

**CONSUMER AND PRODUCER OPPOSITION TO THE ELIMINATION OF
SYNTHETIC LAUNDRY DETERGENTS IN CANADA: 1947-1992**

by

Inge Vibeke Sanmiya

Department of History

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ABSTRACT

This thesis investigates consumer and producer opposition to the elimination of synthetic laundry detergents in Canada during the years 1947-1992. After the Second World War, these new "wonder products" found a huge domestic market largely due to post-war changes in household and economic structures that increased pressure and demand for convenience goods. By the 1960s, however, Canadian consumers learned of the negative side effects attributed to the continued use and disposal of synthetic laundry detergents. Many concerned parties called for the elimination, or at least the modification, of these chemically complex products. Their campaign proved largely unsuccessful. The thesis deals with why consumers continued to buy these products in spite of widely disseminated evidence and information about their toxic side effects.

The thesis demonstrates that per capita consumption of synthetic detergents declined in the late 1970s which inferred that opposition to elimination of these products was weakening. By examining demographic trends, social, economic and political structures and organizations, and the constructs of opposition within variegated consumer and producer groups, the thesis argues that after 1978, the beliefs and values of the marketplace changed significantly.

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Introduction

This thesis investigates consumer and producer opposition to the elimination of synthetic laundry detergents in Canada during the years 1947-1992. During the Second World War, military researchers experimented with early synthetic technologies and developed non-fat based surface active cleaning agents for maintenance needs of weaponry and other armaments. As rationing of natural fatty materials continued after the war, soap manufacturers purchased the capital plants and technologies created during wartime and adapted processes to produce synthetic detergents and cleaners for general household applications. By 1950, Procter and Gamble's synthetic laundry detergent, "Tide", became a household standard, outselling all other laundry detergents on the market in Canada and the U.S.

Synthetic laundry detergents found a large domestic market between 1947 and 1992. Major influences on this development included rapid population growth, rising real wages, the baby boom during the 1940s and 1950s, the increasing presence of married women in the permanent labour force, and the introduction of new technologies into the household. By the 1960s, however, public health officials, Great-Lakes shippers, scientists, community activists and others noted that the effluents from synthetic laundry detergents posed serious environmental and health costs for Canadians. Many of these concerned groups and individuals called for the elimination of synthetic laundry detergents, or for alternative non-synthetic ingredients which had less detrimental consequences than conventional synthetic products. Their campaign proved largely unsuccessful. From an ecological and public health perspective, the synthetic laundry detergent manufacturers continued to use a wide variety of chemical ingredients with potentially dangerous side effects in the manufacture of their products. Both federal and provincial governments made recommendations about industrial manufacturing

processes and product ingredient guidelines rather than imposing production bans on the synthetic laundry detergent industry. Consumer demand and acceptance of these products continued to grow unabated.

The thesis examines why consumers continued to buy these products in spite of widely disseminated evidence and information about their toxic side effects.¹ Three general influences caused consumers to resist the elimination of synthetic laundry detergents and choose simpler soap-based alternatives. First, synthetic laundry detergents, unlike fatty based soaps, cleaned clothing in hard water conditions (a common North American phenomenon) without re-depositing an oily scum on the fabrics. Second, changes in household structures during the period 1947-1978 created increased pressure and demand for convenience products. By 1960, the numbers of married women in the permanent labour force had started to rise. Moreover, wartime had disrupted traditional family values and beliefs.² Household units sought to reclaim these values and traditions by reinforcing the traditional roles and responsibilities of women in the household. Consequently, women struggled with juggling family and household duties and increasing obligations outside the household. Choosing easy to use and efficient synthetic laundry detergents became a coping strategy in their busy life styles. Third, evidence about the serious consequences attributed to the continued use of synthetic laundry detergents emerged during the 1960s and 1970s which was a time of social and political turmoil. The media inundated Canadians with information about a wide array of urgent issues. By 1975 more than 38% of married women participated in the paid work force, up from approximately 18% in 1959.³ As the predominant household managers, women continued to choose synthetic laundry detergents. Reports about the negative

¹William McGucken. Biodegradable Detergents and the Environment. College Station: Texas A & M University Press, 1991. pp.12-17.

²Gordon Preist. The Demographic Future. Ottawa: Statistics Canada, 1990. pp.5-8.

³F. H. Leacy, ed. Historical Statistics of Canada. Second Edition. Published by Statistics Canada, 1983. Series D431-448. "Female Civilian Labour Force Participation Rates."

consequences associated with these products gave conflicting information to the public. Government and health agencies continually called for more study of the issues, and no authority, national or international, explicitly recommended the removal of these products from the marketplace.⁴ Women rationalized their consumption of synthetic laundry detergents by choosing low-phosphate alternatives or other product modifications which, at least in part, addressed the health and environmental concerns.

After the Second World War, the Canadian manufacturing sector saw many opportunities for expansion. As a result of this development and growth, Canadian consumers encountered and used countless new products and services derived from new technologies, scientific knowledge, and new developments and methods of manufacturing. North Americans experienced and adapted to new processes, new markets and business structures. Social and economic changes accompanied by dramatic technological development and adaptation provided a voracious marketplace with an unprecedented choice of goods and services. Alterations in household structures, the presence of increasing numbers of married women in the workplace and population expansion provided industries with lucrative markets and opportunities. In its efforts to generate and maintain increasing sales and production of these goods, the synthetic laundry detergent industry invested heavily in researching consumer behaviour and preferences, advertising and promotions, and political lobbying. In the 1960s and 1970s, when faced with widespread public and political concerns about product ingredients in synthetic laundry detergents and the consequent ecological harm created by these new technologies, producers opposed the elimination of these products in a variety of ways. They developed new reformulated products which ostensibly posed less of a burden on the environment. Then synthetic laundry detergent companies appealed to public concerns by aggressively promoting the beneficial aspects of using concentrated

⁴The Organization for Economic Co-Operation and Development. (OECD) The Pollution of Water by Detergents. Paris, 1964. pp. 1-5. and p.38.

powders and liquids available in bio-degradable or refillable containers. Moreover, producers worked collectively with other related industrial branches such as the chemical industry in the research, development and market testing of new technologies and innovations. Synthetic laundry detergent industries also effectively challenged the validity of scientific and other studies which identified synthetic laundry detergents as culprits in the ecological debates raging throughout the discussion period. They worked to improve their relationships with political and public agencies by working closely with government and health organizations to formulate industrial guidelines. Through this interaction, manufacturers further protected their position and acceptance in the marketplace by developing and adapting technologies; they nurtured consumer acceptance with "environmentally friendly" packaging, phosphate-free detergents and medical endorsements from outside agencies. Throughout the discussion period, Canadian governments responded only with recommendations, not production limits or bans on the manufacture and use of synthetic laundry detergents. Consumers rationalized their preference and choice of synthetic laundry detergents based on the manufacturers' promises and demonstrated strategies for addressing environmental and health issues through product innovations. Manufacturers actively cultivated and instilled wide spread consumer acceptance, and hence, imbedded opposition to the elimination of synthetic laundry detergents in the Canadian marketplace.

After 1978, the composition of the consumer marketplace changed largely as a result of changing demographics and changing social values and attitudes. The baby boom generation of consumers now entering the marketplace in increasing numbers enjoyed different amenities and opportunities than the previous generation of consumers. Baby boomers, much like each earlier generation, had distinct attitudes, beliefs and life styles which molded their consumption choices. These differences in life styles and attitudes had significant impact on corresponding consumption patterns simply because

there were so many consumers in this demographic cohort.⁵ Although per capita consumption of synthetic laundry detergents remained substantially higher than consumption recorded in the 1950s and 1960s, the net production units after 1977 showed a decline. The thesis argues that this change in consumer behaviour signals a weakening of the opposition to the elimination of synthetic laundry detergents.

Opposition to the removal of synthetic laundry detergents holds interest in several ways. An examination of the forces of opposition demonstrates the symbiotic features of consumer-producer relationships. These relationships mirror broader based resistance and opposition to change. The study also focuses on the consequences of consumer and life style choices. All human activities, whether they are simple and rudimentary or technologically complex and sophisticated, change the physical dimensions of our human living space.⁶ In Canada and other industrialized nations, there exists a general consensus that current rates of economic and technological expansion cannot be sustained. Earth's resources of land, water and air remain static. However, transition to and implementation of profound and appropriate change must begin with an understanding of and appreciation for the obstacles to change.

Opposition to the elimination of one mundane widely used product speaks to a broad spectrum of social, economic and political issues. The thesis arguments demonstrate the existent tension between economic growth and environmental and health issues. The analysis also contributes to the discussion and ongoing debate concerning economic development based on technological sophistication and the incumbent costs of these activities. Using the example of a prosaic and widely accepted

⁵Statistics Canada. Population Projections for Canada and the Provinces. Ottawa: Published under the authority of the Minister of Supply and Services Canada, February 1979 pp.30-36.

⁶Julian L. Simon, ed. The State of Humanity. Cambridge, Massachusetts: Blackwell Publishers Inc., 1995 p. 5 In the introduction, Simon discusses the extraordinary positive progress resulting from human activities over the past two hundred years. Material conditions of life, mortality rates and productivity have shown steady increases. He also acknowledges that while aggregate trends are improving, poverty, lack of opportunity and other human misfortunes also exist. He cautions readers to assess non-economic trends carefully since "trends are negative" when viewed from only one perspective.

consumer product such as synthetic laundry detergents, the thesis invites comparisons about other goods and services used and discarded by consumers in other industrialized nations. Products such as fluorides, aerosols, fossil fuels for heating and transportation, food preservatives in processed meats and dairy goods, disposable diapers and many others are routinely purchased and used by households. Many critics believe that continued reliance on and development of such products threatens to encroach on our human living space and puts future generations at risk.

In his critique of technological development, Herman Daly observes that "...no system that uses resources at a rate that destroys natural life support-systems, yet does not meet the basic needs of all earth's constituents, can possibly be considered efficient." ⁷In a prophetic sense, the success of North American, and specifically Canadian, industrial and technologically constructed society may result in the abrogation of its acquisitive and chemically dependent consumer orientation. Industrial expansion and consumer activities and desires necessitate changes in our values and social priorities, economic structures and processes and in political responses and directives. Such changes may mean the eventual relinquishment of numerous goods and services which threaten the health and well being of future generations. These dramatic changes are not necessarily "doomsday predictions" but rather an acknowledgment of human progress.⁸ Transition to a post-industrial era which focuses on the protection and maintenance of human and ecological health will require innovative and pervasive political, social and economic solutions. The precursory symptoms of impending change and transition can be seen in the wide spread and general Canadian resistance to elimination of certain mundane, convenience items such as synthetic laundry detergents.

⁷Herman E. Daly. "Physical Growth Versus Technological Development." in Building Sustainable Societies: A Blueprint for a Post-Industrial World. Dennis C. Pirages, editor. New York: M.E. Sharpe, 1996. pp.270-276.

⁸Simon, p.25.

Throughout Canada's industrial and economic development, the government's role corresponded to prevailing political, social or economic forces. As promoters, the Canadian government served as an instrument and financial underwriter for major public works.⁹ At other times, government also played the role of mediator and arbitrator of disputes which erupted between competing interests of business, labour and the users of services.¹⁰ Consistently, the underlying goal of Canadian governments, either as promoters or mediators, remained the expansion and stabilization of the nation's economy. However, during the 1970s and 1980s, governments in Canada and elsewhere realized that continued industrial and technological growth threatened to de-stabilize national economies. Governments struggled to find appropriate methods and programs to deal with a wide array of issues such as: resource depletion, acid rain, dwindling fish stocks, unspecified and perhaps irreversible damage due to radiation leaks and mismanagement of nuclear power plants. Governments in Canada and throughout the industrialized world recognized the need to seek information and solutions co-operatively.

International forums and fact finding initiatives which focused specifically on the problems attributed to synthetic laundry detergent use, encouraged and advised political leaders and delegates from Canada and other industrialized nations to implement suitable

⁹Hugh Aitken. The Welland Canal Company. Cambridge: Harvard University Press, 1954. Aitken interpreted the role and function of government within a model of "defensive expansionism" This aggressive response was propelled by a forceful lobbying effort by private businessmen and politicians who perceived a threat to their economic well-being from the United States.

¹⁰David J. Bercuson. Confrontation at Winnipeg-Labour, Industrial Relations and the General Strike. Montreal: McGill-Queen's University Press, 1974. During the Winnipeg General Strike of 1919 the government used military force and coercive tactics to quell strikers. Although Prime Minister Borden had hoped to distance his government from any involvement in the strike, the immobilization of the city of Winnipeg jeopardized the nation's communications. As the strike escalated, causing substantial disruption to the provincial and national economies, Borden intervened.

structures and remedial programs which appropriately addressed the diverse issues and problems found within different jurisdictions. Significantly, no assembly of delegates investigating issues of resource depletion and the adverse affects of synthetic laundry detergents sanctioned a unilateral global course of action. Within the Canadian political structure, all levels of government shared responsibility for environmental health and security. Budgetary constraints, consumer and voter demands, bureaucratic duplication and the inherent fragmented decision-making process influenced and limited the scope and effectiveness of government responses.

Future governments inevitably face the challenges of responding to the variegated and complex issues of resource depletion, rising concerns about human health, and the incumbent adjustments imposed upon the manufacturing and industrial sectors. These governing bodies must tackle formidable, and as yet unknown, social, economic and political resistance to change. Although a discussion of the future shape, form and extent of governments and their respective roles in the ecological controversy extends beyond the scope of this paper, an examination of the forces of resistance and opposition to the elimination of one consumer product provides a rudimentary starting point for further study. Furthermore, each social, economic and political constituent within industrialized societies of the world is affected by past, present and future decisions and activities arising from issues of resource management and industrial and technological development.

To develop the arguments about synthetic laundry detergents this thesis draws on scientific and government reports and documents, media and journal sources, and interviews and file documents from the synthetic laundry detergent industry and the proponents of rigid government regulation available for the period 1947-1992. A critical interpretation of the available data recognizes the limitations of certain quantitative measurements gleaned from census data and other statistical information employed in the research. For example, during the discussion period manufacturers and producers

continually reformulate their products in the form of tablets, bars, liquids and powdered substances. Some detergents also feature additives such as perfumes, bleaching agents or fabric softeners. Such variegated production units make standardization of criteria difficult, if not impossible to achieve. Consequently, quantitative measurements provide illustrations of trends as opposed to finite measurements of usage. A glossary of terms is also provided under Appendix A for clarification and interpretation of scientific and other technical terms.

The thesis arguments unfold in four chapters. Chapter one discusses the development, manufacture and acceptance of synthetic laundry detergents after 1947. It examines the postwar economic boom and its effects on Canadian business development and restructuring, new technologies introduced into the household, and the social implications of these changes. Based on Census information, and other statistical reports, it employs quantitative measurements of synthetic laundry detergent production and consumption and finds evidence of the increasing acceptance and use of these products during the period 1947-1992. Increased consumption reflects changing consumer needs and wants, new family and household structures, as well as changing levels of disposable household incomes. Consumption patterns fall into three phases or time periods. In the first stages, 1947-1959, consumer acceptance arises from the increase in household formation, the baby boom, and rising per capita wages. In the second stage, roughly 1960-late 1970s, evidence about the ecological harm caused by synthetic laundry detergents becomes widely known. However, this is also a time when the numbers of married women in the labour force increases dramatically. In the third stage, late 1970s-1992, per capita consumption of synthetic laundry detergents declines. Manufacturers of synthetic laundry detergents respond to these economic, social and structural changes with product innovations, promotions and advertising and other strategies.

Chapter two describes the environmental, social, economic and political costs arising from the increased use and acceptance of synthetic laundry detergents. The

issues discussed include concerns about waste management; product packaging; chemical runoffs and effluents and their effects on potable water supplies. The chapter incorporates a discussion of the federal government's responses to these issues through the creation of the Ministry of the Environment in 1971 and other related initiatives such as the Environmental Choice Program. All such programs impose social and economic expenses and obligations on all sectors of Canadian society. Government responses to environmental degradation are many and varied largely because of Canada's geographic, social and economic diversity. For instance, in areas with greater population densities, issues of potable water quality may receive more immediate government attention than that given to sparsely populated areas. Rather than catalogue and analyze the extensive list of government programs and initiatives, the chapter focuses on several key studies and research forums which attempted to measure the scope and the seriousness of the problems resulting from the increased use of synthetic laundry detergents.

Chapter three proposes a model of opposition wherein the relationship of the consumer and the producer is used as a method of investigating the scope and depth of resistance to the elimination of synthetic laundry detergents. The discussion opens with an analysis of changing social attitudes and perceptions about household management after the Second World War. Extrapolating from this premise, the discussion explores general Canadian consumer expectations and beliefs about technological and scientific innovations as they apply to the manufacture and sale of synthetic laundry detergents and other consumer goods and services. The chapter also deals with corporate actions and strategies employed to ensure the corporations' survival and to garner wide spread acceptance both from the public at large and within the political sphere.

Chapter four summarizes the findings. The foregoing analysis suggests that the opposition to the elimination of synthetic laundry detergents arises from the consumer and producer interactions. During the period under discussion, consumers continue to

predominant household manager, and juggle demands of the workplace and the home against constraints of limited time, levels of disposable income and access to alternative products. Household managers also receive an avalanche of information about the complexity of environmental and health issues as well as guarantees and assurances from detergent manufacturers that synthetic laundry detergents pose no significant harm to consumers. Manufacturers adapt technologies, develop consumer products and work to ensure continued profitability. Governments respond in various, but limited, ways to issues associated with the continued use and disposal of these products. Likely, if increasing numbers of consumers actively choose products and services which pose less of a burden on our ecosystems, manufacturers would adapt to these marketplace forces. However, this transition to a world with less convenience and less reliance on synthetic technologies bears an unknown, and therefore, feared social, economic and political cost.

Chapter One

The Development and Acceptance of Synthetic Laundry Detergents

The technological development and introduction of synthetic laundry detergents into the Canadian marketplace occurred shortly after the end of the Second World War. Manufacturers successfully adapted war-time synthetic technologies and produced a readily acceptable laundry product which household managers preferred over soap-based products. During the discussion period, the synthetic detergent industry expanded steadily and eventually held 85 per cent of the market share in Canada and the United States. Product innovations, the development and availability of new technologies in the household, changing demographics and rising per capita incomes influenced consumer acceptance of synthetic laundry detergents. Also, these circumstances influenced business structures and organizations. The soaps and cleaning compounds industry transformed from a number of small individually run shops into modern factories dominated by the presence of three major multi-national corporations. These firms employed armies of technically skilled individuals with connections to other sectors of the economy such as advertising, packaging and the chemical industry. Corporations continually invested in capital projects, research and development and product diversification in order to sustain continued consumer confidence and acceptance and generate sales. The following discussion examines how corporations achieved these goals.



Before the Second World War, households often made their own soaps or relied on manufactured soaps produced from fats, fatty oils and alkali to launder clothing. Defined chemically as either the sodium or the potassium salt of a fatty acid, soap was

commonly produced by a reaction between caustic soda or caustic potash and a fat or fatty oil. Domestic and industrial soap products contained other materials such as water, alkalis, sodium silicate, phosphates, bleaches and perfumes. The fatty acid content varied from 5-90 per cent per volume.¹¹ However, soaps lost solubility in hard water (a common North American phenomenon).¹² This reduced its cleaning effectiveness and caused the formation of a "scum" often deposited on the fabric.¹³ To counteract these effects, householders added water softening agents to the laundry water.

The rationing of natural fats and oils during wartime forced manufacturers to reduce their soap production. Consequently, soap producers began the search for detergents and wetting agents which could be manufactured without fats.¹⁴ Wartime technological advances led to the discovery of synthetic surfactants which used non-fatty raw materials.¹⁵ The army and the navy used these early soap substitutes and crude synthetic surface active agents derived from petroleum by-products for cleaning jet engines and weaponry exposed to salt water conditions. However, soap manufacturers rarely used these ingredients in domestic detergents until after the war because they were too abrasive and damaging to fabrics as well as more expensive than soaps.¹⁶ In the U.S. several manufacturing plants engaged in the production of these synthetic cleaners. With the end of hostilities, these plants would become obsolete unless they could be converted to the production of synthetic cleaners suitable for the domestic market.

