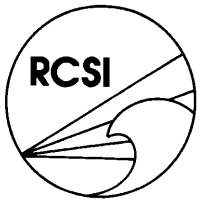

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Labeling of Detergents as a Means of Regulation Phosphate Pollution

By: Herman S. Forest
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Labeling of Detergents as a Means of Regulating Phosphate Pollution

by

Herman S. Forest

Introduction

R.C.S.I. presented testimony before the Federal Trade Commission in Washington, D.C. on April 27, 1971, in a hearing on Labeling of Detergents. The Public Interest Research Group, Washington, D.C. asked the organization to appear and Dr. Kenneth G. Harbison, Scientific Vice President, had received a direct request from a staff member of the Commission.

Written documents were submitted before the hearing, including published R.C.S.I. bulletins and the Statement included within the text of this bulletin. The oral testimony was delivered chiefly by Dr. Harbison, with Dr. Forest introducing and summing up. This trip afforded an unusual opportunity to identify the elements of controversy clearly, and to receive information directly for interested or informed parties. Subsequently, Dr. Robert A. Sweeney, Director of the S.U.N.Y. Great Lakes Laboratory at Buffalo, has provided copies of correspondence which reveal something of the strategy in a struggle for influence through information. The interest of the R.C.S.I. remains to provide the public with accurate information in the language of the layman, particularly if attempts are made to conceal it.

Summary

R.C.S.I. upholds the strategy of drastic reduction in the phosphate input of lakes. It concludes that removal of phosphates from detergents is a suitable action. It recognizes that there are more than one means of achieving the goal: national restriction, regional restriction and choice by informed users. Effective labeling is required for intelligent user choice, but we conclude that both the proposed FTC labeling and New York's presently required labeling are not adequate. We suggest examples of effective labeling. R.C.S.I. emphasized these chief points:

1. The great majority of lake biologists strongly support the rationale for phosphate removal, in spite of deliberate attempts to foster the impression that there is widespread doubt among them.

2. No detergent product is safe in mouth, nose or eyes.

3. There are non-phosphate detergents already on the market which do not pose a substantially greater hazard to the user than phosphate-based detergents.

4. The principal ingredients in non-phosphate detergents presently being manufactured are also present in many currect phosphate-based detergents or have been used for laundry purposes for many years, i.e., these are not "worse polluters" than what is already being used nor "exotic" chemicals of unknown risk.

5. The cleaning effectiveness of a number of non-phosphate detergents is satisfactory to many users.

6. All contents present in amount greater than or equal to 1% should be listed by percentage, and grams per washload, with the function given (surface agent, softener, optical brightener). Those under 1% should be listed in order of concentration without the concentration being given.

7. The labeling should be prominent, with an area not less than one quarter of the largest face of the box. Another testifier, Mr. I. A. Eldib of Eldib Industries, Newark, N.J. has suggested that the whole of the side panel be devoted to the labeling of contents.

8. For quick understanding the phosphate content should be classified as "High", "Medium", or "Low" phosphate or "Phosphate-free". Standards of classification shall be set by an appropriate governmental agency. This classification should appear in prominent type on the front face or on the face bearing the price.

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Table of Contents

I. Written Statement Prepared by R.C.S.I. for Federal Trade Commission

(Introduction deleted)

2. The issue before this hearing is the need for controlling the use of phosphates in detergents. We submit evidence (in supporting documents) that sewage phosphates are a major cause of degradation of lakes, that detergent phosphates are a major source of sewage phosphate, and that this pollutant cannot be controlled adequately at the sewage treatment plant for years to come. Even the best level of treatment that can be bought leaves more than 10% of sewage phosphate in the effluent, and this is too much for the health of an over-fertilized lake. Treatments that are now in general use leave nearly all phosphate in sewage effluent, and in many cases that is no treatment at all. Rapid aid to our deteriorating lakes can be given through control at the input.

3. R.C.S.I. members have attended numerous meetings and conferences on water pollution, and have been convinced that in the best judgment of limnologists the inflow of phosphate into lakes must be controlled. No one denies that there are some waters so polluted or so unusual that phosphate is not a controlling factor for plant growth. These lakes are in minority and will have to be dealt with by other means, and preferably at other hearings.

