protect local environments, regional regulations like Pennsylvania's seemed to

have struck an acceptable balance between protecting the aquatic environment (you can now swim in Lake Erie without slipping on mats of green slime), protecting the citizens' health and welfare, and not burdening the detergent manufacturers and phosphate producers unreasonably with blanket prohibitions. In the final analysis both sides seemed to fair well. Phosphates can be legally banned in localities wishing to implement such legislation to protect regional aquatic environments. And the Industry is apparently able to exceed even their earlier voluntary limit of 8.7% phosphorus ("P" Tide has 10.9%) in their pursuit of giving homemakers whiter and brighter clothes.

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