¹¹W. J. Corlett. The Economic Development of Detergents. London, England: Gerald Duckworth & Co. Ltd., 1958. p.13.

¹²Doris L. Anderson. Lightening the Laundry Load. Extension Bulletin No. 28. New Jersey State College, November 1954. This pamphlet described hard water as water with a high iron content. Chemists measure the calcium and magnesium content of water in terms of grains of hardness. Water with less than 3 grains of hardness " does not cause any serious hard water laundry problems."

¹³Environmental Choice Papers. Marbek Resource Consultants. Contracted by the Environmental Choice Program. "Confidential Briefing Note-Laundry Detergents." April 2, 1992. pp 1-2.

¹⁴Charles Wilson. Unilever 1945-1965: Challenge and Response in the Post-War Industrial Revolution. Vol. 1. London, England: Cassell & Company Ltd., 1968. pp 5-7

¹⁵David R. Foster. The Story of Colgate-Palmolive. New York: The Newcomen Society in North America, 1975 pp 22-23

¹⁶Corlett, p 107 Synthetic detergents used in Europe and the United States prior to 1945 cost about four times that of soap products available at the time.

Early experiments with synthetic laundry detergents resulted in a viable product suitable for household applications. Over time, manufacturers refined these synthetic detergents to meet consumer demands for less abrasive cleaners that did not damage fine fibres such as silks, woolens and newly introduced synthetic textiles such as nylon and rayon. These soap alternatives cleaned different types of clothing in hard water conditions which eliminated the addition of softening agents during the washing process. Moreover, the costs for such products remained only slightly higher than those for soap-based products.

Although synthetic detergents are more chemically complex than soaps, both products are surfactants which perform the cleaning function by moving the dirt on a fabric into the wash water and keeping it there. The surface active agents enable the water to spread and to penetrate the fabric more easily because they lower the surface tension. Agitation by scrubbing or in a washing machine contributes to the removal and suspension of dirt. Agitation emulsifies oil in the dirt which is then surrounded by the molecules of the surface active agent. In soft water conditions, the oil remains emulsified and the solids suspended so they can be rinsed away.¹⁷

While soap-based products also emulsify oils, these elements often re-deposit on the fabrics. The softening agents or builders needed to suspend the oils work less effectively with soaps and fatty ingredients than with the synthetic surfactant ingredients.

Canada's postwar social, economic and political situation influenced soap manufacturers in a variety of ways. Canada emerged from the Second World War with a greatly expanded manufacturing advantage. Wartime mobilization had led to the creation of new industries and the introduction and adaptation of technologies which had not existed previously. Political and industrial leaders recognized that war had resulted in increasing government intervention in Canada's economy and industrial development.

¹⁷U. S. International Trade Commission. Industry & Trade Summary: Soaps, Detergents, and Surface-Active Agents. Washington, D. C.: USITC Publication 2458, November 1991. pp.1-5.

Canada's contributions to the war effort included an investment of more than 1.3 billion dollars in new capital ventures. Moreover, war mobilization had strengthened Canada's trade and industrial relationship with the United States.¹⁸ During the Reconstruction debates, government officials and business leaders focused on strategies which would protect Canada's export trade. They also recognized the advantages and potential of an expanding and vigorous domestic consumer market which the country sustained with high rates of immigration and an accompanying high birth rate that continued to the end of the 1960s.¹⁹ Soap manufacturers and many other North American industries saw opportunities in the marketplace and the economy for adapting wartime technologies and plants. They invested in the development of a wide array of consumer goods to satisfy the needs of a voracious consuming public.

Procter and Gamble, a soap and laundry products company prior to 1945, took advantage of post-war conditions and used its resources and research staff to develop surface active agents or surfactants for domestic household use. The company introduced *Dreft*, its first synthetic detergent for all round household use in 1933. However, it did not achieve significant consumer acceptance because it failed to remove heavy dirt effectively and proved too abrasive and damaging to fabrics.²⁰ Drawing on earlier synthetic detergent research, Procter and Gamble created *Tide* which fulfilled both the cleaning and performance criteria lacking in earlier synthetic detergents. The company patented *Tide* in 1946. Since then, this heavy duty synthetic detergent has become a common household commodity and has set the detergent industry standards for performance.²¹

¹⁸Graham D. Taylor and Peter A. Baskerville. A Concise History of Business in Canada. Toronto: Oxford University Press, 1994. pp.364-389.

¹⁹Taylor and Baskerville, p.396.

²⁰Advertising Age. Procter & Gamble: The House that Ivory Built. Lincolnville, Illinois: NTC Business Books, 1988. p.19.

²¹Ibid. pp.22-26.

Procter and Gamble marketing executives aggressively promoted their new "wonder product".²² By 1948 the company reported that the industry volume of all Procter and Gambles' synthetic detergent lines amounted to approximately 20 per cent of all its other household laundry products. The following year, *Tide* outsold all other synthetic laundry detergents available in North America.²³ A study conducted by the Chatelaine Consumer Council in 1976 reiterated the success of the company's brand name promotions. In Ontario, 36 per cent of the households surveyed picked *Tide* as the detergent of choice and 19 per cent picked *Sunlight* powdered detergent.²⁴

Two other large multinational corporations, Unilever and Colgate-Palmolive, targeted the affluent urban markets in Canada and the U.S. in the promotion of synthetic laundry detergents and other convenience goods and services. The larger volumes of improved products such as prepared foods, cosmetics, cleaning products, toothpastes, and labour saving appliances was not only linked to rising incomes but to changing social habits and the introduction and rapid acceptance of other products resulting from innovations and new technologies.

²²Ibid., p. 18. Procter & Gamble spent \$8.8 million (U.S.) on network radio advertising, \$1.8 million (U.S.) on magazine promotions and \$3.0 million (U.S.) on newspaper advertising in 1948. Other market research included the distribution of product samples, coupon offers and the creation of a centralized advertising department.

²³Paula Kepos, ed. "The Procter & Gamble Company" in International Directory of Company Histories, Vol. 8. Washington, D.C.: St. James Press, 1994. p. 433. P & G backed *Tide* with a \$21 million advertising campaign. Despite the product's premium price, *Tide* has remained the number-one laundry detergent into the 1990s.

²⁴Chatelaine Consumer Council. The Chatelaine Laundry Products & Appliances Study. New York: Mac-Hunter Research Bureau, 1976. This study reported only information regarding consumer purchases of various brand name products and appliances, but did not indicate why the consumers chose these goods or services.

Paula Kepos, ed. "Lever Brothers Company." in International Directory of Company Histories, Vol. 9. Washington, D.C.: St. James Press, 1994. p. 318. Lever Brothers had manufactured *Sunlight* bar soaps during the 1920s. Like their competitors, the company invested in research and development of synthetic laundry detergents and promoted their *Sunlight* powdered detergents under the well known brand name. By 1980, Lever had also introduced *Sunlight* automatic and regular dish washing detergents.

Influences on Consumer Behaviour

A number of factors influenced consumer behaviour and acceptance of synthetic detergents during the two decades following the war. Some historians and social observers have described the unprecedented expansion of economic production and increasing consumption in North America through to the 1960s as a manifestation of affluence and "a revolution of expectations regarding luxuries and comforts."²⁵ During these post-war decades increasing numbers of Canadians enjoyed relatively stable, skilled, white-collar and professional employment. This sector of society, generally the urban middle class, were the first to enjoy the benefits of expanded consumer credit opportunities and the goods available through mass production.²⁶

After the Second World War, changing household structures and women's increasing participation in the paid labour force directly affected householders' accessibility and demand for consumer goods and services.²⁷ Table 1.1 shows participation rates of married and other categories of women 15 years of age and over between 1959 and 1975. The participation rates were obtained by expressing labour force figures as percentages of corresponding non-institutional population figures. Certain regional data were also excluded.²⁸ During this period, married women accounted for almost 18 per cent of the total labour force in 1959. By 1975, this rate more than doubled

²⁵Stuart M. Blumin. The Emergence of the Middle Class: Social Experience in the American City, 1760-1900. Cambridge: Cambridge University Press, 1989 p.138.

²⁶Veronica Strong-Boag. The New Day Recalled: Lives of Girls and Women in English Canada, 1919-1939. Toronto: Copp Clark Pitman, 1988. p.431. In Europe and North America rising numbers of married women continued to work after marriage.

Claudia Goldin. Understanding the Generation Gap: An Economic History of American Women. New York: Oxford University Press, 1990. pp.16-37. Goldin provides a comprehensive study of labour force participation of married women and life cycle labour force participation and work experience. For example, in Britain, 40 per cent of married women between 30-34 years of age had jobs outside the home in 1958.

²⁷Claudia Goldin. Understanding the Generation Gap: An Economic History of American Women. New York: Oxford University Press, 1990 p.16-37. Goldin provides a comprehensive study of labour force participation of married women and life cycle labour force participation and work experience. In Britain, for example, 40% of married women between 3-34 years of age had jobs outside the home in 1958.

²⁸Leacy, Table Series D431-433 Newfoundland is excluded prior to 1950. Figures for the Yukon and the North West Territories are excluded in all years as are Indians living on reserves.

to 38.4 per cent in 1975. Rates for other categories of non-married women remained fairly level during the same time period.

Table 1.1 Female Civilian Labour Force Participation Rates (Annual Averages) 1959-1975

Year	Total	Married	Other*
1975	40.9	38.4	44.7
1974	39.7	36.7	44.7
1973	38.7	35.5	43.8
1972	37.1	33.9	42.4
1971	36.5	33.0	42.2
1970	35.5	32.0	41.4
1969	35.2	31.2	42.2
1968	34.4	29.6	42.7
1967	33.8	28.3	43.4
1966	32.8	26.8	43.3
1965	31.3	25.2	42.4
1964	30.5	24.1	42.1
1963	29.6	22.5	42.4
1962	29.1	21.5	43.2
1961	28.8	20.7	43.8
1960	28.0	19.1	44.5
1959	26.7	17.9	43.4 ²⁹

* This category includes single, widowed, separated and divorced women .

The stable trend for single women and the upward trend for married women indicated a two stage household structural change taking place between 1959-1975. During the war, women represented 33 per cent of the labour force. This disrupted family values and the traditional perception of women as mothers and household managers. Canadians emerged from the Second World War eager to put the deprivation of the 1930s and the uncertainty of war behind them. Marriage rates increased from 8 per

²⁹Ibid.

thousand during the Depression to 10.8 per thousand in 1939 and remained at 9 per thousand until 1952. The creation of more family units combined with a much higher birth rate represented the Baby Boom. Population and birth rates increased further due to the high levels of immigration during the same period.³⁰ The substantial increase in numbers of children born in the period 1941-1961 fueled demand for convenience and other consumer goods. When assessing the information on Table 1.1, one can reasonably conclude that working and mothering competed for women's time and energy. A 1984 survey of married couples' time management showed that the bulk of housework continued to fall on the woman's shoulders even when they were employed outside the home while the husband's share remained relatively small.³¹ By inference, more married women incurred double duty as household managers and child-care providers, as well as wage earners. Modern household appliances had not reduced the amount of time spent on housework, nor did the level of household technology make a difference in the amount of time spent by women in performing these duties. Rather, these technologies raised the standards for house care and service to families.³² With such demands on their time and energies, it followed that convenient, efficient and affordable synthetic laundry detergents met with tremendous approval and consumer acceptance.

Another demographic factor affecting demand was the decline in mortality rates which were a consequence of the universally available social welfare legislation

³⁰Doug Owram. Born at the Right Time: A History of the Baby Boom Generation. Toronto: University of Toronto Press, 1996. pp.18-29

David K. Foote with Daniel Stoffman. Boom Bust & Echo: How to Profit from the Coming Demographic Shift. Toronto: Macfarlane Walter & Ross, 1996. pp.20-28.

³¹A. Romaniuc. Current Demographic Analysis: Fertility in Canada From Baby-boom to Baby-bust. Ottawa. Published under the authority of the Minister of Supply and Services, November 1984 pp.62-68. The survey results reported the average time spent daily on household tasks by married people living in 6 different urban centres in the U.S. Employed men reported 30 minutes or less while employed women reported 3 hours and 35 minutes per day devoted to household tasks.

³²Statistics Canada. New Trends in the Family: Demographic Facts and Figures. Ottawa: 1991 pp.69-72. The evolution of families and households since the 1960s saw increasing numbers of married women with children participating in the labour force. This raised the family's revenue earning capacity and provided greater economic independence for the spouses. During the same period, the expansion in the consumer goods and services, as well as greater expectations triggered by "aggressive advertising

introduced during and after the war. Improved access to health care facilities, family allowances, pensions and unemployment benefits together provided Canadians with a higher standard of living than pre-war generations had enjoyed.³³

Demographic information after 1975 indicated a third phase in consumer behaviour. Following the Second World War through to 1959, in phase one, the Canadian economy expanded rapidly, more marriages took place and the birth rate rose. The baby boom continued until the mid 1960s. Married women with children chose to stay at home and resumed their traditional gender roles.³⁴ In phase two, roughly 1960 through to the late 1970s, increases in labour force participation by women coincided with a slackening birth rate at 1963-1966.³⁵ The 1960s also saw an increase in the number of women pursuing higher education, postponing marriage and having fewer babies.³⁶ In phase three, the late 1970s to early 1990s, other demographic shifts appeared. In 1979, about 55 per cent of husband-wife families under 65 years of age had both partners participating in the work force. By 1987 the ratio rose to 66 per cent and by 1990 it climbed to 70 per cent. The predominance of working mothers also increased. In 1988, 57 per cent of married women with children under age 6, whose husband was employed, had jobs, up from 31 per cent in 1976. During the same period, the proportion of married women with children aged 6-15 with jobs rose from 47 per cent to 70 per cent.³⁷ These changing labour force participation rates also affected householders' time management. According to the 1986 General Social Survey, both male and female adult Canadians spent an average of 1.75 hours per day on housework,

and assisted by a credit system designed to sustain consumers' demands" rendered the two wage earner family almost a necessity.

³³James Struthers. The Limits of Affluence: Welfare in Ontario, 1920-1970. Toronto: University of Toronto Press, 1994. Chapter 4: Reconstructing Welfare, pp 117-141.

³⁴Owram, pp 20-28.

³⁵Owram, pp.4-9 Canadian annual numbers of birth at the end of World War Two reached 300,000. In 1947 it climbed to 372,000, then up to 400,000 in 1952. In 1966 the numbers fell below 400,000.

³⁶ Foote, pp 20-21. The introduction of the birth control pill makes this life style choice easier.

³⁷Statistics Canada. Canadian Social Trends. No. 13, Summer, 1989. p.4.

and laundry duty represented more than twenty per cent of that time.³⁸ As might be expected, householders with children devoted more time to domestic tasks than householders with no children.³⁹

Not only did Canadian families and households enjoy steadily rising rates of affluence, but their life styles became busier despite the abundance of supposed labour-saving devices, household appliances and increased access to a wide assortment of social services. Consequently, householders usually purchased products which they perceived as reliable, convenient, efficient and affordable.⁴⁰

Producers' Responses to Social and Economic Changes.

These social and economic changes had implications for both synthetic laundry detergent industries and their affiliated associates. Appliance producers promoted the sale of private clothes washers with enticements such as easy credit terms, and claims that home laundering saved money and increased standards of hygiene and health. Understandably, increasing sales and use of domestic laundry appliances became integral to corporate planning. Synthetic laundry detergent producers collaborated with appliance manufacturers and often arranged for samples of brand name detergents to be included with each purchase of a washing machine.⁴¹ As electricity became available to a wider population of Canadians, rural dwellers also purchased automatic washing machines. Older generations of women welcomed these new technologies into their homes. Many considered laundry as "the worst work a woman's got."⁴² Laundry work had previously

³⁸Ibid. p.18.

³⁹Statistics Canada. Canadian Social Trends No. 16, Spring 1990, p.19

⁴⁰Roger Sauve. Canadian People Patterns. Saskatoon, Saskatchewan: Western Producer Prairie Books, 1990. pp.80-81.

⁴¹Foster, pp.22-23.

⁴²Meg Luxton. More than a Labour of Love: Three Generations of Women's Work in the Home. Toronto Women's Educational Press, 1980. p.154.

entailed washing, boiling and rinsing clothing by hand in tubs or vats. It had also meant that women spent one or two days washing, drying, folding and then ironing the family's clothing. The introduction of washing machines, and later dryers, freed up women's time and also became a symbol of affluence.⁴³ Installment purchase plans and other credit options allowed lower income groups opportunities to purchase washing machines.⁴⁴ Over time, many Canadians considered washing machines and other convenience and luxury appliances as household necessities.⁴⁵ Based on consumer research, Procter and Gamble found that 33 per cent of all U.S. households owned automatic washing machines in 1955. Similarly, in Canada, more than 70 per cent of all households had access to both an automatic washing machine and a clothes dryer by 1990.⁴⁶

Detergent manufacturers soon realized that new technologies introduced into the household directly affected their product development. New machines and new fabrics demanded detergent changes. For example, Procter and Gamble developed specific detergents like *Cheer* to clean laundry in cool water and another product called *Oxydol* which contained a colour safe oxygen bleach. Other detergents had brighteners and fabric softeners.⁴⁷ When appliance manufacturers designed and sold "new extra-large capacity, low-energy, front loading clothes washers" synthetic laundry detergent producers adjusted their product formulas to accommodate these innovations. Frigidaire made an agreement

⁴³Ibid. pp.83-90. Much of Luxton's research was based on oral histories of women living in Flin Flon, Manitoba. One mother recounted that in the 1940s, before she owned an automatic washing machine, she needed 20 nightgowns and 100 diapers for each infant because in the winter everything took two days to dry. By the 1950s, mothers with washers and dryers were able to reduce the number of garments used by increasing the amount of laundry they did.

⁴⁴C. M. Beach, et al. Distribution of Income and Wealth in Ontario: Theory and Evidence. Ottawa: Ontario Economic Council Research Studies, 1981. pp.193-222. This chapter discusses the strategies employed by lower income groups to increase their rates of consumption through access to consumer credit.

David Brody. Workers in Industrial America: Essays in the Twentieth Century Struggle. New York: Oxford University Press, 1980. Consumer credit begins in the 1920s. See Chapter 2.

⁴⁵Luxton, pp.150-156.

⁴⁶Sauve, p. 138.

⁴⁷Advertising Age, p.23.

with Lever Brothers to include a sample box of specially formulated low-sudsing *Wisk* detergent with each newly designed washer. Kenwyn D. Saunders, Lever Brothers' marketing director for *Wisk* detergent acknowledged that "...the basic ingredients are not significantly different [from other synthetic detergents on the market], but are re balanced [sic] to account for the clothes-to-liquid ratios and deal with water hardness."⁴⁸ Other external forces influenced the manufacture, sale and promotion of detergents. The transformation of the retail sales environment entailed the construction of shopping malls and wide-aisled super markets. Manufacturers began to study how consumers shopped .⁴⁹ They redesigned their product packaging not only to accommodate the retailers' shelving requirements, but to encourage customer selection when retailers and grocery outlets moved rapidly to a concept of customer self-service. In 1950 about 30 per cent of all grocery outlets and retailers were self-serve, but by 1965 the figure had reached 95 per cent.⁵⁰ In recognition of these new patterns in purchasing and consumption, manufacturers competed vigorously with other producers and employed ingenious and costly strategies for product advertising and promotion.

New communications technology such as radio and television bombarded householders with the merits of "new and improved" laundry products. Television programs profoundly affected women's consumption choices by promoting the myth of the "ideal family" and reinforcing women's roles and responsibilities within the sanctuary of the home.⁵¹ In 1935 Procter and Gamble spent \$2 million on national radio sponsorship

⁴⁸Elisabeth M. Kirschner. "Product Report" in Chemical & Engineering News, Vol. 75, January 27, 1997. p.32. Kirschner's article used the example of Lever Brothers' reformulations in her survey of product innovation within the synthetic laundry detergent industry over a period spanning the years 1960-1995.