4. Our largest and clearest waters can be rescued from degradation and the control of phosphate in sewage is an urgent first step. It is not the whole answer; indeed, we stress the fact that there is no single magic answer to the problem of pollution. If we control phosphate now, we will gain both time and opportunity to work on the next step. This will certainly involve more extensive and more advanced sewage treatment, which takes many years to build.

5. Detergent phosphates can be controlled by a nationwide prohibition; by regional restrictions; or by labeling and consumer education. This testimony concerns the use and misuse of labels about phosphate. We are here to advise the Federal Trade Commission that there is a need for legislating an honest label. The manufacturers' labels describing phosphate content which we find on boxes of detergents in New York State are not good, since they confuse the buyer instead of informing him.

In the labels we have seen:

a. Information is hidden in small print, and

b. The labels are cruel to the housewife insofar as they make her feel ignorant and unable to decide which box to buy. To prove this point, I quote the label on the DASH box - read in a Wegman's supermarket in Rochester, N. Y. on April 24th. "This DASH product is not made with trisodium phosphate but its phosphate content, so expressed, averages 77.2% or 14.6% phosphorus. This DASH formula averages 14.6% phosphorus, in the form of phosphates, which is equivalent to 15.5 grams per 3/4 cup used level. DASH's surfactants are biodegradable in lakes and streams." A housewife faced with a label saying that 14.6% is 77.2% can only give up reading.

c. This is an attempt to mask the truth by starting with the statement that this product is not made with trisodium phosphate. Maybe the shopper won't read the rest.

6. The information on a label should be visible, usable and brief. We suggest:

a. Use the front display surface, and cover no less than a quarter of the surface with the required message. The area requirement will guarantee prominence.

b. Convey only three items of information: (1) How much phosphate in the product; (2) What does the number mean; and (3) Why worry about it. We will present each item in turn.

(1) The amount of phosphate should be given as one number only, using the same kind of measuring unit on every box. The R.C.S.I. is aware of the controversy over a choice of measuring units, and looks at it as a device for confusing both the public and the regulatory agencies. Let us agree on some one measure of phosphate content - for example, grams of phosphorus per cupful - and put it on the label in small print. The number itself has little meaning without comparison and interpretation. Meaning of the figure must be determined and presented.

(2) The meaning of the label should be shown in large print in two words. The words should be:

HIGH PHOSPHATE or
MEDIUM PHOSPHATE or
LOW PHOSPHATE or
PHOSPHATE-FREE

Each class would be defined in terms of phosphate (or phosphorus) content per standard washload or portion of total weight. An example of class limit based on content alone:

High - more than 20% by weight phosphate (PO_4)
Medium - less than 20% and more than 5%
Low - less than 5% down to 1%
Free - less than 1%

Alternatively, the limits could be set on a different basis, such as grams phosphorus/washload. The critical point is the need for simple, meaningful labels.

(3) The numbers will need to be adjusted with the advice of the industry's engineers, but we warn the Commission that the label can be made useless by setting the numbers too high. These numbers should not go on the boxes.

(3) The reason for the label should be given in a brief sentence in bold type, again the same on every box.

A possible example is:

> "Phosphates will increase the growth of unwanted green plants in many streams and lakes."

This statement is an educational device, and not a legal brief or a scientific thesis. Making it longer, and adding various reservations raised by industry spokesmen, will only confuse the reader - it will not make the statement more scientific.

7. Finally, the R.C.S.I. favors disclosing all ingredients of a detergent in the same way as phosphate: Briefly, clearly and in a uniform manner, although it is outside the scope of this hearing. The system is easy: List principal ingredients by function and identity (phosphate water softener), list them by percentage and order down to 1% and list the presence of ingredients composing less than 1%.

The disclosure will help protect waters from pollution by chemicals other than phosphate (1). An informative label - written to help, not confuse - can only be of value.

II. Testimony Before the Federal Trade Commission, April 27, 1971

Kenneth Harbison and Herman Forest testified on behalf of the R.C.S.I. before the Federal Trade Commission hearings on "Labeling and Advertising Requirements for Detergents." There were many questions by the Commissioners, some of which would have required the National Academy of Sciences to answer authoritatively. The main points which Harbison made concerning non-phosphate detergents follow. This written version is an expansion of the oral testimony.