⁴⁹Richard De Santa. "Bucking the Big Brand Era." in Supermarket Business, Vol. 15, Issue 9. September 1996. p.10. The Consumer Research Network, based in Philadelphia, conducted several surveys between 1981-1996 aimed at identifying packaging which consumers preferred. The organization developed an index that rates packaging on the basis of four functions: graphic design, convenience, product protection and (in 1986) environmental friendliness.

⁵⁰Wilson, pp.19-29.

⁵¹Owram, p.p.31-34 and p.87. Television became a symbol of leisure and affluence during the 1950s. One popular program, *Father Knows Best*, ran from 1954-1962 and depicted the ideal family with a stay at

21 programs, the original *soap operas*, on the air and spent \$9 million in promotions.⁵² Advertising dollars tended to spell the difference between several similar products that differed only by scent, colour or packaging. Procter and Gamble spent massive amounts on advertising campaigns and controlled between 45-50 per cent of the household products market in North America until the early 1980s when competition from Lever Brothers and Colgate-Palmolive escalated. Collectively, such aggressive promotional techniques affected consumer attitudes about the preference for "whiter than white" and fresh smelling laundry.⁵³

Manufacturers of synthetic laundry detergents experienced sustained strength and growth of the industry from 1947-1992. In Canada, Procter and Gamble, Lever Brothers Canada and Colgate-Palmolive Canada, the three main producers of synthetic laundry detergents collectively maintained more than 80 per cent of the market share by the mid 1970s.⁵⁴ The degree of industrial concentration which predominated in the synthetic laundry detergent industry in Canada surpassed that found in the U.S. American government sources reported 867 companies involved in the soap, detergent and surface-active agent industry in 1991. Of these, at least 123 companies, or about 14 per cent, reported shipments valued at more than \$100,000. annually. The four largest U.S. producers accounted for 55 per cent of the domestic market.⁵⁵ According to

⁵²Paula Kepos, "Procter & Gamble." p. 433.

⁵³Environmental Choice Papers. Colgate-Palmolive Canada., Toronto, Ontario. Letter to the ECP dated November 29, 1990.

⁵⁴Chatelaine Consumer Council, pp.17-22. A survey of consumer recognition of name brand synthetic laundry detergents was completed in 1976.

Statistics Canada. Industry Division: Annual Survey of Manufacturers Section. Chemical and Chemical Products Industries, 1992. This survey replaced the earlier Census documents known as the Annual Census of Industry. Synthetic detergents first appeared in the Annual Census of Industry in 1947. By 1959 the formats of the Census of Industry discontinued the reporting of information about volumes of chemical ingredients used in the manufacture of synthetic laundry detergents. Instead, the Census data reported geographical locations of chemical industries and activities and monetary measurements of chemical production output throughout Canada. Data also made references to affiliated buyers of these products which identified Procter & Gamble, Lever Brothers Canada and Colgate-Palmolive Canada as the largest consumers.

⁵⁵U.S. International Trade Commission, 1991. pp.3-5.

Statistics Canada, 130 establishments remained involved in the production of synthetic laundry detergents with a total shipment value of \$1651.2 million dollars in 1992.

Table 1.2
Firms Involved in Production of Synthetic Laundry Detergents

Year	# of Firms Producing Synthetic Detergents (Canada)	# of Firms where main product is synthetic detergents
1947	166	53
1948	149	44
1949	143	46
1950	142	50
1951	130	48
1952	136	52
1953	141	52
1954	141	53
1955	141	
1956	142	
1957	139	
1958	137	
1959	134	

Source: Census of Industry⁵⁶

The soap, detergent and surface-active agent industry comprises a multitude of different types of producers. These producers range from large multinational firms to small, cottage-industry producers. Although it would be impossible to describe every type of activity and structure within the industry, Canadian and U.S. industry profiles have significant similarities largely because Canada has imported much of the technology, capital investment in plants, and research and development from the U.S.⁵⁷ Nonetheless,

⁵⁶Canada. Department of Trade and Commerce. Census of Industry: The Soap, Washing Compounds and Cleaning Preparations Industry. 1947-1959.

⁵⁷Roland P. Soule. "Establishing an Untried Product." in The Chemical Industry: Viewpoints and Perspectives. Conrad Berenson, ed. New York: Interscience Publishers, 1963. pp.373-375.

the U.S. Trade Commission attempts some categorical delineation of the major producers of synthetic laundry detergents. According to their analysis, producers generally fall into four categories: multinational chemical companies; multinational consumer products companies; multinational specialty chemical products companies; and domestic specialty soap and detergent companies.⁵⁸ In Canada, the three major producers of synthetic laundry detergents are multinational consumer products companies.⁵⁹

Corporate concentration in the Canadian synthetic laundry detergent industry had implications for consumers in the Canadian marketplace. Business structures and organizations, as well as investments in new technologies and research and development of new products were reflected in the variety and availability of the goods and services offered to Canadian consumers. All multinational companies aimed at combining operations and reducing costs on a global scale.⁶⁰ Through the mechanism of acquisitions and mergers, these corporations achieved advantages for economies of scale which in turn secured a constant flow of production. These corporations also demonstrated characteristics of product diversification and strategies for widening markets, for which capital resources, technology and organization were essential.⁶¹ Corporate directors committed substantial financial resources to marketing, consumer surveys, and research and development in order to ensure and maintain consumer acceptance. Without a market, the company did not survive.

Many commentators argue that this mobilization of resources shows the corporations' strategies to manipulate, regulate and replace the market

⁵⁸U. S. International Trade Commission, p.2.

⁵⁹Chatelaine Consumer Council, pp.17-22.

Statistics Canada. Industry Division: Annual Survey of Manufacturers Section. Chemical and Chemical Products Industries, 1992.

⁶⁰A. Teichova et al. "Multinational Enterprise in Historical Perspective." in Historical Studies in International Corporate Business. New York: Cambridge University Press, 1989. pp.365-367.

⁶¹Ibid.

mechanism.⁶² Debate about corporate concentration of power in any industrial context falls into two general camps. Some see the continual and progressive industrial concentration as a deviation "from the normal course of economic development" which could be corrected by the normal functioning of supply and demand forces.⁶³ Others see these new trends in industrial organization as "a conspiracy against the consumer" wherein markets have been shaped or created to serve the insatiable profit goals of big business."⁶⁴ Moreover, when an industry is controlled by a small number of firms, these companies have significantly more scope for influencing the technological, economic, political and social environment in which they operate.⁶⁵

Yet, corporate concentration represented only one facet of opposition to the elimination of synthetic laundry detergents from the marketplace. Undoubtedly, the corporations' massive mobilization of resources created conditions for the technological development and consumer acceptance of synthetic laundry detergents. While corporations achieved significant advantages within industrial sectors and the Canadian marketplace, social, economic and political factors also paved the way for their emergent dominance. These industries succeeded in adapting war time technologies and developing synthetic laundry detergents and other consumer products during a time of rapid scientific and technological advancement and development and social change which made mass production, distribution, employment and consumption possible. Throughout the period under discussion, this ongoing innovation and introduction of new goods and services flourished. Changing lifestyles, increases in household disposable incomes and the industry's aggressive and effective promotion of the product firmly

⁶²Daniel A. Ondrack. "Responses to Government Industrial Research Policy: A Comparison of Foreign-Owned and Canadian-Owned Firms." in Governments and Multinationals. Walter H. Goldberg, ed. Cambridge, Mass.: Oelgeschlager, Gunn & Hain, Publishers, Inc., 1983. p.179.

⁶³Teichova, p.369.

⁶⁴Ibid.

⁶⁵G. Rosenbluth. "Monopolistic Practices and Canadian Combines Law" in The Canadian Economy- Selected Readings. John J. Deutsch et al. eds. Toronto: The MacMillan Company of Canada Limited, 1965 p.215.

established widespread consumer preference for chemically complex synthetic laundry detergents rather than soap. By the late 1950s, more than 75 per cent of Canadian and U.S. households used synthetic detergents regularly. This stabilized to a rate slightly over 85 per cent in 1990.⁶⁶ As this technological industry matured, manufacturers channeled increasingly more capital into research and development and multiple product formulation changes in order to sustain consumer acceptance. However, the expenses associated with marketing strategies represented the largest component and addition to the product cost.⁶⁷

To assess the cumulative oppositional effect of industrial concentration and its impact on smaller producers and the marketplace, a comparison of corporate structures and small business structures is warranted. As foreign-owned entities, these major corporations are not required to file their annual reports in Canada. However, numerous Industrial Surveys and economic reports provide information about corporate structures, acquisitions and mergers, budgets, and annual sales.⁶⁸

The three largest Canadian producers and distributors of synthetic laundry detergents are multinational firms which are vertically integrated from the cultivation of plant materials through the manufacture, marketing, and distribution of the final consumer products. Significantly, these three major manufacturers also produce a wide variety of other consumer products such as processed foods, disposable diapers,

⁶⁶U. S. International Trade Commission, p. 4.

Susan J. Ainsworth. "Soaps and Detergents." in Chemical and Engineering News, January 22, 1996. pp.32-33.

⁶⁷Peter J. Simmons. Choice and Demand. New York: John Wiley & Sons, 1974. p.95.

Manufacturing Chemists' Association Inc. The Chemical Industry Fact Book. New York, 1962. p.147.

Susan E. M. Selke. Packaging and the Environment: Alternatives, Trends and Solutions. Lancaster, Pennsylvania: School of Packaging-Michigan State University and Technomic Publishing Co. Inc., 1990 pp.10-26

U. S. International Trade Commission, 1991. pp.3-5.

⁶⁸Kepos. "Lever Brothers." pp.317-318.

Kepos. "Procter & Gamble." pp.432-433.

cosmetics, industrial cleaners and waxes, toiletries, and surgical supplies.⁶⁹ Moreover, these corporations have substantial and impressive resources in terms of capital and technologically trained personnel which are employed in the continual research, development and marketing of new products and processes aimed at generating and increasing sales.

For example, in 1965, Unilever, the parent company of Lever Brothers Canada, had eleven major research establishments and an undisclosed number of smaller research establishments located throughout the western industrialized world as well as in West Africa, the Congo and the Solomon Islands.⁷⁰ The corporation spent \$50 million in 1985 to expand the laboratories and research staff at its Edgewater, New Jersey, research centre.⁷¹ Procter and Gamble launched fourteen "new" products in test markets worldwide in 1981. Jack Henry, a former market research department manager for the corporation, explained that the research and development of new products represented the "lifeblood of its business" success.⁷² Procter and Gamble committed 3 per cent of its annual sales, or \$479 million on research for new and existing products in 1986.⁷³ The corporation filed more than 500 patents annually with patent offices in the U.S., Canada and Europe in 1988.⁷⁴ Colgate-Palmolive embarked upon an extensive new-product-development program which created such brands as *Cold Power* laundry detergent and *Ultra Bright* toothpaste in the early 1960s. In 1987 the company beat Procter and Gamble to the market with a laundry detergent packaged in a refillable pouch.⁷⁵

Conversely, the other smaller producers of synthetic laundry detergents, which maintain about 20 per cent of the market share in Canada, averaged less than \$100,000.

⁶⁹Adele Hast, editor. "Colgate-Palmolive Company." in International Directory of Company Histories, Vol. III. Chicago: St. James Press, 1991. pp.24-25.

⁷⁰Wilson, Unilever 1945-1965, Vol. 1. p.65.

⁷¹Kezos, "Lever Brothers." p.318.

⁷²Advertising Age, pp.33-36.

⁷³Ibid. p.127.

⁷⁴Ibid. p.128.

⁷⁵Hast. pp 23-25

in annual sales of product and employed fewer than 20 persons. In the majority of cases, these firms manufactured product lines which relied on fewer chemical components which meant they were limited in the volume and variety of goods generated.⁷⁶ Despite their limited output and capital resources, Statistics Canada found that small Canadian-controlled firms spent a greater portion of their revenues on research and development than foreign-controlled firms of the same size. Since 1980, Canadian-controlled firms almost tripled their activity and almost half of this increase occurred after 1992. However, the study also found that the majority of the research and development financed by foreign-controlled firms was in the chemical products and motor vehicle industries.⁷⁷

Although smaller firms actively engage in research and development, in many cases, these smaller producers of synthetic laundry detergents buy new recipes and technologies from their chemical suppliers.⁷⁸ Also, unlike the larger, integrated manufacturers, these firms usually buy their product packaging, labels and advertising from outside sources.⁷⁹ Consequently, smaller corporations have less control over their product ingredients and packaging.

These structural characteristics of smaller corporations limited their access and visibility in the Canadian marketplace. Corporate concentration in the synthetic laundry detergent industry actively nurtured consumer allegiance to their product lines. Consumers readily identified brand name products which larger business entities promoted through multi-media advertising, prominent retail displays and other such strategies. As consumer acceptance increased so too did the producers' efforts to bolster

⁷⁶Gideon Rosenbluth. Concentration in Canadian Manufacturing Industries Princeton: Princeton University Press, 1957. p.15.

Richard Pomfret. the Economic Development of Canada. Toronto: Methuen, 1981. p.135

Environment Canada. EcoLogo (The Environmental Choice Newsletter) March, 1988. pp.2-3.

⁷⁷Statistics Canada Science Statistics, Vol. 21, No. 2. March 1997. p.2..

⁷⁸Environmental Choice Papers. Sharon De Cloet. Letter to Environmental Choice Program dated February 15, 1992.

⁷⁹U.S. International Trade Commission, 1991. pp 3-8.

and sustain that acceptance. As a result, the pervasive and successful corporate strategies transformed the synthetic laundry detergent industry into a multi-million dollar enterprise. Chemical producers and engineers, marketing, packaging and distributing agencies and many other personnel were employed in the creation of "new and improved" synthetic laundry detergents. Given the tremendous scope of these economic factors, any attempt to remove these products from the marketplace would meet with industrial and corporate resistance. The producers could always legitimize their arguments for maintaining these products by pointing to the overwhelming social acceptance of synthetic laundry detergents and the relative inability of alternative products to satisfy consumers' needs and expectations.

As Table 1.3 shows, the synthetic laundry detergent manufacturers expanded their production and sales of the product during the discussion period. To the manufacturer, increasing sales and production coincided with increasing profits and market shares. Unfortunately, due to changes in the formats of census information recorded after 1978, measurements of annual production appeared as monetary values rather than units of volumes produced. This factor thwarted efforts to present standardized units and comparisons of production during the period 1947-1992. The available information, presented in Table 1.3, revealed that in 1947 annual production of synthetic detergents reached 22.8 million pounds. By 1967 production rose to 200.1 million pounds and by 1978 it exceeded 330 million pounds. The ECP reported production and use in terms of weight at 330 million pounds in 1990 which equaled the 1978 production output.⁸⁰

⁸⁰Ibid.

Environmental Choice Papers. Environment Canada. Discussion Draft ECP-??-90. May 16, 1990. p.1.

Table 1.3 Production of Synthetic Laundry Detergents in Canada:
Pounds per Capita, 1947-1990

<u>Year</u>	<u>Pounds of Production (millions)</u>	<u>(Millions) Populations</u>	<u>PoundsPer Capita per Capita</u>	<u>PoundsPer Capita Consumption: Ratio to 1947</u>
1947	22.8	12.551	1.8	1.0
1967	200.1	20.378	9.8	5.4
1978	330.0	23.783	13.9	7.6
1990	330.0	26.452	12.5	6.9

Sources: Statistics Canada⁸¹

Manufacturers realized that once synthetic laundry detergents were introduced into the market and reached a mature growth stage, real growth tended to follow a pattern similar to that of growth in the size of the general population. Based on demographic trends and projections on population increases, Canada's major producers of synthetic laundry detergents made forecasts in 1996 that increases in annual sales would continue at a steady rate of 2 per cent.

However, per capita consumption rates declined after 1978. Interpreting the decline in the production statistics required careful and cautious assessment. Several factors may have accounted for the apparent discrepancy between producers' forecasts of increasing annual sales and the fall in per capita consumption. During the 1950s and 1960s, detergent manufacturers began to introduce a variety of production units into the marketplace in the shape of concentrated liquids, powders and tablets. Since these innovations had consistently been a feature of the product, this production unit variable likely had little demonstrable effect on the reduction in per capita consumption of the

⁸¹Statistics Canada. Prepared by the Ministry of Supply and Services Canada. Current Demographic Analysis Report on the Demographic Situation in Canada, 1983. p.21 Table 2: Demographic Accounts of Canada 1971-1983.
Census Canada, 1947-1990.

product after 1978. Importantly, synthetic laundry detergent producers measured production increases in terms of monetary values and not in terms of production units per capita. In fact, company reports reconciled the reduced production volumes as a reflection of the success of their new formulations and concentrated product innovations.⁸² The largest component of price, however, remained the promotional and advertising cost factor. Multinational, vertically integrated firms had, by the 1950s, established their own advertising departments, packaging facilities and consumer research departments. Within this jurisdiction, large firms could reasonably be expected to control this cost factor. Moreover, new technologies in office equipment and other facilities have reduced labour and set up costs dramatically since 1978. Therefore, manufacturers' forecasts about increasing sales in terms of dollars more likely represented economies and efficiencies associated with promotional activities than increases in production units.

Explanations and information about consumer behaviour are difficult to find because such personal choices are not objectively measured or reported by individual consumers. Much of the available information comes from consumer research departments established within business organizations or from agencies and groups involved in the sphere of consumer protection services. Determining the motivation behind consumer opposition must then become an exercise of observation of consumer choices. On this basis, one can infer motivation and relate those activities to known demographic and social trends and other quantitative data. Certain assumptions and premises also govern these efforts of analysis and explanation. First, consumption rates are a measure of resistance as well as acceptance of synthetic laundry detergents and second, consumption is a voluntary behaviour. Manufacturers cannot compel consumers to buy their products, but they can and do go to amazing lengths to influence consumer

⁸²Madelaine Jacobs. "Soap." in Chemical and Engineering News. January 22, 1996. p.5.

purchases. However, these various and powerful mechanisms affecting consumption choices are not necessarily the largest consideration determining choice. Other choice determinants include the individual's attitudes and values about certain social and health issues, the price of the product and other related criteria.

Within these limits of assessment, reduced per capita consumption may have some relationship to product innovations which in turn reduced the volume of laundry done in households. Also, after 1978, work place and leisure dress codes and styles became more casual, new fabrics and textiles appeared in the marketplace, and mothers had new convenience products such as disposable diapers. Perhaps an aging population had less need for frequent washing than did earlier generations of young children and teenagers. Any of these factors may have contributed to lower per capita consumption rates.

However, when per capita consumption figures and the demographic and social data are reconciled, a three phase progression in consumer behaviour and acceptance of synthetic laundry detergents emerges. In phase one, roughly 1947-late 1950s, consumers readily accept synthetic laundry detergents due to post-war affluence, a reinforcement of women's traditional roles and functions, and the product's superior performance over soap-based alternatives. At this juncture, no known negative side effects attributed to synthetic laundry detergents are known. In phase two, generally the 1960s and 1970s, information about environmental degradation and other harmful events becomes public at the same time that household managers' needs for convenient products intensifies. Consumers rationalize their consumption choices by choosing low-phosphate products, concentrated liquids and other 'environmental compromises', while coping with extraordinary responsibilities within and without the household. Manufacturers sully the consumer with certain product innovations and promotions which aim at reducing the focus on synthetic detergents as dangerous to the public. In phase three, population changes over time dramatically affect consumption behaviour.

In the years after 1978, baby boomers began to enter the marketplace as independents. This generation of consumers enjoyed opportunities not available to preceding generations such as access to schools, university educations, jobs and a wide array of social welfare benefits.⁸³ Early baby boomers espoused idealistic causes during the youth activism of the 1960s with a sense of security and belief that their futures held opportunities and prosperity. These same consumers also enjoyed the time and the type of life styles which allowed them to become involved and knowledgeable about social issues such as AIDS and the environment.⁸⁴ Building on this premise, the activism and awareness, as well as the sheer numbers of baby boomers in Canada likely had a more profound impact on consumer choices than the other personal and highly subjective explanations suggested earlier. Consequently, the marketplace changed after 1978. These consumers reduced the demand and consumption of synthetic laundry detergents because these products created conditions harmful to general environmental and social security and health. This slight weakening of opposition to the elimination of synthetic laundry detergents signaled the likelihood of future significant changes in consumer behaviour. Perhaps the transitional period and wide spread commitment to protect our ecosystem and future generations through informed consumer choices had gained a modest foothold in Canada.

Summary

Soap manufacturers successfully adapted wartime technologies and developed synthetic laundry detergents for general household use in 1946. During the period 1947-1978, conditions such as post-war affluence, the presence of women in the permanent

⁸³ Foote, p.23. Foote identifies the cohort born between 1967-1979 as the baby busters. Early boomers, that cohort born between 1947-1966 represent one third of the Canadian population today and it follows that their presence in the marketplace influences consumption behaviour.

⁸⁴ Foote, pp.23-28.

work force, the baby boom and access and availability of new household appliances helped to increase and sustain consumer acceptance and preference for these products over soap-based products. Eventually, three major multinational firms dominated the synthetic laundry detergent industry in Canada. These companies used their vast capital resources, research and development facilities and aggressive promotional strategies to increase their market share. By the mid 1970s, Procter and Gamble, Lever Brothers and Colgate-Palmolive claimed 70 per cent of the Canadian market for synthetic laundry detergents.

From 1947-1978, consumers chose synthetic laundry detergents because they performed the cleaning function more efficiently in hard water conditions than did soaps. Per capita consumption statistics from Table 1.3 showed increases from 1.0 pounds in 1947 to 7.6 pounds in 1978. As new textiles and technologies became available, the manufacturers introduced corresponding product innovations to meet consumer needs and demands. In the 1960s and 1970s, when issues about resource depletion, the harmful effects of synthetic detergent effluents and other health related concerns became widely known to consumers, manufacturers responded. A variety of product innovations claimed to reduce the negative consequences attributed to synthetic laundry detergents. Women, who accounted for nearly 40 per cent of the permanent labour force, balanced their concerns about environmental health and safety with their need for convenient and efficient laundry products.

After 1978, average consumption of synthetic laundry detergents falls from 7.6 pounds per capita to 6.9 pounds per capita. This reduced demand stems from the changing values and attitudes expressed by the large numbers of baby boomers entering the marketplace. This generation of consumers now entering the marketplace enjoy more opportunities of employment choices, education and smaller family units. They have time to evaluate information and thereby gain a heightened awareness and concern about environmental security and health as well as the social, economic and political costs and

consequences of consumer choices. The scope and extent of these costs are the subject of the next chapter.

Chapter Two The Costs of Convenience

Information about the costs of using convenient synthetic laundry detergents developed gradually after the Second World War. During the 1940s and 1950s, consumers measured the convenience of synthetic laundry detergents in terms of their superior cleaning performance over soap-based products under varying conditions, the cost of the detergents, and time efficiencies achieved for the household manager. Until the 1960s, consumers had little evidence or information about the consequences of the continued use and disposal of synthetic laundry detergents. Manufacturers responded to these early concerns by reformulating products and introducing product innovations. Through advertising and aggressive promotions, synthetic laundry detergent manufacturers hoped to ameliorate consumer concerns about the safety of these products. By the late 1970s, however, consumer awareness of the social and environmental implications and costs of using synthetic detergents led to a slight, but significant reduction in consumption rates.

Issues of pollution and resource degradation steadily increase after 1960 and become primary concerns in Canadian society. Public health officials, the media, government agencies and other groups provide Canadians with information about variegated and urgent environmental and health findings. Reports about contaminated ground water for drinking purposes and depleting fish stocks in the Great Lakes system give these costs a personal dimension for many consumers. The extent and depth of issues affects every Canadian in every jurisdiction and walk of life. Governments in Canada fund scientific and other studies, and participate in international fact finding forums and initiatives in their efforts to find appropriate solutions to these complex and technical issues. By examining several key studies and research data, this chapter

attempts to measure the scope and seriousness of the problems resulting from the increased use of synthetic laundry detergents placing them within the context of the wider realm of other issues of risk and associated costs.



After 1960, synthetic detergent manufacturers had access to and used over four hundred different synthetic surfactants with different physical, chemical and biological characteristics. These ingredients were also used in personal care products such as hand soaps, shampoos, cosmetics, and toiletries.¹ Synthetic laundry detergents usually contained up to fifteen different ingredients including: surface active agents or surfactants; soil suspending agents; anti-caking; foam stabilizers; flourescers or whitening agents; phosphates or NTA s and other additives.² Some of the complex petroleum and acid based compounds included: linear albylbenzene sulfonates (LAS); alcohol ethoxylates; alkylphenol ethoxylates; alcohol ether sulfates and alcohol sulfates; and proteolytic enzymes which attack protein stains.³ Table 2.1 provides a list of the chemical materials used in synthetic laundry detergent manufacturing processes as recorded by the Census of Industry from 1947 through to 1954. Throughout this period of early development, manufacturers relied on only seven basic chemical compound and ingredient groups.

¹Hirschhorn and Oldenburg, p.307.

²Refer to glossary for more information on chemical compounds and their derivatives.

³ R. J. Taylor of Unilever Research Division. Theory of Detergency. Published by Information Division, Unilever Limited, 1989. Section No. 7.

Refer to the glossary for further explanation about chemical terms used in this thesis.

⁴Ibid. By 1954 product and ingredient specifications were no longer recorded by the Census of Industry

Table 2.1 Materials Used in Synthetic Detergent Manufacturing Processes

cresylic acid	sodium carbonate (soda ash)
fatty acids of all kinds	tetra sodium pyrophosphate
stearic acid	trisodium phosphate ⁴
<u>sulphuric acid</u>	

The variety of chemical ingredients used in synthetic laundry detergents increased because of rapid expansion and growth in research, development and technology in the chemical industries after the mid 1950s. Considering the array of chemicals used in the manufacture of synthetic laundry detergents since 1954, concerns and efforts to assess toxicity and its manifestations took a slower course than the application of these new ingredients to consumer products. Many of these new chemical ingredients were used and tested in corporate research facilities which primarily focused on product applications. Later, in the 1970s and 1980s, non-corporate and independent testing of synthetic detergent ingredients demonstrated the need for expanded testing criteria and study. Scientists and health officials generally agreed that human exposure to small doses of surfactants caused low to high toxic effects when ingested as well as skin and eye irritation.⁵ Due to their peculiar physical properties, the surface active agents in synthetic laundry detergents had the capability of penetrating into human skin either directly or through the sweat glands. Scientists in the U.S. attributed over 13 per cent of dermatitis and eczema cases to synthetic laundry detergent use in the early 1980s.⁶ Numerous other studies since the 1960s have established that the impact of the

⁴Ibid. By 1954 product and ingredient specifications were no longer recorded by the Census of Industry.

⁵Hirschhorn and Oldenburg, p.307.

⁶The Organization for Economic Co-operation and Development. (OECD) The Pollution of Water by Detergents. Paris, 1964. p.38.

use and disposal of synthetic laundry detergents on water resources posed an even greater potential for harm.⁷

Ground water, which is freshwater that penetrates the soil and reaches the water table, is derived from precipitation and other sources including: water that infiltrates from surface waters such as lakes and rivers; storm water retention or recharge ponds; and waste water from treatment areas such as cess pools, septic tanks and drainage fields.⁸ Consequently, effluents emitted by households, manufacturing industries and by agricultural communities affect the quality of the ground water.

Several Canadian government-funded studies, undertaken during the discussion period, established that per capita use of water in urban areas increased at a rate of 2 per cent per year during the first half of the twentieth century. One study gauged per capita consumption on a daily basis at 125-200 gallons in 1980. The researchers projected consumption rates to climb to 300-350 gallons per day by the year 2000.⁹

Over time, just as consumption of synthetic laundry detergents increased, so too did the use of water. Although Canada accounted for more than 25 per cent of the world's supply of accessible fresh water, Canadians began to realize in the early 1960s that their supplies of safe usable water were in jeopardy.¹⁰ While most of Canada's abundant water supply remained virtually uncontaminated, in those areas where

⁷Environment Canada. The Effects of Household Sanitary Systems on Effluent Levels. Research Report No. 2, March 1973, pp. 1-5.

William McGucken, Biodegradable Detergents and the Environment. College Station: Texas A & M University Press, 1991. pp. 12-17.

⁸Botkin and Keller, p. 198. Ground water is not as easily measured quantitatively as surface water.

⁹D. Cass-Beggs. "Water as a Basic Resource." in Resources For Tomorrow: Conference Background Papers. Ottawa: Queen's Printer, 1961. p. 55.

O P Dwivedi ed. Protecting the Environment: Issues and Choices-Canadian Perspectives. Toronto: Copp-Clark Publishing, 1974. p. 35

Michael Hart and Sushma Gera. "Trade and the Environment: Dialogue of the Deaf or Scope for Cooperation." in New Directions: Environment, Labour and the International Trade Agenda. Keith H. Christie ed. Ottawa: Carleton University Press, 1995. p. 13.

Science Council of Canada. It's Not Too Late - Yet. Report No. 16. Ottawa, June 1972.

¹⁰Dwivedi, ed. p. 34. Scientists estimated that 99 per cent of the earth's supply of water was unavailable or unsuitable for beneficial human use because of salinity (sea water) or because it was lodged in ice caps or glaciers. Therefore, all humans on earth competed for less than 1 per cent of the earth's total water supply

industrial and urban concentrations exist, early evidence of fresh water contamination was common and often severe.

One of the first indicators of water degradation appeared in the Great Lakes and St. Lawrence Seaway route in the early 1960s. The shipping industry and government resource management agencies noted that these waterways, which received synthetic detergent effluents, had a blanket of foam forming below weirs at lockgates. These foamy deposits were often several meters high and sometimes extended over several hundred meters in area.¹¹ Shipping traffic through the lock systems and the repeated opening and closing of the gates churned up the water and created hazardous conditions for navigation. The foamy residue entirely covered the barges and other ships leaving a sticky deposit which made decks and walkways slippery. Fish and flora also suffered as a result of effluent foams. Synthetic detergents contained as much as 35 per cent by volume of phosphate builders which are not water soluble.¹² Several studies linked eutrophication, or the excessive growth of aquatic plants such as algae, to the increased level of phosphorus elements in waterways. When the plants died, the decaying process used up oxygen in the water which in turn suffocated and killed fish and other aquatic organisms.¹³ Studies conducted during the 1970s by naturalists, and resource management agencies isolated traces of NTAs, phosphate elements and some other toxic substances not related to synthetic laundry detergents in the dead carcasses of birds and fish found in the Great Lakes waterways.¹⁴ Commercial freshwater fisheries reported diminishing stocks, as did the sports fishermen.¹⁵ Revenues for these enterprises, both commercial and recreational, also declined.

¹¹OECD. The Pollution of Water by Detergents. Paris, 1964. p.17.

¹²Ontario. Departments of Land Resource Science & Microbiology, University of Guelph, Ontario. Land Disposal of Sewage Sludge. Project No. 72-5-17, 1975. p.181.

¹³OECD. The Pollution of Water by Detergents, Paris, 1964, p. 32.

¹⁴M.S. Rudolph. "Case Study No. 11: The PCB Problem in Ontario." in Living with Risk: Environmental Risk Management in Canada. I. Burton et al. editors. Toronto: Institute for Environmental Studies, University of Toronto, 1982. pp.241-243.

¹⁵Ibid. Studies in the U S. and Japan detected chemicals (including PCBs) in milk, fish meal, chickens and rice. The most severe incident of human toxic poisoning occurred in Japan in 1968. Over 1650 in southern

Other industrialized nations reported similar problems with water quality during the late 1950s and early 1960s. In response to rising concerns about detergent use and its effects on water quality, Canada and thirteen other member states of The Organization for Economic Co-operation and Development (OECD) underwrote the participation of scientists and other experts in a "study [of] the effects of detergents on water supplies and water treatment" in 1961.¹⁶ The group of experts agreed on three methods for combating "nuisances" caused by the pollution of water by detergents.¹⁷ They suggested: the elimination of foam in watercourses and purification plants; the elimination of detergents in waste water and; substitution of synthetic detergents with products capable of undergoing complete and rapid biodegradation in watercourses and purification plants. Clearly, researchers perceived the effects of synthetic laundry detergents in effluents as a temporary, yet troubling, inconvenience which was to be endured until industry found an economically viable alternative to synthetic laundry detergents. Significantly, the published findings revealed that the Federal Republic of Germany "seem[ed] to be the only country which [had] introduced legislation controlling the sale of washing and cleaning materials." Dr. Cohen, the U.S. delegate to OECD said that the leading industrial firms concerned with manufacturing synthetic laundry detergents had promised to market a bio-degradable line of such products before 1965. No other member delegate commented on the potential or need for government legislation or regulation. Perhaps more importantly, no delegate considered a ban on the manufacture, use or disposal of synthetic laundry detergent products necessary, even though OECD members had

Japan had been exposed to food cooked with rice oil contaminated by PCBs and EDTA (a builder used in synthetic detergents). The patients studied suffered liver toxicity manifested as jaundice and edema in joints and eyelids, and neurological toxicity resulting in generalized muscle weakness, numbness, and visual and hearing disorders.

¹⁶ OECD, Paris, 1964. Forward. p.2. The Organization for Economic Co-operation and Development was set up under a convention signed in Paris on December 14, 1960 by Canada and the United States. Other members are: Austria, Belgium, Denmark, France, the Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the United States.

¹⁷ OECD, Paris, 1964. p.57

collectively recognized elimination of detergents in waste water as an appropriate solution.¹⁸

When OECD members and associated agencies publicized these findings, Procter and Gamble and the other major manufacturers responded quickly with innovations and reformulated products. By the late 1960s, consumers in Canada and the U.S. could purchase a wide assortment of "low-sudsing" phosphate free detergents.¹⁹ Canadian manufacturers experimented with sodium nitrilotriacetate (NTA) and ethylene diamino tetra acetic acid (EDTA) in place of sodium triphosphate because they had good building properties. Synthetic detergents contained as much as 30 per cent by weight of builders which acted to control water hardness. However, several of these "non-P products" (phosphate-free) constituted a hazard in the home because of their high alkalinity. Not only were these products highly toxic if ingested, but they also caused mild to severe lesions if handled without protective rubber gloves. Consequently, the U.S. Food and Drug Administration, under a provision of the Federal Hazardous Substances Act, required a number of laundry and dish washing detergents to carry warning labels.²⁰ Moreover, many scientific and other reports warned that NTAs formed "soluble and fairly stable complexes with heavy metals" and might potentially "bring about a redistribution of heavy metals in those systems where it appeared."²¹ Industrial research and development had produced chemical alternatives to phosphate elements, but these highly caustic substitutes also created hazardous health and environmental problems.

Obviously, the problem of water quality degradation did not prove to be a temporary inconvenience or "nuisance". Canada's Inland Water Branch of the Department of the Environment produced a study in 1973 on the effects of household sanitary systems on effluent levels. The study showed that in 1970, municipal wastes

¹⁸Ibid. pp.36-55.

¹⁹ Kepos, "Procter & Gamble." p 433.

²⁰OECD, Paris, 1973. Section 30-34.

²¹Ibid. Section 66-68.

accounted for 64 per cent of the phosphates added to Lake Erie. A year later, another related report estimated that household detergents accounted for fully 50 per cent of the phosphates found in Ontario's domestic sewage.²² Also in 1973, the OECD members tabled "A Report of the Expert Group on Detergents".²³ Again, the OECD member delegates emphasized that the contribution of human wastes and modern types of detergents to the total amount of environmental degradation "differ[ed] from country to country." Significantly, the Swedish national report argued that NTAs and other phosphate substitutes offered no advantage over triphosphate from the pollution point of view. Canada's national report revealed that no specific policies had been established for phosphate alternatives. However, the report did reveal that, in August 1970, under the provisions of the Canada Water Act, the Minister of the Environment had developed a set of regulations which limited phosphate content in synthetic detergents marketed in Canada.²⁴ The U.S. report showed that while Congress had not passed any laws which banned or restricted the use of phosphates in detergent formulations, five states and 47 municipalities had done so.²⁵ In its conclusion, the panel of experts failed to support any unilateral action or initiative which would address the global risks incurred with synthetic laundry detergent use. Instead, the panel acknowledged that problems such as eutrophication " may vary considerably from area to area even within the same country; it may therefore be more appropriate to enforce policies according to these particular area conditions." ²⁶

²²Environment Canada. The Effects of Household Sanitary Systems on Effluent Levels. Research Report No. 2, March 1973, pp.1-5.

²³OECD, Paris, 1973 "A Report of the Expert Group on Detergents." Part I, Sections 1-11. The member countries were asked to produce national reports to serve as basic material for the preparation of this draft report. Australia, (which had become a full member by this time), Austria, Belgium, Canada, Finland, France, Germany, Italy, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States submitted national reports.

²⁴ibid. Section 19-29

²⁵ibid. Section 30-31.

²⁶ibid. Conclusions, Part II, Section 1-8

The Canadian government, in its efforts to design appropriate strategies and policies, allocated funds for a number of studies that sought to assess the scope and extent of environmental risks and relevant costs. For example, a comprehensive study conducted under the provisions of Environmental Protection Services Canada analyzed the costs of operation and maintenance for municipal waste water treatment plants in 1984. Researchers surveyed 52 municipal waste water treatment facilities which included primary treatment plants, secondary treatment plants and lagoons. Primary waste water treatment typically removed about 60 per cent of solids found in raw sewage. In secondary plants, the sewage underwent chemical treatment for the removal or immobilization of phosphorus. Lagoons, or open sludge ponds, provided primary storage and holding facilities for sieved sewage. After treatment with chemicals, sewage sludge from lagoons may then be hauled to secondary plants for further treatment, incinerated, or used in agricultural fertilization. About 55 per cent of all waste water discharged from municipal sewage received some form of chemical treatment.²⁷

When assessing the costs of sewage treatment, the study factored in electrical power costs and wages for personnel. Researchers also considered costs for plants using chemicals such as chlorine for disinfection and/or odour control as well as precipitant chemicals such as alum for phosphorus removal and air purification. Costs associated with sludge treatment included not only chemicals and labour, but haulage contracts for disposal and where appropriate, incineration of these wastes. Researchers identified administration and miscellaneous costs to cover vehicle maintenance, municipal taxes, insurance and laboratory costs.

Table 2.2 shows the level of treatment and plant capacities for the three categories of waste water treatment plants. Costs quoted are in 1980 constant dollars.

²⁷Canada. Environmental Protection Services, Industrial Programs Branch. Operation and Maintenance Costs for Municipal Waste water Treatment Facilities in Canada. May, 1984. Sections 1.1-3.3.

The study concluded that secondary plants with the most complex treatment processes proved more expensive to operate until capacities exceeded 50,000 cubic meters per day. At this level, all plants achieved economies of scale. Researchers calculated average annual costs of operations based on their random sampling of 52 treatment plants. The sampling had representation in each category of treatment type and size except for primary plants with a capacity of <1000 cubic meters per day and lagoons with a capacity of > 50,000 cubic meters per day. Their conversion formulas showed annual costs of operation and maintenance as being \$10 per capita for primary plants, \$9 per capita for secondary plants and \$8 per capita for lagoons.

Table 2.2: Annual Costs of Operation and Maintenance of Municipal Waste water Treatment Plants
(Level of Treatment-\$millions)

Plant Capacity in Cu. Meters/day	Primary	Secondary	Lagoons
<1000	\$---	\$ 22	\$ 72
1000-5000	\$ 38	\$ 72	\$ 41
5000-50,000	\$ 49	\$ 58	\$ 28
>50,000	\$ 41	\$ 27	Not applicable
Average for all Plants	\$44	\$ 54	\$ 33
Average per capita costs	\$10	\$ 9	\$ 8

Source: Environmental Protection Services²⁸

Costs associated with waste water treatment extended beyond those of plant operations. In 1988, medical researchers studied the potential health risks among sewage workers. Although the sewage treatment processes eliminated or destroyed pathogens

²⁸Environmental Protection Services, p.11.