1. Essentially all ingredients in the present non-phosphate detergents have been present in other laundry products for many years. These include: sodium carbonate (washing soda); borax (present in about one-fourth of phosphate-based detergents being sold locally in January, 1971); sodium silicates (present in some form in all heavy duty laundry detergents); anionic surfactants (the typical surfactant in phosphate-based detergents); nonionic detergents, usually "ethoxylated alcohols" present in some phosphate-based detergents); perborate (present in some phosphate-based detergents and used separately as a laundry bleach); optical brighteners (present in all laundry detergents); and minor ingredients, such as carboxymethylcellulose, foam stabilizers, perfumes, etc., which are present in detergents. Two compounds present in certain non-phosphate detergents not long used in laundry detergents are sodium chloride, an inert filler, and nitrilotriacetate (NTA), which has been present in at least fifteen laundry detergents for up to three years. NTA was discussed in R.C.S.I. Bulletin #111; it has been discontinued for use in detergents currently being manufactured.

2. The amount of nitrogen introduced from laundry detergents is negligible compared to that present in sewage from human wastes. Some nitrogen is present in many phosphate-based detergents; of the detergents tested, only COLD WATER ALL (containing NTA) contained more than 0.5% nitrogen. (Monsanto has estimated that if NTA were used in almost all detergents, the amount of nitrogen in municipal sewage would be increased by, at most, 5%.) Although nitrogen appears to be limiting for plant growth in some waters, it comes in from diverse sources, including natural sources, which are not practical to control. Nitrogen differs markedly from phosphorus in that it is continually converted into the form of inert nitrogen gas by bacterial action if it is not used for cell growth. Thus part of the fertilizer form is removed from the environment where plants grow.

3. Evidence that phosphate is stimulating to plant growth in Lake Ontario has been obtained from several sources.

4. Of the nominally phosphate-free products which have been tested, some contain traces of phosphate, but generally less than one-hundredth of that present in typical phosphate-based detergents. Detergents claimed as "low phosphate" detergents contain amounts of phosphate per washload which are not much less than that of typical phosphate-based detergents.

The pH of non-phosphate detergents is on the average higher than that of phosphate-based detergents. However, several formulations have lower pH values than phosphate-based detergents and about one-third of the formualtions originally tested had pH values less than or equal to 10.6, the upper limit reported for phosphate-based detergents. On the other hand, some non-phosphate detergents are considerably more alkaline than any phosphate-based detergent.

5. Cost per washload of phosphate-free detergents is less than that of typical phosphate-based detergents (5.8%) for approximately one-third of the products in the Rochester area. About one-third, however, are more expensive than the typical phosphate-based detergents. The most expensive products generally are distributed directly to the customer and are not available in supermarkets.

6. R.C.S.I. has performed no tests on cleaning effectiveness or safety except for limited experiments with acetate fabrics. The non-phosphate detergents of highest pH value caused shrinkage and fabric degradation, but those with lower pH value (10.6 or under) caused equal or less shrinkage, and no fabric disintegration was observed.

7. Comparisons of cleaning effectiveness reported by Consumers Bulletin (2) and Chemical Week (3) were cited. In general, the cleaning effectiveness for non-phosphate detergents (except for Cold Water All liquid, which probably contained NTA) is less than that of phosphate-based detergents. However, good results were reported (2) for a number of products. In a blend bundle comparison of Tide XK with Sears detergent (3) Tide XK was preferred by the consumer panel 2:1. This means that a substantial number of consumers cannot detect a difference in cleaning effectiveness. By pure chance, the choice between the two would have been 50-50 instead of 66-33. Finally, there are no test reports for several of the newer phosphate-free products.

Forest introduced the testimony by identifying R.C.S.I. as an organization and presenting a brief synopsis of his more significant contributions to public information.

Following the Harbison testimony, Forest made a two-minute concluding statement in which he:

1. Reiterated the hearing chairman's own summation of Harbison's testimony - "It is possible to make a safe, effective phosphate-free detergent". (Although it may not produce the whitest or the brightest wash in the world.)

2. Most lake scientists are still strongly in favor of phosphate removal from detergents. The view was affirmed at a February meeting sponsored by the American Society of Limnology and Oceanography. The attempts to create an impression that a strong body of scientists is turning against the phosphate policy are without foundation.