(including air borne bacteria, fecal coliforms, E. coli and endotoxins), some proved resistant to treatment. The processing of sewage sludge caused the release of micro-organisms into the air. If the number of microbes per unit volume of air proved to be high, workers inhaling these organisms incurred insidious health problems.²⁹

Medical researchers found that 30-50 per cent of workers studied complained of influenza-like symptoms consistent with those associated with endotoxin exposure.³⁰ Other investigations showed high rates of gastrointestinal disturbances among sewage workers. Some parasites, which thrived on phosphate derivatives and other nutrients in sewage, survived all forms of sewage treatment. Moreover, through this particular investigation, researchers recognized a "new" intestinal protozoan, cryptosporidium, which appeared not only in sewage and waste water, but also in lake water, contaminated river beds and drinking water.³¹ Notably, researchers did not attempt to assess health hazards in monetary terms, nor did they make recommendations for the reduction of risks for sewage workers.

According to the various studies undertaken between the early 1960s through to the mid 1980s, disposal of synthetic laundry detergents into discharged sewage imposed both a social and an economic cost. Continued use of synthetic laundry detergents threatened to increase these costs. Environment Canada estimated daily municipal sewage discharges at 110 million cubic meters per day in 1984. Given increases in population and economic activities, the costs have escalated dramatically since then.³² Assuming per capita water consumption in Canada reached 300 gallons per day, and if laundry work represented 5-10 per cent of that usage, a conservative estimate of costs

²⁹Ottawa. Environment Canada. 11th. International Symposium on Waste water Treatment. Montreal, November 21-22, 1988. pp.149-152.

³⁰Endotoxin: any of several intensely poisonous substances produced by certain bacteria and which remain within the bacterial medium which produces it.

³¹Ibid.

³²Environmental Protection Services, Section 1-1 and 1-3.

attributed to disposal of synthetic laundry detergents would represent roughly 10-15 per cent of all total costs of sewage treatment. Loss of productivity through illness and the accompanying medical expenses must also be included.³³

Consumers purchased tonnes of synthetic laundry detergents packaged in a variety of containers and mediums. Just as the consumption and disposal of the product itself created costs, so too did the disposal of the various packaging forms. Increased use of a wide array of convenience goods accompanied by population growth meant that each Canadian household also contributed to the increase in the volume of solid wastes. In 1920 per capita waste averaged only 2.8 pounds per day. By 1970 Canadians discarded more than 4.5 pounds daily.³⁴ Municipalities soon faced a shortage of suitable landfill sites. Moreover, resource management studies found unregulated open dump sites to be a contributing factor in contamination of ground water through leachate, as well as a disturbing source of other environmental and health problems such as odour and disease spread by insects, animals and birds.³⁵

In Ontario, prior to the introduction of the Environmental Protection Act (EPA) in 1971, open dumping of wastes was a common practice. The EPA formed the primary legislation regulating the operation, management, alteration, enlargement and/or extension of landfill sites. In general, the provisions under the EPA required specific and detailed technical analysis of any specific site with the requirement that the proponent address the potential effects on the natural environment (air, land and water), including transportation and noise aspects. The effectiveness of these initiatives relied on strong public involvement and the successful implementation of the "3Rs program" (reduction,

³³Estimated Canadian population at 30 million in 1992. $5\% \times 300 \text{ gal./day} = 15 \text{ gal.} \times 30 \text{ mil.} = 450 \text{ mil.}$ gallons of laundry effluent discharged per day. Rough conversion: 16 cu. meters of sewage waste water or 15% of total.

³⁴J. W. MacNeill. "Urban Environment." in Protecting the Environment: Issues and Choices-Canadian Perspectives. O. P. Dwivedi, ed. Toronto: Copp Clark Publishing, 1974. p. 50.

³⁵Ontario. Guidance Manual for Landfill Sites Receiving Municipal Wastes, 1993. Section 1-1 through 1-7

reuse and recycling of wastes).³⁶ Even before the provincial government officially started to organize and promote the "3Rs", vertically integrated corporations took action. Management teams quickly recognized the tremendous potential of using their corporations' extensive research and development facilities to create new packaging forms which could be promoted in a positive way. Packaging, after all, had always been seen as an extension of these firms' advertising and promotional investments.

Disposal of domestic refuse in Canada underwent marked changes. Beginning in the early 1970s, all levels of government endorsed and gradually implemented waste management and recycling alternatives which eventually succeeded in maintaining per capita refuse disposal at 1970 levels. However, the costs of refuse collection amounted to more than 100 per cent the cost of any contemporary disposal process which incorporated recycling.³⁷ During this transition period, manufacturers of synthetic laundry detergents overtly advertised the "environmental" advantages available to consumers who chose new types of packaging such as bio-degradable cardboards, refillable containers, pouches and detergent concentrates.³⁸ In effect, the manufacturers had diverted attention away from their products' chemical ingredients and potential toxicity and refocused attention to the issue of solid waste disposal. Manufacturers admirably and effectively used the waste management problems to create opportunities for garnering public praise and increasing consumer acceptance for their environmental

³⁶Ibid.

³⁷John Cotter. "The Physiology of Cities." in Environment and the Industrial Society. Nicholas Homes, ed. Toronto: Hodder and Stroughton, 1976. p.97.

Stephen Trudgell. Barriers to a Better Environment. London: Belhaven Press, 1990. p.80.

Monte Hummel. Resource-Constrained Economics: the North American Dilemma. Ankeny, Iowa: Soil Conservation Society of America, 1980. p.231.

Richard Hofrichter. Toxic Struggles. Philadelphia PA: New Society Publishers, 1993. p.16.

³⁸W J Reader. Fifty Years of Unilever: 1930-1980. London: William Heinemann Ltd., 1980. pp.74-76.

Corporations like Unilever owned and operated subsidiary firms which handled all their product packaging from its earliest days. Unilever's soap and margarine factories had their own printing works and the company also owned a paper mill in Bavaria. After 1945 the range of packaging materials increased enormously. Materials included glass, metal foil, paper, plastic film, rigid plastic and paper board. In 1965 Unilever developed what corporate management called the "4P" Group-Paper, Packaging, Plastics and Printing. Like other aspects of their advertising and market research investments, this branch of the company's activities developed into a major source of profit income on the open market.

leadership! Smaller manufacturing firms which relied on outside sources for their packaging and labeling needs introduced similar types of "environmentally friendly" containers, but only after the major manufacturers had snared their leadership position in the marketplace.³⁹

Ironically, although manufacturers offered synthetic laundry detergents in new containers and in new mediums, they continued to rely on and to use a wide assortment of chemical components in their manufacturing processes.⁴⁰ These innovations derived specifically from consumer and political demands to reduce household wastes and effluents. Manufacturers acknowledged the weight of these market driven demands and worked creatively to promote consumer acceptance of new containers and concentrated powders or liquids which claimed to reduce volumes of waste disposal. Investment in these innovations benefited the manufacturers in other ways as well. While corporations regularly committed large budgets to research and development, a significant portion of these start up costs were recovered through pricing adjustments. Manufacturers and suppliers soon realized that consumers would pay more for products which they perceived to be less of a burden on the environment. A 1992 study conducted by the Consumer Research Network of Philadelphia developed an index that rated packaging on the basis of four functions: graphic design, convenience, product protection and environmental friendliness.⁴¹

Consumption of synthetic laundry detergents, as well as other widely available goods, incurred political costs as well. During the late 1960s and early 1970s the Canadian government faced a wave of media and public outcry about environment

³⁹Sharon De Cloet. interviewed by author, May 16, 1996. While Ms De Cloet's firm promoted non-synthetic products, she admitted that the costs of finding packaging suppliers which could provide "environmentally friendly" containers in smaller quantities than those demanded from the major manufacturing concerns proved onerous. In fact, many packaging firms refused orders of less than a thousand gross.

⁴⁰Environmental Choice Papers. Environmental Choice program. File No. SP101.17-33, "Minutes of Meeting held July 18, 1990 at the Carleton Place Hotel, Toronto, Ontario." p.3.

⁴¹Richard De Santa. "Bucking the Big Brand Era." in Supermarket Business, Vol. 15, Issue 9, September 1996 p 10.

degradation and the depletion of Canada's natural resources. People in Canada and elsewhere worried about piles of unsightly garbage, belching smokestacks, smog over big cities, soil erosion and visible pollution of many lakes and rivers.⁴² In response to these pressures, the Trudeau government created the Department of the Environment (DOE) in 1971 with a mandate to "co-ordinate federal policies and programs for the preservation and enhancement of the quality of the natural environment."⁴³ The DOE also provided scientific research, information, monitoring, regulatory services and environmental protection related to wildlife and water resources. However, in its 1991 year end report, the DOE admitted that controls on phosphates in washing detergents and changes in municipal sewage treatment and farming practices had reduced the flow of "nutrients" into the Great Lakes, but "the contaminant levels are still not acceptable."⁴⁴ The report also underlined the extraordinary complexity and implications of environmental problems facing Canadians.⁴⁵

In Canada, regional and transcontinental environmental impacts are not fully understood. Not only are environmental problems scientifically complex and diverse, but they rarely respect geographic or jurisdictional boundaries.⁴⁶ In Canada, responsibility for environmental management is shared by all levels of government. For example, Canada and the U.S. signed The Great Lakes Water Quality Agreement in 1972 which committed the two countries to restoring and maintaining the chemical, physical and biological integrity of the waters of the Great Lakes. However, this required federal and provincial co-operation because many of the initiatives pertaining to the Great Lakes fall

⁴²Ottawa. The State of Canada's Environment. Published by the authority of the Ministry of the Environment, 1991. In the preface, the DOE acknowledged the physical signs of deterioration which had culminated in the creation of the Department of the Environment twenty years earlier. This report supplied quantitative data and measurements of improvement about certain issues such as: rates of deforestation, soil erosion, global climate changes and pollution abatement in the manufacturing and agricultural sector.

⁴³Ottawa. Auditor General. Department of the Environment, Fiscal Year Ended March 31, 1990, p.437.

⁴⁴Ottawa. Auditor General. Department of the Environment, Fiscal Year Ended March 31, 1991, p.265.

⁴⁵Ibid.

⁴⁶Ibid.

within Ontario's jurisdiction.⁴⁷ In other cases, issues concerning waste water treatment and solid waste disposal often fall within municipal jurisdictions.⁴⁸

Each province in Canada administers numerous pieces of legislation and procedures to ensure public health and environmental security. Municipalities across the country adopt and enforce local water restrictions, municipal planning and control, land surveys, pesticides acts, drainage acts and so on. A full cost accounting of these political structures and their relevant application to synthetic laundry detergents has not been attempted. However, reports by the Auditor General to the House of Commons provide some indication of the federal tax dollars devoted to these issues.

When the federal government established the DOE, the 1971 budget allocation (expressed in 1971 constant dollars) for this department amounts to \$157 million. The following year this allocation increases 28 per cent to over \$200 million. The increased expenditures cover \$36 million targeted for the Renewable Resources Program and \$4.8 million for capital expenditures under the Environmental Quality Program. Budgets for the DOE increase steadily and reach \$555 million in 1982.⁴⁹ Table 2.3 shows the expenditures recorded by the Auditor General for 1971-1982 with a conversion of costs expressed in constant dollars per capita.

Notably, after 1978, the Ministry of the Environment's expenditures, expressed as a ratio of 1971 expenditures, declined from 1.8 to 1.3 in 1982. Similarly, after 1978, per capita consumption of synthetic laundry detergents also declined.⁵⁰ Attempts to make a complete comparison between consumption of synthetic laundry detergents and related

⁴⁷Auditor General Report, March 31, 1991. Department of the Environment: Conservation and Protection p 273

⁴⁸British Columbia. Auditor General's Report. Waste Management Program (1981) pp.19-23. Ostensibly the provincial ministry of the environment in B.C. followed guidelines prepared by DOE for protecting all fish species and their habitat from the negative effects of urban development, which included not only waste water but land fill sites and leachage of chemicals from those sites into the waterways. The Ministry of the Environment Act gives the ministry a mandate for managing fish and wildlife only in the province of B.C. In practice much of the enforcement of the Act derives from regional and municipal governments.

⁴⁹Ottawa. Report of the Auditor General to the House of Commons. Various:1972-1982.

⁵⁰Table 1.3, chapter two of thesis.

government expenditures were limited because reports produced by the Auditor General's office after 1982 discontinued line item identification of budget allocations for the DOE and various other federal departments. Instead, the reports provided narrative assessments and highlighted only those government initiatives which had been revived or awarded special grants.⁵¹ Although it exceeds the scope of this thesis, the coincidence of a decline in per capita consumption, a decline in per capita solid waste disposal rates and a decline in government expenditures, merits more extensive research and study.

Table 2.3 Expenditures for the Ministry of the Environment
(Dollars in millions)
(1971 Constant Dollars)

<u>Year</u>	<u>Expenditures</u>	<u>\$ per capita</u>	<u>Ratio to 1971</u>
1971	\$157	\$ 7.28	1.0
1972	\$201	\$ 8.79	1.2
1973	\$248	\$ 9.98	1.4
1974	\$316	\$11.30	1.6
1975	\$383	\$12.18	1.7
1976	\$453	\$13.23	1.8
1977	\$485	\$12.96	1.8
1978	\$547	\$13.28	1.8
1979	not available	not available	--
1980	\$456	\$ 9.00	1.2
1981	\$537	\$ 9.31	1.3
1982	\$555	\$ 9.47	1.3

Source: Auditor General's Reports⁵²

Many public and private sectors of Canadian society voiced concerns about the government's unwillingness and inability, as expressed through legislation and reduced

⁵¹Ottawa. Report of the Auditor General to the House of Commons. Various: 1983-1991. While the changed reporting formats provided only fragmented budget data after 1983, they are employed in this research in an attempt to achieve consistency of sources.

⁵²Ottawa. Report of the Auditor General to the House of Commons. Various: 1971-1982. In 1979, these reports reviewed the performance of several key associated agencies such as the performance of Great Lakes Water Quality etc. No cumulative budget figures were available for all DOE costs and expenditures.

budgets, to adequately fulfill its "environmental mandate." Despite these debates and criticisms, governments and the public had been amenable to environmental and health issues through their acceptance and support for various waste reduction methods and other initiatives. Moreover, the DOE had increased its responsibilities and jurisdictional influence dramatically since its establishment in 1971. These included environmental assessment, the National Parks Service, the Atmospheric Environment Service which monitored airborne pollution, as well as the enforcement of rules and regulations made by the International Joint Commission relating to boundary waters.⁵³ Circumstances of resource depletion and issues of environmental degradation existed across Canada in varying degrees of urgency. Each year of operations unveiled an ever expanding role for the DOE and its affiliate agencies to fulfill. During the early 1980s, high levels of unemployment persisted and federal tax revenues also declined. The federal government made budget allocations within the context of a spiraling federal debt, reduced tax revenues, and persistent demands for diverse social and welfare programs. Given these social and economic conditions, it was highly unlikely that any government action would be deemed adequate or effective.

Reports by the Auditor General's office after the mid 1980s, focused on the need for the DOE to achieve more accountability in terms of evaluation of its rehabilitative projects and also in terms of enforcement and reporting. At the same time, the DOE greatly expanded its responsibilities, but not its funding base. Similar recommendations, in a corporate context, would have been equated with a need for operational efficiencies and improved structural organization.

Achieving efficiencies and transforming the theory and intent of environmental health into a practical form were often difficult objectives for the DOE and other associated agencies to achieve. A fragmented bureaucratic structure as well as the

⁵³Ottawa. Auditor General's Report to the House of Commons. March 1990. Section 18.10. p. 437.

existence of many other urgent social and economic issues affected their effectiveness. The news media also influenced public perceptions of the DOE's effectiveness. During the 1980s and early 1990s, the federal government struggled to meet the needs for many Canadians' increased reliance on social and welfare services. By 1982 Canadians once again grappled with a crippling economic recession, extraordinarily high interest rates and accompanying high levels of unemployment. Commentators and the media heaped scathing criticism on the federal government for its massive social spending cuts.⁵⁴ Some critics, like the NDP, perceived the federal government's cuts to environmental agencies as an endorsement of economic interests at the expense of health and environmental interests.⁵⁵ Others saw society at large as the primary instigator of health and environmental woes. Pope John Paul II gave an indictment of our throwaway society in 1990 when he said: "In many areas of the world today, society is given to instant gratification and consumerism while remaining indifferent to the damage they cause."⁵⁶

The Auditor General's report of the operations of the DOE for fiscal year ended March 31, 1991 identified certain significant expenditures and commitments. The report disclosed that in 1990-91, the DOE's budget for the Great Lakes Water Quality Program amounted to approximately \$17 million. The total budget for all federal departments concerned with Great Lakes water issues came to almost \$41 million. Since the Great Lakes basin contained over 20 per cent of Canada's fresh water supplies, such budget allocations may have been reasonable.⁵⁷ However, the Auditor General also identified

⁵⁴Linda McQuaig, The Wealthy Banker's Wife: the Assault on Equality in Canada. Toronto: Penguin Books Canada Ltd., 1993 p. 14. The Canadian Manufacturers' Association called on the federal government to cut social spending by \$43 billion over five years in a brief tabled in 1989-90. Ottawa. New Democratic Party. Mulroney's Green Plan: Protecting Big Business From the Environment. December 17, 1990. The NDP attacked the Mulroney government's Bill c-78. This Environmental Assessment Bill, "introduced by Brian Mulroney's government on behalf of the major multinational corporations, would serve to dramatically weaken our already poor environmental assessment process." The NDP also claimed that since 1984 the Mulroney government had cut spending on alternate energy and conservation from \$500 million to \$50 million.

⁵⁵NDP, Mulroney's Green Plan. pp.3-9.

⁵⁶ Hirschhorn and Oldenburg, p 9

⁵⁷Ottawa. Report of the Auditor General to the House of Commons, Fiscal Year Ended March 31, 1991. p 273 Section 11 67.

significant deficiencies in the DOE's performance on a national scale which the report attributed directly to budget cuts and lack of clearly articulated parliamentary direction.

The 1991 report also disclosed that DOE staff had identified approximately 1,000 contaminated sites across Canada "that posed a threat to human health or the environment."⁵⁸ Contamination had occurred not only as a result of household effluents, but also a wide variety of industrial and commercial processes. Fifty of these sites were termed "orphan sites" where the polluters were unknown. Cleaning of them required direct government intervention. For the remaining sites, "the responsible parties are known and will be responsible for clean-up at their own expense." The report projected the DOE's share of the clean-up costs, which included monitoring, consultation and prosecution where necessary, to exceed \$150 million over a five year period.⁵⁹ However, on further reading, the report also acknowledged that "...not all contaminated sites have been identified. The actual costs of cleaning up contaminated sites [across Canada] are not known."⁶⁰ The Auditor General's office warned that "If Parliament and the public are not aware of these constraints, [and incomplete survey estimates], they may believe that \$150 million spent] over five years are firmer figures than the circumstances warrant."⁶¹ In its final assessment the report recommended that Parliament devise acceptable mechanisms and funds to enable DOE operations to proceed in its original mandate and "environmental responsibilities." ⁶²

Although these preliminary findings about declining administration costs, consumption and disposal rates were not conclusive, these downward trends supported the argument that consumers began to act in ways that benefited the ecosystem. Such a

⁵⁸ Auditor General, March 31, 1991. p.276 Section 11 87

⁵⁹ Ibid.

⁶⁰ Auditor General, March 31, 1991. p.276. Section 11 88.-11 90.

⁶¹ Ibid.

⁶² Auditor General, March 31, 1991 p.279 Section 11 111

transition, whereby convenience took a secondary position to environmental and public health and security, indicated a profound change in generally held social values, attitudes and beliefs. Reports generated by the DOE clearly stated that much more needed to be done in terms of "orphan sites", environmental assessment and enforcement. Yet, if these rehabilitative programs and individual activities and choices continued to produce positive results, (i.e. reduced consumption and reduced costs), opposition to the elimination of certain harmful products like synthetic detergents was weakening.

Definition and expression of " environmental responsibilities" took many forms. Not all programs and efforts produced immediate or positive results, but they demonstrated the tension between economic activities and expansion derived from technology and the swelling movement and support for eliminating those activities and processes which harmed the ecosystem. The Environmental Choice Program (ECP) which resided within Environment Canada, provided one example of the federal government's interpretation of its "environmental mandate." DOE administration perceived the ECP as a mechanism to help consumers make informed choices about their product purchases. The ECP, established in 1988, decided on the types of products to be assessed from a pool of suggestions received from the public. Experts in Environment Canada developed a briefing paper for each suggested product review and then instructed its technical agency, with the aid of an ad hoc committee, to develop a draft guideline. Only those products which fulfilled all the guideline criteria would be eligible to display the EcoLogo symbol, an image consisting of three doves intertwined to form a maple leaf, on its packaging.⁶³

Participants in the Task Force committee reviewing synthetic laundry detergents included representatives from companies which manufactured or contributed to the manufacture of synthetic laundry detergents; advocates for environmental protection; the

⁶³Ottawa. Environment Canada. Environmental Choice Licensee Bulletin. Issue Two, December 1992.

ECP staff; the Program's Co-ordinating Technical Committee (CTC); other ministries and government agencies; as well as authorities from the academic and scientific communities. Most of the membership on the Task Force selected for the synthetic laundry detergent category came from the three major synthetic laundry detergent manufacturers in Canada and their affiliate suppliers.⁶⁴

A review of the ECP Task Force proceedings which worked in the preparation of guidelines for synthetic laundry detergents indicated that the first meeting took place in Toronto on May 16, 1990. Over the course of two years, the Task Force and the ECP staff debated a number of issues and eventually prepared two draft guidelines for public review. The proposed draft guidelines dealt with issues such as product ingredients, labeling, packaging and the degree of recycled materials recommended, as well as health warnings to consumers. Minutes of these proceedings revealed that on numerous occasions participants in the Task Force failed to reach any consensus on specific product ingredient criteria. A harbinger of this polemic attitude occurred in the first meeting of the Task Force which introduced the question of ingredient specifications. Procter and Gamble's representative suggested that phosphates had been an issue prior to 1977, but their impact on the environment had diminished with improvements in sewage treatment plants. For this reason, the representative objected to the guideline ban on phosphates in ECP approved synthetic laundry detergents.⁶⁵ Input from other Task Force members and respondents to the public review of the draft guidelines showed the intense polarization of opinion with respect to the inclusion of phosphates, EDTA, FWAs, bleaches and

⁶⁴Ottawa. Environment Canada. EcoLogo (The Environmental Choice Newsletter), March 1988. The newsletter regularly announced the forming of task force committees for various products. Interested parties could submit their names for inclusion on any Task Force Committee organized by the ECP. Of the 33 recorded participant agencies or companies, 18 represented manufacturers of synthetic laundry detergents and their affiliate suppliers; 3 came from the ranks of small businesses involved in the distribution and marketing of "environmentally friendly" products; 10 were involved within government agencies, the academic community or municipal services; and 2 were representatives from Eco-Experts Inc. and Pollution Probe respectively.

⁶⁵ Environmental Choice Papers. Environmental Choice Program. File No. S0101.17 33. "Minutes of Meeting held on May 16, 1990 at the Westbury Hotel, Toronto, Ontario." p 2.

perfumes in ECP approved synthetic laundry detergents. Catherine Commandeur, the Consulting Physician for Public Health at Montreal General Hospital believed the ECP "should develop a program aimed at eliminating all chemical substances contained in detergents."⁶⁶ Another respondent, Dennis Brown from Water Standards and Studies for Manitoba Environment, advised against product ingredient limits. He noted that most of the regions in Manitoba, as well as many other areas in Canada, did not undertake widespread phosphorous removal during sewage treatment. The guidelines permitted up to 15 g per dose of phosphorous which, according to Brown, still presented "great potential for stimulation of algal growth."⁶⁷

The ECP received more feedback on the second draft guidelines than anticipated, and so Environment Canada extended the review period by fifteen days.⁶⁸ In late November 1991, when the Task Force members reassembled, they thoroughly examined and reviewed the suggestions submitted during the public review process. At this meeting, Tony Redpath, the chairperson for the Co-ordinating Technical Committee, initiated debate on ingredient specifications. According to the minutes, members "were divided as to their opinion on this issue. Some...felt that the limit was rigorous whereas others felt that it was lenient."⁶⁹ Throughout the day, every topic discussion reinforced this division. On eight occasions, Redpath intervened and closed debate. He explained to the members that the CTC would take all comments into consideration when it made a final ruling.⁷⁰ Clearly, the Task Force no longer operated as a cohesive and productive

⁶⁶ Environmental Choice Papers. Catherine Commandeur, Consulting Physician on Public Health, Montreal General Hospital. Letter to ECP dated September 17, 1991.

⁶⁷ Environmental Choice Papers. Manitoba Environment. Dennis Brown. Letter addressed to ECP dated September 9, 1991.

⁶⁸ Environmental Choice Papers. Environmental Choice Program. File SP107.24. Letter to members of the Task Force for Laundry Detergents dated November 1, 1991.

⁶⁹ Environmental Choice Papers. Environmental Choice Program. File SP107.24 "Minutes of Meeting held on November 25, 1991 at the Venture Inn, Etobicoke." p 2.

⁷⁰ Environmental Choice Papers. ECP File SP107.24 Minutes of November 25, 1991. pp.4-11 inclusive.

body. The minutes showed that members agreed on only one item—the definition for laundry detergents.⁷¹

When interviewed, Ms. De Cloet, a Task Force participant, recalled that she perceived that the lines of demarcation had been clearly identified as "the environmentalists versus industry." She described her frustration and disappointment with the process of compromise which seemed always to bow to the interests of big business. In a letter to Tony Redpath, dated February 15, 1992 she wrote:

You must wonder yourself why there has not been more participation from small business [in the ECP process]. Considering that over 90% of Canadian companies fit this category, the task force is heavily slanted towards participation by large companies.⁷²

Later in the letter, she criticized the undemocratic features inherent in the Task Force system of inquiry and consultation. Specifically, she referred to the disproportionate costs involved in member participation. "Small companies," wrote Ms. De Cloet, "have small staffs and cannot afford to send one person to full day meetings. We do not have budgets for research staff who specialize in these projects."⁷³ In her final critique, Ms. De Cloet cited the opinions of several other proponents of eliminating unnecessary chemical products in the marketplace. They believed that the corporate engineers, technical experts and bureaucrats had produced a guideline inconsistent with their stated goal of protecting the environment.

Notice of the promulgation of the national guideline for Laundry Detergents appeared in the *Canada Gazette* on December 12, 1992. In the final guideline, certain ingredients such as EDTA and chlorine bleaching agents remained on the 'black list' of

⁷¹ibid.

⁷²Environmental Choice Papers. Sharon De Cloet, Brantford, Ontario. Letter to ECP dated February 15, 1992.

⁷³ibid.

unacceptable ingredients. However, the guideline allowed phosphorous and nitrogen based ingredients, FWAs, perfumes and bittering agents within limits expressed in terms of weight per product dose. Approximately forty per cent of the guideline directives related to aspects of product packaging.⁷⁴

Sharon De Cloet and several other non-corporate participants in the Task Force believed that the efforts expended by the Task Force members and the ECP produced no measurable benefit or assurance for Canadian consumers who may have wanted to use a laundry detergent that reduced the burden on the environment.⁷⁵ They noted that at present, no synthetic laundry detergents available in Canada have qualified for the ECP endorsement. Apparently, products which achieved the ingredient standards did not fulfill the packaging standards, and vice versa.⁷⁶

Although the federal government had attempted to fulfill its "mandate" many participants, who shared Sharon De Cloet's outlook, were discouraged by the results. The corporate representatives had argued collectively to protect their vested interests, and in this particular case they may have achieved some measure of success. However, the corporations that opposed the elimination of conventional synthetic laundry detergents and various other ingredient restrictions had to counter formidable and expert opinions and arguments from the academic community, health care workers, resource managers and small businesses. These proponents were clearly ready to continue the battle for the elimination of synthetic laundry detergents.

Every consumer decision, like every corresponding business decision had far reaching social, economic and political implications and costs. Worldwide, public and private concerns about health and environmental hazards only highlighted this fact.

⁷⁴ Environmental Choice Papers. ECP File SP107 24 Minutes of November 25, 1991. pp.4-11.

⁷⁵ Sharon De Cloet, interview with author. January 6, 1996.

⁷⁶ Derek Stevenson. "Buying Green." Canadian Consumer, February 1991, p.47.

Environmental Choice Papers. Sharon De Cloet, Brantford, Ontario. Letter to ECP, Attention Tony Redpath, dated February 15, 1992.

Canada and other member states of the UN, and the OECD participated in international debates and conferences that sought long-term solutions and strategies to the pervasive and complex problems associated with economic development based on technological innovation. In 1983, the General Assembly of the United Nations established the World Commission on Environment and Development in a global attempt to change "attitudes and perceptions of the international community with respect to environmental issues at stake in overall development."⁷⁷ After three years of organized consultation, the Commission published a consensus document under the title Our Common Future. "Sustainable development" or the process of reconciling resource exploitation and capital development without jeopardizing social and ecological stability emerged as the key concept. As an industrialized, resource-dependent nation, Canada's approach to and political endorsement of "sustainable development" became the focus of vigorous debate in both public and private realms.

Summary

The continued use and disposal of convenient synthetic laundry detergents imposed significant social, economic and political costs for Canadian consumers. Like other industrialized nations, Canada gradually implemented programs and policies based on "risk management" as opposed to elimination of risk.⁷⁸ For example, the DOE's Atmospheric Environment Service monitored concentrations of various airborne pollutants and issued public air quality advisories when levels exceeded prescribed limits.⁷⁹ Technological innovations had, in the case of synthetic laundry detergents,

⁷⁷United Nations. Panel of Experts on Environmental Management for Vector Control, (PEEM). PEEM Newsletter, No. 21, August, 1988.

⁷⁸I. Burton et. al. editors. Living with Risk: Environmental Risk Management in Canada. Toronto: Institute for Environmental Studies, University of Toronto, 1982. pp.25-29.

⁷⁹Auditor General, March 1990. Section 18.10.

exposed Canadians to unintended hazards and negative consequences including disease incidence, health care costs, and lost productivity. Canadian society also suffered incumbent costs in terms of loss of property through contamination, reduction in wildlife species variety, and massive public expenditures directed at variegated environmental and health services. Government actions remained limited in effect and enforcement largely due to the complexity and immeasurable scope of the issues, economic recession and inefficient bureaucratic and governing structures.

Although a firm quantitative measurement of the social, economic and political costs proved elusive, substantial evidence inferred that the continued use and manufacture of synthetic laundry detergents jeopardized the general health and environmental security for all sectors of Canadian society. Public awareness of and concern about the seriousness and complexity of these issues heightened during the 1970s and 1980s. While governments struggled to devise and implement appropriate remedial measures, manufactures and producers of synthetic detergents found opportunities for strengthening their marketplace position and acceptability. These strategies diffused the issues and diverted the public focus away from the potential chemical side effects of these synthetic products. Consumer concerns about the future of their ecosystem and living space were alleviated to some extent when manufacturers offered them "environmentally friendly" solutions such as bio-degradable packaging.

However, from 1978-1991, per capita consumption of synthetic laundry detergents, per capita waste disposal rates and administrative costs declined. These preliminary findings needed further study and research, but they pointed to the possibility that Canadian consumers were beginning to make life style and consumer choices which expressed a willingness to participate actively in the rehabilitation of the environment. In the case of the ECP Task Force, proponents for eliminating or drastically modifying the chemical design of synthetic laundry detergents met significant opposition from the three major corporations involved in the manufacturing of synthetic laundry

detergents. Some frustrated and discouraged Task Force participants believed the power of this opposition was immovable. They recognized the corporations' advantages in terms of capital resources, political networks and affiliation with associated industries.

However many other factors also defined and shaped this opposition. To shed light on these issues chapter three examines the forces of opposition.

Chapter Three
Opposition to the Elimination of
Synthetic Laundry Detergents

Consumption is the sole end and purpose of all production; and the interest of the producer ought to be attended to, only so far as it may be necessary for promoting that of the consumer...The interest of the consumer is almost constantly sacrificed to that of the producer; and it seems to consider production, and not consumption as the ultimate end and object of all industry and commerce.

Thomas Paine, 1776.¹

This chapter examines the relationship between consumers and producers of synthetic laundry detergents and in the process it uncovers the scope and depth of opposition to the elimination of synthetic laundry detergents. Consumers and producers, as Thomas Paine expounded, sustain one another in an interdependent relationship. Without markets corporations can not survive. Householders cope with increasing home oriented and external responsibilities and consequently seek products, like synthetic detergents, which afford them with efficiency and reliability of performance. However, as industrialized societies become increasingly aware of the negative consequences associated with the use of these manufactured goods and services, producers find resources and methods to respond creatively to the concerns and interests voiced in the marketplace and from governing bodies. If sufficient numbers of consumers choose to boycott potentially toxic substances found in the marketplace, manufacturers, in order to survive, can make the corresponding adjustments in their product formulations and processes.

¹Thomas Paine, 1776 quoted by G. Bruce Doern in How Ottawa Spends Your Tax Dollars: National Policy and Economic Development, 1982. Toronto: James Lorimer & Company, Publishers, 1982. p.173.

The chapter demonstrates how changing social values, attitudes and beliefs weakened consumer opposition to the elimination of synthetic laundry detergents over time. Dramatic changes in household structures and management in the two decades following the war, created circumstances which opened a market for convenience goods. Time constraints on women, the predominant household managers, as well as internal and external household responsibilities increased during the period 1947-1992. Women represented less than 20 per cent of the permanent labour force in 1959, but by 1990, more than 50 per cent of women with newborn children returned to their jobs within one year.² As primary household managers, women prioritized their responsibilities, available disposal income and their needs and wants. Their consumption behaviour and choices reflected these factors.

After the 1960s, as information about resource degradation became widely disseminated through the media and other public information services, women struggled to find a balance with their need for efficiency and convenience with the need to eliminate harmful products from the marketplace. In the Canadian capitalist economy, corporations viewed consumption primarily as a function of achieving profits through sales and production of their goods. In response to consumers' changing needs and wants as well as pressures exerted through regulatory and other government agencies, manufacturers reformulated the various detergents either through ingredient substitution, methods of packaging, or detergent performance criteria. Their entrepreneurial activities, attention to consumer demands and their collective ability to adjust their production processes and procedures in accordance with various legislative limits, placed these convenience products in millions of Canadian households.

After 1978, a decline in per capita consumption of synthetic laundry detergents coincided with increased efforts to eliminate or modify these products.

²Claudia Goldin. Understanding the Gender Gap: An Economic History of American Women. New York: Oxford University Press, 1990. Preface, p.p. -ix.

Corporate strategies for perpetuating consumer confidence in synthetic detergents met with significant criticism and scrutiny. Some vocal sectors of Canadian society began to object to the continued operations and practices which threatened the well being of the ecosystem and hence, the wider population. However, group activism and political lobbying efforts which promoted 'green consumerism' had limited success. Corporate structures and activities reasserted claims about the positive benefits associated with maintaining synthetic laundry detergents in the marketplace. When synthetic laundry detergents were identified as "pollutants" and hazardous to the environment, corporations countered such accusations with an arsenal of defensive measures. Large multinationals invested heavily in research and development, consumer research and political lobbying. All these protective activities acted as forces of opposition to the elimination of synthetic laundry detergents from the marketplace.

Manufacturers of synthetic laundry detergents also use Canadian political structures and organizations when constructing their defensive strategies. In Canada, responsibility for environmental security and general health falls to all levels of government. Each province and municipality formulates and enforces diverse acts and procedures in response to their specific regional circumstances. Often jurisdictional disputes and the operations, structures and leadership of political bureaucracies hamper or limit the administrative and legislative function of various government programs and initiatives. Moreover, these factors allow for a fragmented and inefficient decision making process. Manufacturers demonstrate an astounding ability and expertise in successfully defending their interests in this political quagmire, while consumers often face disillusionment and failure to achieve their goals within the system.

Opposition from Canadian Consumers.

Until the late 1970s, Canadian consumers readily accepted convenience and the consequent costs of their consumer choices.³ Within a space of only thirty years Canadians had evidence that the ability to perform ordinary laundry tasks efficiently and reliably with technologically complex synthetic laundry products imposed significant costs in terms of water and land quality, waste disposal and public administration. However, the cost to the consumer and to society of eliminating synthetic laundry detergents would also result in certain costs measured in terms of less convenience, lost wages due to job dislocations, and possible product and tax increases. Consumer concerns about job security and financial well being overrode, but did not entirely obliterate, their concerns about personal health and environmental security.⁴ Rather than face the prospect of fulfilling their household management duties with synthetic alternatives which might not provide the level of convenience and efficiency that they had come to enjoy, the majority of consumers compromised and actively supported "environmentally friendly" options.

Consumption choices depended upon both internal and external household factors. The development and eventual acceptance of new technologies, including chemically complex laundering products, provided the impetus for changes in household and societal behaviour. During the period under discussion, women continued in their predominant role as household managers in spite of their growing responsibilities outside the home. In order to accomplish both household and extraneous duties, women increasingly demanded and consumed those convenience products, such as synthetic

³Doug Mac Donald. The Politics of Pollution: Why Canadians are Failing Their Environment. Toronto: McClelland & Stewart Inc., 1991 pp.19-23.

⁴William M. Lurch and Stanley Rotham. "American Public Opinion." in The State of Humanity. Julian L. Simon, ed. Cambridge, Massachusetts: Blackwell Publishers Inc., 1995. pp. 610-618.

laundry detergents, which offered them the highest utility benefit. As consumers, they made their consumption choices by actively comparing and testing those laundering products which they believed best met their needs. Price, product promotions and performance, the type of laundering facilities available to the household, and time constraints on the household manager also influenced consumption behaviour. At different stages of the household and family life cycle, these criteria of choice determination varied in terms of importance and priority. For example, households with young children devoted more time to domestic tasks than those households where the children had left home.⁵

In a recent study of the economics of household organizations, Peter Kooreman and Sophia Wundernik proposed a neo-classical model of consumer behaviour.⁶ Their model assumed that consumers made decisions based upon the individual household manager's attempts to maximize utility. The researchers assumed that certain factors limited or restricted the various consumption decisions. These factors included the consumer's knowledge of and familiarity with the specific product and the ability of that product to perform its function with ease and convenience. Issues such as cost and time available during any given life cycle period also operated as determining criteria.⁷ The model also recognized that consumers might behave rationally or choose certain products because of the influence of suggestive advertisements or out of habit.⁸ While useful in its application to gauging the criteria of consumer choice, the model did not emphasize the limiting effect of technological and scientific innovations which also influenced consumer decisions. A suggested refinement of the model would be an

⁵Statistics Canada. Canadian Social Trends. No. 16, Spring 1990. pp.18-19

⁶Peter Kooreman and Sophia Wundernik. The Economics of Household Behaviour. New York: St. Marten's Press Inc., 1997. p.11.

⁷Kooreman and Wundernik, p.3.

⁸Kooreman and Wundernik, pp.11-26.

acknowledgment of the limitations of the product choices available to the consumer which resulted from these advances.

Consider for example, that after 1945, many privately funded research and development facilities developed products such as synthetic fabrics, plastics, detergents and even penicillin. All became common household commodities. Modern consumers relied upon these products partly because of their unique and novel properties and also because alternatives from natural sources were no longer available in sufficient quantities to meet their needs. These technological developments had particular relevance to the synthetic laundry detergent industry. During most of the nineteenth century, households manufactured their own soaps and other surface active agents from readily available and inexpensive natural fats, potash and other ingredients. Soap makers also used simple equipment and recipes which could be easily modified to produce varying volumes of the product. By 1900, numerous scattered and small factories produced soaps and various products derived from soap-making by-products. For example, Colgate & Company, which later reorganized as the Colgate-Palmolive Company in 1926, concentrated exclusively on selling starch, soap and candles produced in its New York facilities.⁹ Since the Second World War, the soap and surfactant industry underwent dramatic changes which eventually saw the industry concentrated in the hands of a few major suppliers. In the decades following the war, companies which first rose to prominence in the U.S. and Britain, like Procter and Gamble and Lever Brothers, dominated the Canadian production of synthetic laundry detergents.¹⁰ As the synthetic laundry detergent manufacturers worked to increase and maintain their production capacities and accompanying market shares, they marginalized the position of smaller soap producers in the marketplace. Ten years after the Census of Industry first reported sales and

⁹Hast, p 23.