3. Treatment facilities now planned cannot effectively eliminate phosphate pollution with the present load of detergent phosphate.

4. Labeling is ineffective unless it is prominent.

A final conclusion from the conduct of the hearings and subsequent events was that the mechanism for informing the public in vital matters, such as this issue, is strongly weighted against the public interest. Judgment must be made by decision makers who are not adequately informed. There is no institutional means of informing them, and vested interests have adequate time and money to influence decisions through public and private channels.

Dr. Harbison has recently stated that there is no way for the consumer to know components of a detergent, the pH or effectiveness, and that even the cost per wash-load must be determined by experiment. The cost of a liquid formulation is easier to determine because it is sold by volume (liquid ounces). On the other hand, granular products are sold by weight but used by volume. The purchaser of these products is given no information on either the weight per cup or washes per box.

III. A Need for Meaningful Language in Labeling

R.C.S.I. has repeatedly emphasized that information must be understood to be effective. It also has demonstrated that the citizen and official is entirely capable of making rational decisions with accurate but non-technical information. In the case before the Federal Trade Commission, the need for meaningful language is painfully apparent.

The Commission's proposed labeling was:

1. "Warning" is the word most likely to be read. It should not be used in this context, but should be reserved for highly dangerous materials - to cry "Wolf" in all cases is to destroy respect for the word. "Warning" is also too strong a word to be used for the phosphate-free detergents containing sodium metasilicate - "Caution" is more appropriate. Liquid chlorox bleach is labeled "Caution" - while household ammonia is "Poison."

2. The remainder of the wording conveys no message on the comparative merit or demerit of the product. Besides, its vague reference to pollution asks but does not answer the question of how much is "excess".

   R.C.S.I. suggested that if labels are to be used as a means of education, the following might be said (from the FTC Statement, above): "Phosphates will increase the growth of unwanted plants in many streams and lakes."

3. The Commission was told, "If you want to get a message across in a label, act as though you want to sell soap. Print HIGH, MEDIUM, LOW AND PHOSPHATE-FREE IN BIG BOLD LETTERS AND color code the words: RED, YELLOW, WHITE AND BLUE".

IV. The Industrial Counterattack Becomes Intense

In objective analysis, there has been a significant swing to phosphate-free detergents; although only a 1% switch was conceded in October (4), the amount has increased enought in the short space of six months to produce obvious concern by the principal manufacturers of phosphate-based products. The other trend has been the failure to muster an authoritative section of scientific opinion against the removal.

Consequently, a distinctly harsher tone is noted in a statement released March, 1971, by the National Industrial Pollution Control Council (5). The signers of the report are high officials of the soap and detergent industry.* Its preparators are anonymous. It is a "no holds barred" attack on the phosphate-free detergents, with allegations of possible damage by substitutes - but without any example given. Some attention is given to the prospect of NTA, and to its voluntary withdrawal in 1970. The implication is clearly that if NTA might have been hazardous, then everything else is certain to be hazardous. The irony of the logic is that a tremendous effort is now being made to clear NTA. This information was communicated directly by Mr. Corbett Johnson of the W.R. Grace Co., during a recess in the FTA hearing, and it has since been verified from other sources. Indeed, the indications are that the earlier evidence against NTA has not been substantiated. Canada has just cleared NTA for general use, and clearance in the United States is being predicted privately within a year or two.

From a viewpoint of accurate information, the publication is an example of deliberately designed misinformation. On the title page is the statement, "Prepared for the Secretary of Commerce. It does not necessarily represent the views of the Department of Commerce or any other Government Agency." Two college professors interpreted the statement as meaning, "A Department of Commerce publication." The most incredible statement is made toward the last when the advice is given, "All truly concerned individuals should stop confusing the issues of general water pollution on one hand with eutrophication." Up until that moment, over-fertilization had been considered one of the kinds of pollution. No informed person thinks in terms of "general" water pollution.