¹⁰Canada. Report prepared by John Davis. "The Canadian Chemical Industry" in Royal Commission on Canada's Economic Prospects. Ottawa, 1957 pp 68-70

production of synthetic laundry detergents, soap-based laundering products accounted for approximately 40 per cent of the total soap market in Canada. By 1992, market share of basic soap products fell to less than 15 per cent.¹¹

Technological developments had also resulted in reduced purchasing options for the consumer. During the period under discussion significantly fewer companies manufactured simple soap-based products and this structural change in the manufacturing and retailing sectors directly affected consumer decisions.¹² Although some manufacturers continued to produce simple soap-based laundering products, retailers preferred to stock those items most requested and sought after by their customers. However, retailers and manufacturers regularly made arrangements about promoting, stocking and displaying products which had little to do with consumer preferences. For example, larger companies, such as Procter and Gamble and Colgate-Palmolive, offered retailers certain incentives such as discount coupons, store displays and advertising concessions, and flexible product pricing rates. These larger integrated corporations supplied retailers with a variety of other products, including convenience foods and other staples. With this type of supply leveraging, dominant producers achieved economies of scale and were often able to undercut their smaller competitors' pricing rates. These and similar tactics reduced competition for the large corporations' product lines and further ensured continuing sales. However, several retail journals such as *Supermarket Business* found that the majority of consumers surveyed regarded private label or generic products in the same sense as the "nationally known items." Apparently, consumer choice related more to the individual shopper's product evaluation based on performance, packaging, satisfaction guarantees and price than the manufacturers and retailers cared to admit.¹³

¹¹Davis, "The Canadian Chemical Industry" p. 69.

¹²Census of Industry: The Soap, Washing Compounds and Cleaning Preparations Industry 1947-1992. Notably, the category of producers which produced soap-based products only was not reported in the census figures. The category definitions identified synthetic detergent manufacturers specifically and left soap producers in the "other related cleaning compounds" category.

¹³*Supermarket Business*, Vol. 51, Issue 9, September 1996. See Editor's Review p.10.

When retailers and manufacturers artificially created and defined consumer preferences with their exclusive stocking and sales promotional activities, they constructed strategies of opposition which would prevent the elimination of synthetic laundry detergents in the marketplace. Manufacturers also realized that busy household managers wanted to reduce the time spent in making household purchases. If conveniently located retail operations did not offer synthetic alternatives, it was highly unlikely that the consumer would seek out smaller specialty stores which stocked one or two particular items on the grocery list. Consequently, while other soap-based products offered consumers a safer alternative in terms of personal and environmental health, these goods had significantly less influence and opportunity to garner customer allegiance in the prevailing retail environments.

Distributors of "natural, non-toxic" products have generally abandoned the popular retailing outlets and devised other marketing methods in their efforts to achieve sales. Some establishments used door-to-door sales or "home parties" while others distributed their goods through specialty and health food stores.¹⁴ Generally, these distribution efforts yielded significantly lower volumes of sales than their counterparts in the major retailing establishments. Although consumer access to these products remained limited, many consumers believed that their non-synthetic product "worked just as well or better than chemical alternatives."¹⁵ However, limited consumer access and knowledge about healthier alternatives characterized the marketplace.

These marketplace limitations and conditions affected smaller businesses and promoters of non-synthetic products more profoundly than the larger competitors selling synthetic products. These purveyors of consumer goods and services encountered escalating external as well as internal regulation and limitations which affected their

¹⁴Sharon De Cloet, owner of Caeran based in Brantford, Ontario. Company catalogues of Caeran for March 1990 through to 1997

¹⁵Caeran Newsletters, various publications from 1990-1992. Published and edited by Sharon De Cloet, Caeran, 25 Penny Lane, Brantford, Ontario.

operations. All levels of government in Canada have constructed a convoluted web of restrictions and legislation which covered an ever-widening range of economic activities. Producers of consumer goods found that keeping up with regulatory changes absorbed more managerial time which in turn led to higher overhead costs. Consequently, smaller businesses with limited managerial staff and budgets had fewer opportunities for participation in government initiated forums aimed at eliminating potentially hazardous substances in the marketplace. Disproportionate levels of representation in these spheres by the smaller non-synthetic promoters reinforced their marginal profiles in the marketplace and in the political consciousness. Conversely, major producers and corporations channeled budget allotments, expertise and skilled personnel towards these venues. This strategy further protected the maintenance of certain products and industries in the marketplace and implied political sanction and endorsement of these activities. Corporations actively fought their competitors not only in the open marketplace, but also in the legislative and political realm. Government documents and reports frequently disclosed information about federally-initiated agencies and activities which originally set out to protect human and environmental health. However, these efforts often resulted in procedures or policies which actually reinforced the manufacturing sector's strength in the marketplace and validated opposition to restrictions or production bans.

The federal government had articulated its involvement and jurisdictional responsibility for "consumer protection" when it established the Department of Consumer and Corporate Affairs (CCA) in 1967. Ostensibly the CCA would investigate and formulate "legislation in areas that [did not] merely record commercial rights but protect[ed] the national and social and economic goals...of Canadians."¹⁶ By the mid 1970s, the CCA found its role had altered and it acted as a regulatory administrator and supplier of information on a limited basis. Herb Gray, Minister of CCA between 1972-74

¹⁶Bruce Doern. How Ottawa Spends Your Tax Dollars. p. 173.

stated his focus for the department as "...being on the free enterprise system, actuated by the profit motive and governed by the forces of the market."¹⁷ Gray's goals for the CCA and its relationship to consumers, business and investors conflicted with one another. However, the minister attempted to ameliorate his position by arguing that the market operated "through an adversarial bargaining process" between consumers and producers. He acknowledged that producer interests were well organized and politically effective while those of the consumers were not. He asserted that the CCA functioned then as an instrument of the political system to right this imbalance of power between consumers and producers.¹⁸ Findings in the Report of the Auditor General in 1981 appeared to support Gray's position. The Report noted that "more new statutes designed to regulate the economic behaviour of the private sector were enacted between 1970 and 1978 than in the previous three decades."¹⁹ Although the Report also found that the CCA's budgetary outlays by 1980-81 amounted to only 1.3% of total federal expenditures, these regulatory responsibilities had an effect on both consumer and corporate behaviours.²⁰ Between 1978-1992, per capita consumption and rates of waste disposal declined and corporations complied with new protocols. Failure to comply would have damaged the positive public image of the large corporations which they so ardently pursued and protected. Furthermore, the media and other information services made the activities of the CCA accessible and known to the public and thereby heightened social awareness of issues.

Financial support for government programs and agencies dealing with health, environmental, education and social welfare issues continues to decline. Today, Canada and the majority of other industrialized nations commit less funding to these areas than

¹⁷ Ibid. p. 179.

¹⁸ Ibid.

¹⁹ Ottawa. The Report of the Auditor General of Canada to the House of Commons, Fiscal Year ended 31 March, 1981. Preface.

²⁰ Ibid.

they do to defense spending which now annually exceeds \$1 trillion.²¹ The effectiveness of these government bureaus is further limited by interdepartmental overlap of responsibilities and lack of communication between regulatory and enforcement agencies.

For example, the CCA was responsible for the Hazardous Product Act (1969) and the Consumer Packaging and Labeling Act (1971). The DOE, through the authority of the Canadian Environmental Protection Act (CEPA) established The Priority Substance List with an independent panel in 1989. The list identified forty-four substances in current use in Canada which were considered potentially dangerous to human health and the environment and which required assessment on a priority basis. The CEPA required that the departments of the Environment and National Health and Welfare, but not the CCA, determine the risks of these substances. By 1991, only two of the forty-four substances had been assessed and investigated. Furthermore, the DOE had not yet established performance standards to assist in evaluating the appropriate regulations for manufacturers' use of these substances in various consumer products. Along with declining financial resources, the Auditor General's Report of 1991 cited the lack of coordination between regulatory and enforcement activities with other federal departments as a major flaw of the CEPA directives.²²

Canadians have generally accepted the government's protective role and presence in their lives. Public ownership of public utilities such as railways and electric power lent credence to this notion that government provided not only fiscal and economic vehicles for good governance but also acted in a promotional capacity which propelled development in primary and secondary industries. Certainly since the Second World War, the activities and jurisdictional responsibilities of governments at all levels have

²¹Robt. Goodland et al. Environmentally Sustainable Economic Development: Building on Brundtland. World Bank Sector: Policy and Research Staff-Environment Working Paper No. 46., July 1991 p.14.

²²Ottawa. Auditor General Report, March 31, 1991. pp 269-270.

become more complex and pervasive. As the variety and scope of issues increased, industrial practices and processes incurred correspondingly higher levels of social and political scrutiny. Producers of synthetic laundry detergents and other questionable consumer goods and services coped adroitly within this changing social and political climate. Corporate leaders recognized the weaknesses inherent in the governing bodies and agencies, the budget constraints and increasing bureaucratic fragmentation. Corporate management teams regularly achieved success when opposing political and administrative entities but individual members of society and smaller activist groups did not. Only a small sector of Canadian society found participation in policy forums or other lobbying groups an effective means for communicating and achieving meaningful political responses to their various needs and wants.²³ A Calgary law professor, Alastair Lucas, examined these participatory efforts and discovered specific exclusionary characteristics. In his opinion, the "devices of exclusion" ranged from agencies' refusal to release information through the use and abuse of ministerial discretion through to simple, but monumental financial obstacles. He claimed that "there is in Canada almost no funding to enable the public to appear before hundreds of boards, commissions and tribunals which daily set policy and rulings with court-like procedure and power."²⁴ These diverse agencies dealt with a wide array of issues with significant social importance such as communications, transportation, environment, health and safety, marketing and trade.

Various other studies have examined the obstacles to effective consumer or citizen participation via political lobbying or other activist mechanisms. Doug Mac Donald, in his book entitled The Politics of Pollution, questioned why the steadily growing social and political support for environmental protection had not yet resulted in

²³Steven Trudgell. Barriers to a Better Environment. London: Belhaven Press, 1990. p. 101.

²⁴Ross Howard. Poisons in Public, pp. 130-135. Howard cites Lucas in support of his argument that political responses to pollution in Canada "are increasingly recognized as wholly inadequate."

elimination or significant reduction of unnecessary products in the Canadian marketplace. He found that opinion polls launched during the late 1980s indicated rising concern over the effects of pollution and growing support for government intervention.²⁵ Through several case study analyses, he found evidence that increasing numbers of Canadians willingly took advantage of recycling programs and practiced "green consumerism" whereby they chose products which imposed less of a burden on the environment. Nonetheless, these piecemeal efforts have not resulted in the elimination of unnecessary chemical products from the marketplace. Canadian households continued to pursue life styles which imposed unnecessary burdens on the environment and jeopardized the health of all constituents. As late as 1988 over 25 per cent of the Canadian urban population lived in municipalities that discharged sewage wastes directly into the environment with no form of prior treatment.²⁶ When Mac Donald surveyed the political achievements of The Green Party of Canada, established in 1983 as an environmental lobbying group, he found that Canadian voter support lagged dismally. In the 1984 federal election the Green Party fielded six candidates and won 29,000 total votes. Four years later the party fielded sixty-eight candidates and won slightly more than 47,000 votes. Mac Donald found that "in all these elections, the Greens captured 0.1 or 0.2 % of the vote, except in Quebec where in 1989 the candidates received 2% of the vote."²⁷ Although "green" votes were an unsatisfactory measurement of environmental awareness, Mac Donald argued that these results demonstrated a contradiction of professed concern for health and environmental safety. He concluded that a lack of social support for such advocacy groups derived from the "traditional Canadian reliance on the government as mediator and protector of the environment and regulator of industry." In other words, complacency characterized Canadian social participation.

²⁵Doug Mac Donald, The Politics of Pollution: Why Canadians are Failing Their Environment, Toronto: McClelland & Stewart Inc., 1991, pp.3-28.

²⁶Ibid. p.24

²⁷Ibid. p.37.

Individual or group activities which resist harmful technologies and other events which threaten social well-being face many obstacles. Wide spread social commitment to participation in policy forums and lobbying groups depends upon access to information and a demonstrated acceptance on the part of government regulators to listen to these points of view. When procedures of assessment exclude public participation, few individuals or groups have the stamina or the resources to proceed with further action. This well-founded frustration with the political process effectively discourages individual or group activities. Consequently, individual and group activism, while increasing in Canadian society, enjoys limited success. These circumstances also effectively operate as forces of opposition to the elimination of certain products or processes found in the marketplace.

In spite of these structural and procedural impediments, some forms of group activism have survived and attained political and social recognition for their efforts. These persistent and continuing efforts demonstrated a swelling social commitment to break down opposition to eliminating certain goods and technologies from the marketplace. For example, Environment Canada provided financial assistance to the Canadian Environmental Network, established in 1977. This non-profit network had a mandate to facilitate communications among environmentalists throughout Canada and to assist those groups through sharing information, resources, energy and expertise. In 1991 the network included about 2,000 such organizations with a central office in each province and one for the Yukon and the North West Territories.²⁸ Although this represented concerted effort and commitment, these groups reported low memberships, usually with fewer than 100 dues-paying members, and low funding. The majority of the groups listed were created in response to particular local concerns such as a B.C. organization calling itself "Save the Bulkey". This organization was formed by a group

²⁸Robert MacIntosh, editor. The Green List: A Guide to Canadian Environmental Organizations & Agencies. Ottawa: The Canadian Environmental Network, 1991 pp.14-30.

of concerned local residents who wished "to preserve the integrity of the Bulkey River and other river systems affected by Alcan's proposed Kemano project." ²⁹ Another weakness in the political effectiveness of these organizations was their lack of centralized organization and direction. When contacted, the Ontario Environmental Network located in Guelph, Ontario used volunteer staff who operated out of their homes. The Network had no funds for regular office space or regular staffing which limited public accessibility and visibility of these groups. Spokespersons for this group further admitted that membership had fallen since 1986. Consequently, the organization concentrated its available staff and resources to publishing bi-monthly "awareness" newsletters. ³⁰ A number of other groups contacted through the Network guide had disbanded after their initial goal and function had been achieved. Since the 1970s, the Canadian public increasingly demonstrated its willingness to participate and to promote programs of resource management and the need to rejuvenate our air, water and land resources. Although many consumer choices and the limitations of group activism and support for Green Parties at the polls undermined the overall effectiveness of such well intentioned activity, the message continued to reach increasingly more Canadians. Each individual needed to adopt attitudes and life styles which protected and sustained diminishing natural resources and human health.

Although public perception of toxic substances has sharpened, especially with respect to conventional pollutants such as municipal wastes, individuals are overwhelmed with the complexity of issues.³¹ All too familiar terms like global

²⁹Ibid. p.29. Alcan proposed building its Kemano hydroelectric development to the B.C. government in 1982 but many of the province's constituents lobbied actively to prevent its construction. They feared that the proposed plant would put salmon stocks and water quality in jeopardy for future generations.

³⁰Ontario Environmental Network located at : Park Mall, 2 Quebec Street, Suite 201-C, Guelph, Ontario. Phone 519-837-2565. Telephone interview by author with Rebecca Orr, a volunteer for the Network.

³¹John E. Carroll. Environmental Diplomacy: An Examination and a Prospective of Canadian-U.S. Transboundary Environmental Relations. Rexdale: C.D. Howe Institute, John Wiley & Sons Canada Ltd., 1983. p.467.

warming, radioactivity, ozone depletion, acid rain, and toxic waste bombard the public daily through the media, through our educational institutions, and even in our workplaces. However, the public is not a homogeneous group. It consists of a multitude of diverse groups with diverse interests and with different powers to influence economic, legal and social structures. Some individuals often address local problems either through participation in recycling programs or through community organizations. Canadians generally rely on governments at all levels to undertake remedial action on larger issues. Individuals lack capital resources, information and expertise on these many and various complex issues whereas governments are perceived to have these qualifications, and perhaps obligation, to take appropriate action. Government structures, however, display characteristics of a fragmented decision making process which often operates as an obstacle and opposition to effective remedial action.

Another factor of resistance and opposition lies in the general social perception of Canada's vast resource wealth. Various levels of government enforce and widely publicize certain environmental protection standards and initiatives. Also, compared to Europe and the U.S., Canada remains relatively sparsely populated. These perceptions of limitless resources and the general complacency of Canadians to rely on government to protect national and personal interests obscures the common view of the escalating environmental and health threats perpetuated by everyday consumer choices. Canadians measure quality of life by indicators of economic expansion and recession. For most individuals, continued economic growth coupled with full employment remain both the primary personal and national goal. Scientific and technological advances propel the luxury of such increases in standards of living. The threat of financial insecurity at a personal level affects consumption choices in that the individual consumer does not connect his/her choice within the wider realm of social accountability. Immediate and personal needs become paramount whereas the consequences of any single consumer choice and its wider social implications become issues beyond the individual's control.

However, this continuing per capita consumption of natural resources, accompanied by the continuing production of wastes, also contributes an oppositional force to the elimination of unnecessary products.

Gauging the Strength of Opposition from Producers

Corporate opposition to the elimination of synthetic laundry detergents took many forms and extended to virtually all sectors of Canadian society. Corporate predominance and strength in the marketplace, the Canadian economy and in administrative and political spheres fostered acceptance, not abolition of synthetic laundry detergents and thousands of other commonplace goods and services. Rarely did major producers confront their critics in open forums. Instead, they used the power and influence of their marketing departments, research and development enterprises and their access and information about political structures and operations.³² Through these networks, corporations achieved and maintained a positive presence in the marketplace. When regulatory constraints or adverse publicity threatened this positive presence, these same networks became negotiating tools and instruments of opposition used by corporations to protect their vested interests.

Economic and business reorganizations which unfolded in the period under discussion substantially affected and determined the structures and objectives of household management and consumption decisions. Creating wide spread acceptance of synthetic laundry detergents represented only one of many aspects of change which affected Canadian society. Widespread consumerism and rising acquisitiveness after the Second World War resulted not only in raising Canadian standards of living but also fueled the financial and technological powers of business organizations. The Canadian

³²Rosenbluth, "Monopolistic Practices." pp. 210-215.
Trudgell, pp.98-115.

economy grew by 10.8 per cent per annum between 1945 and 1955 in constant dollars.³³ Ordinary Canadians and particularly business people connected economic growth with freedom. Prosperity allowed individuals increased opportunities and choices. Wealth, reliable incomes, and savings gave industrial organizations, governments and the individual power. Consumers enjoyed travel, leisure activities, better health care and educational opportunities. Corporations diversified their product lines and ventured into new areas of product development, internal and international corporate organization, and financial management. Governments accumulated tax revenues and used those resources of money, people and expertise to provide constituents with new services and benefits.³⁴

In the case of the synthetic laundry detergent industry, these forces of a voracious marketplace, a government encouraging and promoting economic expansion and the availability of capital and opportunities culminated in corporate concentration. By 1950, the Canadian soap and laundry industrial sector had three vertically integrated multinational firms dominating market share of these products and accounting for 75 per cent of the total employment in the industry. Similarly, in the U.S. four such corporations accounted for 79 per cent of that sector's industrial employment.³⁵ Stability of industrial concentration persisted throughout the following four decades for a number of reasons. Development of synthetic laundry detergents required complex technologies, a high degree of innovation and marketing advantage, substantial capital investments in terms of physical plants and materials, research and development, and good transportation facilities. In a survey of Canadian multinationals, Jorge Niosi also identified other defining characteristics and determining factors relevant to corporate concentration in

³³Michael Bliss. Northern Enterprise: Five Centuries of Canadian Business. Toronto: McClelland and Stewart, 1987. p. 467.

³⁴Ibid. pp.469-481.