The soap and detergent industry has also circulated an edited reprint of a Cornell Extension Publication which strongly favors high phosphate detergents, and advocates removal only by treatment plants - if at all. Professional weight is apparent, since the author is a member of the faculty of the College of Human Ecology (formerly Home Economics). Mr. Robert W. Sweeney, Director of the State University of New York Great Lakes Laboratory, Buffalo, produced evidence that the reprint had in fact edited the original text, and was unable to discover who authorized the reprinting. Dr. Sweeney has protested the dubious transaction to Assemblyman C. D. (Larry) Lane, Chairman of the Standing Committee on Conservation of the New York State Assembly (6).

The manufacturers or distributors of phosphate-free detergents have been the principal economic beneficiaries in the switch from phosphates. They are in a position of attacking the giants and use tactics which are customary in our society. Because the subject of this bulletin is labeling, and the availability of information, their

*The sub-committee which signed the document are the presidents or chairmen of the boards of Proctor and Gamble, Lever Brothers, Armour-Dial, Avon Products, Colgate-Palmolive, Purex and Calgon. In addition, a representative from International Flavors and Fragrances, Inc. is present.

practices too must be noted. They have not been distinguished for clarity or authenticity. "Biodegradable" has been exploited, although all surfactants now must be biodegradable, to some extent. In addition, a number have capitalized on their "organic" content, although all surfactants are organic. Few have been any more informative of content than their competition. Somehow it seems just as important to conceal a content of half washing soda as a like amount of phosphate. On the positive side, a contribution to environmental education is made in some of the advertising and labeling - regardless of the motive behind it.

V. Will Phosphates Be Abandoned for General Use in Detergents: Will Detergents be Abandoned?

The spokesman for the Soap and Detergent Association at the International Joint Commission Hearings in Rochester in February, 1970 (see R.C.S.I. Bulletin #68 (W)) told me in private, emphatically, "We are going to get rid of phosphates." I asked him why he had just told the Commission that washing was ineffective without a high phosphate content, and why he had opposed the proposed ban in the Great Lakes. His answer was revealing, "We have had a good working relationship with the United States government and it is just the Canadians causing trouble." The intention to be rid of phosphates is reiterated in a brochure published by Proctor and Gamble Company (50% of U.S. market) although almost the whole writing (4) is devoted to an attack on regulation of phosphates. The reason which Proctor and Gamble gives is "We are working to eliminate all phosphates from household laundry products .... we recognize that the public wants phosphates out....."

This intricate philosophy is reflected in the advertising of small as well as large manufacturers. Amway conducted an expensive campaign to resist phosphate removal, and very promptly lowered the content in its regular laundry product and marketed a new phosphate-free product.

The most likely candidate for replacement in 1970 was NTA, which would add about 4% to the nitrogen in municipal waste. This would usually not be expected to produce added plant growth, except where nitrogen is limiting. Although the direct toxicity of NTA is low, the logical possibility that carcinogenic compounds might be produced during biodegradations has been suggested by Epstein (7). NTA was withdrawn from consumer use however, because some test suggested that birth defects might be caused. R.C.S.I. has direct evidence that a considerable effort is being made to reinstate NTA. The effort is not surprising because a heavy investment has been made by several detergent manufacturers. R.C.S.I. also has received personal communications stating that the hazards claimed have not been substantiated in further test (see IV). Several limnologists told R.C.S.I. "That they would rather do without both phosphates and NTA". Meanwhile other softeners appear to be acceptable in use.

REFERENCES

(1) Kenneth G. Harbison, "The Phosphate-Free Detergents II." R.C.S.I. Bulletin #119 (C & W), May 1971. For a non-technical summary of Bulletins #119 and #120 see:

Forest, H. S., "Water Pollution Abatement Through Regulation of Content and Use of Detergents", R.C.S.I. Bulletin #118 (C & W), May, 1971.

(2) "How Well Do The No-Phosphate Detergents Clean?", Consumer Bulletin, 54 (2), February 1971, p. 24.

(3) "Ecological Detergents: Will the Bubble Burst?", Chemical Week, April 28, 1971, p. 10.

(4) "The Issue of Phosphates in Detergents", A statement to shareholders of the Proctor and Gamble Company on October 13, 1970 by Howard J. Morgens, President.

(5) "Detergents, A Status Report", Sub-Council on Major Pollution, National Industrial Pollution Control Council, March, 1971.

(6) Letter, on file with R.C.S.I.

(7) S. S. Epstein, "NTA", ENVIRONMENT, September, 1970.