³⁵Gideon Rosenbluth. Concentration in Canadian Manufacturing Industries. Princeton: Princeton University Press, 1957. p.79

Canada. He noted that foreign direct investments in the Canadian economy have always shown a marked industrial distribution where "the great majority of it is carried out by firms in a fairly small number of industrial sectors [such as] chemicals, transportation equipment and metal processing."³⁶ These firms enjoyed organizational advantages derived from their well developed vertical integration as well. Finally, the products manufactured by these large companies followed a cycle that began with innovation by a small oligarchy through to gradual standardization and then complete standardization. Niosi observed that once the technological information had become fully disseminated throughout the industry, then the market became competitive.³⁷

However, Niosi did not investigate the arguments employed by these large corporations when defending their monopolistic strategies. These defensive strategies translated into mechanisms of opposition which corporations used to protect and sustain the viability of their products as well as their economic predominance. Large corporations acquired smaller competitive firms which produced similar products. In this way they increased their financial and technological power and protected their market share. Niosi and other critics of multinational behaviours argued that such concentration limited healthy competition, but business leaders, like the directors of Lever Brothers, successfully argued that "they actually help[ed] to preserve a competitive marketplace."³⁸ In 1957 Lever Brothers bought Monsanto Chemical Company's line of "all" detergents which included "Concentrated "all, Liquid "all" and Dishwasher "all." "³⁹ However, the U.S. Department of Justice filed an anti-trust suit which charged Lever Brothers with "restricting competition by acquiring that piece of Monsanto which manufactured low-suds synthetic detergent, a product similar to one that

³⁶Jorge Niosi. Translated by Robert Chodos. Canadian Multinationals. Toronto: Garamond Press, 1985. pp. 10.

³⁷Ibid. p.29.

³⁸Kepos, "Lever Brothers." p.38 l.

³⁹Ibid.

Lever already made." ⁴⁰ Lever Brothers won the suit, asserting that its actions protected both Lever's and Monsanto's products which had lost sales due to competition from "larger rivals" like Procter and Gamble. ⁴¹ Lever convinced the Department of Justice that if the synthetic detergent business remained separate, then the larger rival would " wipe both of them out."⁴²

Corporate growth also provided producers with other significant albeit less obvious means of opposition. Multinationals consistently sought opportunities for expanding their markets either through acquisitions and mergers or through direct investment in foreign economies. By providing a wider assortment of goods and services the large corporations not only generated more sales but also solidified their presence in the marketplace. Consumers readily identified and trusted products which displayed well known international or foreign-owned company logos and trademarks. The launching of fully developed Canadian-owned and operated manufacturing facilities, as in the case of synthetic laundry detergents, faced numerous obstacles. Canada possessed a limited domestic market compared to that of the U.S. and Europe, and that market was scattered over a vast land area. Lever Brothers Company, although a wholly owned subsidiary of Unilever United States Inc., relied on the protracted colonial links between Canada and Britain when it first ventured into the Canadian manufacturing sector. Lever Brothers had its roots with William Hesketh Lever, an English grocer, who operated a successful wholesale business and marketed a popular soap called Lever's Pure Honey during the mid nineteenth century.⁴³The American-based companies, Procter and Gamble and Colgate-Palmolive, found the Canadian market conducive for international expansion because language, geographical proximity, income levels and consumer habits closely matched those of the American market. These foreign-owned multinational firms also

⁴⁰Ibid. p 318.

⁴¹Ibid.

⁴²Ibid.

⁴³Ibid. p. 317.

had strong ties and financial control of the developing chemical industry in Canada. Total foreign investment in the chemical sector exceeded 77 per cent of the total production and development by 1980, and Americans had a vested interest in 59 per cent of those enterprises.⁴⁴

Writings in business history provide ample documentation and arguments for more public control of big business and its operations in industry and finance. A value judgment of the role and obligations of corporate giants is beyond the scope or intent of this research. Rather, from an historical perspective, the predominance of multinationals and the resultant corporate concentration in the Canadian synthetic laundry detergent industry can be seen as the outcome of a century of intensive change in capitalist economic activity.⁴⁵ In compliance with their capitalistic objectives, the primary duty of corporate leaders is to seek profits, sustain the pressures of competition and to ensure corporate survival.⁴⁶ In every respect, the operations and decisions about product development undertaken by the three major producers of synthetic laundry detergents follows this creed. These corporations actively oppose their political critics by emphasizing their wide spread economic influence in Canada. Corporations argue that they bolster the Canadian economy by providing employment opportunities and efficiently managing capital resources. Within the context of a competitive capitalistic market economy these corporate strategies and responses can be seen as expressions of rational survival tactics. Consumers for their part accept synthetic laundry detergents and thereby share responsibility with the manufacturers for the negative consequences associated with those products.

⁴⁴Niosi, p.39 .

⁴⁵Walter H. Goldberg. Governments and Multinationals. Cambridge, Mass.: Oelgeschlager, Gunn and Hain Publishers Inc., 1983. pp.179-182.

⁴⁶Gerard Elfstrom. Moral Issues and Multinational Corporations. London: MacMillan Academic and Professional Ltd., 1991. p.23.

If these tactics of opposition prove unsuccessful, corporations point to their massive research and development enterprises as evidence of their collective commitment to provide consumers with high quality and safe goods and services. Consumer acceptance of synthetic laundry detergents is related to this widespread reliance on these corporate guarantees. This widespread consumer perception of the purpose and role of industrial research and development can and does become a tangible obstacle or factor of opposition to the elimination of certain products such as synthetic laundry detergents from the marketplace. Large multinationals generally promote their product by advertising not only its level of performance, but also by emphasizing that their research laboratories have conducted extensive and expensive testing. For example, Procter and Gamble researchers developed "Crest" toothpaste in the late 1950s. In 1960 the American Dental Association endorsed "Crest" by making the claim that regular use "could substantially reduce cavities."⁴⁷ This toothpaste became the number one selling brand in North America, not necessarily because of the endorsement, but because that endorsement was incorporated aggressively into the marketing of the product. In this way, corporations instilled consumer confidence, and possibly some level of complacency, by advertising the personal and social benefits of products which have been tested through their research and development facilities.

Corporations publicly advertise their substantial commitment to and investment in research and development. Most of this activity has a commercial purpose and aims specifically to achieve profits. However, not all their research and development is generated by this profit motive, nor should these efforts be accepted as safe. During the period under discussion, Procter and Gamble experimented with various synthetic technologies. In the earliest experiments, the firm produced "Teel" dentifrice which the

⁴⁷Kepos. "Procter & Gamble." p.433.

company had to discontinue because the product turned teeth brown.⁴⁸ After the war ended, the company geared up for growth with its introduction of brand-name promotions, the creation of a national selling force, expanded advertising and an ongoing research program.⁴⁹ Although the research department had developed "Tide" in the laboratories during the war period, shortages of materials held up the market testing. The researchers had been experimenting with a new kind of phosphate compound known as STPP (sodium tripolyphosphate) that improved the cleaning performance of institutional dish washing machines and did not leave harsh mineral deposits. When lab workers added STPP to household laundry detergents, the product's cleaning performance also improved. Procter and Gamble patented "Tide" in 1946 at a time when no other market competition presented itself.⁵⁰ Within three years, consumers in North America chose "Tide" over all other detergents available on the market.

During the 1960s and 1970s when controversy over the effects of phosphates in the Great Lakes System became widely publicized, Procter and Gamble and the other major producers of synthetic laundry detergent vigorously resisted arguments that called for the elimination of phosphates and NTAs from their formulations. Company directors argued that phosphates contributed less to the deterioration of the water quality than did agricultural wastes and improperly treated sewage emptying into the lake system. At a U.S. Senate subcommittee hearing in 1970, Procter and Gamble, Lever Brothers and Colgate-Palmolive representatives emphasized the findings of their respective research and development departments and told investigators that "phosphates [were] necessary and safe and it [was] difficult to find a suitable replacement."⁵¹ However, the U.S. Surgeon General asked the three multinationals to find a replacement for both NTAs and

⁴⁸Advertising Age, p. 19.

⁴⁹Ibid. pp.20-24.

⁵⁰Ibid. p.25.

⁵¹Ibid. p.30.

phosphates. Procter and Gamble complied grudgingly as evidenced by Chairman Howard Morgen's comments recorded at the next annual meeting. He said, "The zero phosphate products fall short of providing housewives with what we feel is the proper level of cleaning effectiveness." He also noted that the corporation had spent more than \$85 million to find a low-phosphate product replacement.⁵² However Morgen did not disclose information about Procter and Gamble's total research and development expenditures which represented approximately ten times the amount allocated to a phosphate substitute.⁵³ Although prevailing political and social pressures had provided the impetus for Procter and Gamble to develop and use alternative ingredients for its synthetic laundry detergents, the company persisted, even until the 1990s, in its claim that phosphates and other ingredients in synthetic laundry detergents were safe for household laundering use.⁵⁴ Corporations substantiated their opposition to the elimination of certain product ingredients on the basis of the credibility of their corporate research and development efforts as well as on the basis of meeting perceived consumer needs and expectations. Significantly, corporate leaders drew attention to the extraordinary financial hardships which such adverse publicity imposed on their businesses. Protection of capital and profit motives remained the primary focus of corporate leaders.

When confronted by circumstances and events that proved detrimental to their public image, corporations abandoned product lines. Perhaps the costs of opposing their critics proved too onerous or the research and development undertaken by the corporations had in fact been incomplete. Regardless of why corporations withdrew

⁵²Ibid. p 31.

⁵³Procter and Gamble Company, Annual Report, 1989. Prepared by John G. Smale, Chairman of the Board and Chief Executive. August 10, 1989 pp. 4-8. In this report, Smale tracked the history of the company's commitment to research and development, noting past and current allocations. These investments, according to Smale, demonstrated the company's goal of maintaining "world class products of superior quality and value."

⁵⁴Environmental Choice Papers. Environmental Choice Program. File No. SP101.17 33. "Minutes of Meeting Held on May 16, 1990 at the Westbury Hotel, Toronto, Ontario." p 2

certain products, retreat and retrenchment also manifested itself as a mechanism of defense whereby these producers hoped to reclaim their positive presence and credibility in the marketplace. These tactics also precluded direct government intervention into corporate operations. Decisions made by Procter and Gamble in 1980 illustrated this defensive mechanism.

Like its counterparts, Procter and Gamble began an aggressive acquisition of smaller companies during the 1950s.⁵⁵ Each acquisition propelled increasing technological development and product creations. At the company's annual shareholder's meeting in 1987, John Smale, the current chairman and CEO described the company's commitment to on-going research and development during the previous thirty-five years of operations. According to Smale, these activities and directives ensured Procter and Gamble's continuing industrial expansion and dominance. He claimed that, "it is our goal to be the world leader in the relevant science and technology for every category that we compete."⁵⁶ However, not all development and technological innovations proved either successful or healthy to consumers. In 1977, the company introduced "Rely" tampons which supposedly had "super-absorbent" qualities superior to other like feminine hygiene products on the market. Three years later, the Centers for Disease Control (CDC) published a report showing "a statistical link between the use of "Rely" and a rare but often fatal disease known as toxic shock syndrome."⁵⁷ Procter and Gamble had launched and promoted these personal hygiene products after three years of "intensive" testing.⁵⁸ The available corporate histories made no acknowledgment about the company's inferred liability, but they did disclose that the company discontinued sales of the product in the fall of 1980.

⁵⁵ Kepos, "Procter & Gamble." p.433. Procter and Gamble purchased W. T. Young Foods, a nut company in 1955; the Nebraska Consolidated Mills Company in 1956; and the Charman Paper Company and the Clorox Chemical Company a year later.

⁵⁶Advertising Age, p. 128.

⁵⁷Kepos, "Procter & Gamble." p.434.

⁵⁸ibid.

The other major manufacturers of synthetic laundry detergents employed similar defensive strategies of product diversification and product testing, not only in order to increase their earnings, but ironically, in some instances, in order to limit their costs for new product development. By the mid 1970s, Colgate-Palmolive reported consistent and disturbing losses in market share in the personal care products category. While Colgate-Palmolive lost ground in the North American market, its major competitor Procter and Gamble gained significantly.⁵⁹ Although the company directors continued to direct investment into new-product developments, these ventures often "never made it out of the test market stage."⁶⁰ Corporate re-organization, plant closures, employee lay-offs and a reduction in new product development allowed the firm to stabilize its market position and solidify its capital resource base by early 1982. Now, research efforts focused on known product brands such as "Dynamo" detergents and "Ajax" cleaners.⁶¹ Again, consumers found "new and improved" brands available on store shelves. Then in 1987, Colgate acquired a line of liquid soap products, which included the parent company's patents and product testing and development plans, from Minnetonka Corporation. This led to the market introduction of a laundry detergent called "Fab 1 Shot". However, this innovation failed to "sustain consumer interest and reach sales expectations over the long term."⁶²

Repeatedly, promotions, new product developments, and innovations aimed at keeping the producers' names visible in the market place. Consumers easily identified these products on their store shelves; and purchased them out of habit, utility, performance criteria or for other reasons. If a product and a name brand remained visible, corporations rang up the sales.

⁵⁹ Adele Hast, p 24.

⁶⁰ Ibid.

⁶¹ Adele Hast, p. 25.

⁶² Ibid.

Major producers of synthetic laundry detergents used a number of other consumer and market oriented strategies in their arsenal of opposition. Large manufacturers invested heavily in consumer and social research. Consumer preference determined the economic viability of the variegated product reformulations, packaging innovations and even ingredients. For example, Procter and Gamble found that consumers wanted perfumes in their laundry detergents because they "provided a pleasant fragrance during the wash process." Marketing studies conducted by the company showed that "only about 20% of users preferred the unscented products."⁶³ Suppliers of perfumes concurred with this assessment and asserted that acceptable odours reinforced "the consumer's perception that articles are clean and that the detergent is effective."⁶⁴ However, perfumes were aesthetic non-essential additives in synthetic laundry detergents which had no cleaning function whatsoever. Advertising and promotional campaigns actively cultivated consumer preference for clean smelling laundry and virtually ignored the issue of product performance altogether.

When opposing measures which would limit or eliminate certain product ingredients, manufacturers demanded that their detractors and critics provide conclusive scientific study to verify the harmful effects of certain chemical compounds. Ironically, in instances where the potential effects of certain chemical components such as FWAs and phosphates were questioned, manufacturers argued that lack of scientific certainty precluded elimination or banning of these ingredients. Rather than choosing a benign alternative ingredient, manufacturers allowed ingredients with unknown or undetermined hazardous effects to be used in their product formulations.

One well publicized example of such controversy revolved around the issue of phosphates and phosphate substitutes in synthetic laundry detergents. During the early

⁶³Environmental Choice Papers. Procter & Gamble Inc. G.G. Parker, Associate Product Development Manager. Letter to Environmental Choice Program dated November 27, 1990. p. 1.

⁶⁴Environmental Choice Papers. Canadian Fragrance Materials Association. Letter to the Environmental Choice program dated November 22, 1990.

1970s, when phosphate derivatives and their potential to cause eutrophication in lakes became more widely publicized, manufacturers used phosphate alternatives and other chemical builders such as NTAs and EDTA instead. When later studies evaluated these substitutes as more hazardous than phosphates, the manufacturers began using polycarboxylates, a chemical compound which had a low level of biodegradability, in the early 1980s. In low-phosphate and phosphate-free detergents, these compounds acted as assistants for avoiding encrustation and soil re deposition on fabrics.⁶⁵ Polycarboxylates bonded with calcium ions and dirt in the wash water, held them in suspension, and then were rinsed away into sewage. Since polycarboxylates have been used to a significant extent in detergents for little over a decade, research into the ecological and toxicological properties remained limited.⁶⁶ Manufacturers justified using these ingredients in increasing amounts in spite of the lack of scientific study and analysis of their effects on our limited resources, sewage treatment facilities and individual users. Notably, any industrial research on polycarboxylates applied to the suitability and performance of these chemicals when used as phosphate substitutes.

Product ingredients for synthetic laundry detergents continued to cause controversy. Ongoing debates about toxicity levels and the many other hazards attributed to the use of synthetic laundry detergents proved costly in terms of time, management, study and defense for both consumers and the major suppliers. Adverse public opinion and scrutiny threatened to weaken public and political acceptance of synthetic laundry detergents in the marketplace. In opposing these negative market driven forces, corporations looked for ways to divert attention from the product itself. Since issues of waste management directly affected the majority of the Canadian households, the major manufacturers adroitly redirected their technological and research staff to devise

⁶⁵N. T. de Oude. Detergents: Part F. Anthropogenic Compounds. London: Springer-Verlag, 1992. p.338

⁶⁶N.T. de Oude, p.339.

acceptable "environmental marketing" strategies.⁶⁷ During the Environmental Choice Review of synthetic laundry detergents of 1990-1992, Procter and Gamble's representative emphasized the necessity for appropriate product packaging in a letter to the ECP chair which read:

Procter & Gamble believes that the product and package should be considered together when establishing Environmental Choice criteria. In the case of the Laundry Detergent category, we believe the program's greatest leverage could be in significantly reducing solid waste. (In contrast, the real environmental benefit of restrictions on builders and surfactants is likely to be minimal, since the industry is already using safe, biodegradable materials.)⁶⁸

The letter then went on to explain how the corporation had addressed issues of waste reduction through product innovations. He described the firm's "latest detergent innovation...*Ultra Cheer*" which delivered excellent performance with only half the conventional recommended usage of product. Other non-concentrated products required 300 ml. of usage compared to "Ultra Cheer's" 150 ml. According to Procter and Gamble's calculations, this represented a "28% reduction in packaging material per recommended use."⁶⁹

This letter and its arguments persuaded some Task Force members to support making product packaging the primary rather than the secondary focus of the ECP review. All members agreed that laundry detergents represented a "high-tonnage consumer product category" and that it defied logic for a "friendly" detergent to be packaged in an "unfriendly" container.⁷⁰

⁶⁷Kepos, p.434 and
Hast, pp.24-25.

⁶⁸Environmental Choice Papers. Procter & Gamble Inc., Toronto, Ontario. Letter from Douglas Moeser dated June 25, 1990 addressed to Environmental Choice Canada, Attention: Ms. Valerie M. Douglas.

⁶⁹Ibid.

⁷⁰Environmental Choice Papers. Environmental Choice Program. File No SP101.17.33, "Minutes of Meeting held July 18, 1990 at the Carlton Place Hotel, Toronto, Ontario." p.3.

By succumbing to the persuasive arguments about product packaging put forth by Procter and Gamble and its supporters, the review process focused in issues not specific to the ECP's original purpose of product specifications for synthetic laundry detergents. Notably, Procter and Gamble's Associate Product Development Manager, G. Parker, not only apprised himself of the ECP proceedings, but he disclosed in a letter dated November 27, 1990, that he was "a member of the National Packaging Task Force representing the Grocery Products Manufacturers of Canada."⁷¹ Moreover, Parker stated that the Code of Preferred Packaging Practices was "not designed to be specific enough to provide measurable criteria for the laundry detergent Environmental Choice guideline."⁷² On this basis, Parker strongly urged the ECP and the Task Force reviewing synthetic laundry detergents to adopt Procter and Gamble's meticulous formula for product packaging. It certainly appeared that Procter and Gamble, as represented by Parker, was willing to promote packaging standards on its own terms, but not on those established by the National Task Force.⁷³

Procter and Gamble's opposition and resistance to the ECP's focus on product ingredients clearly demonstrated the strength and weight of the company's defensive strategies. Parker's activities and disclosures to the ECP also provided evidence about how corporations operated successfully and forcefully within the complexity of the Canadian political system.

⁷¹Environmental Choice Papers. Procter & Gamble Inc. G.G. Parker, Associate Product Development Manager. Letter dated November 27, 1990 addressed to Mr. A. Hussein, Chairman, ECP. p. 1.

⁷²Ibid.

⁷³Ottawa. Environment Canada. Canadian Council of Ministers of the Environment, April 1986. Packaging, Reduction, Reuse and Recycling Technology Options. Environment Canada had appointed a National Task Force, one dealing exclusively with packaging, reduction, reuse and recycling technology in 1986. However, the ECP staff involved in the review of synthetic laundry detergents had no input or liaison with this other arm of Environment Canada's activities. During the time the ECP Task Force met, the Packaging Code had not yet been released.

The working drafts of the National Packaging Task Force disclosed the limitations of "3R Opportunities" (recycling, reuse and reduction). For example, some paper channeled into recycling processes would be unsuitable because of soiling or other exposure to contamination. Also, it was only possible to recycle paper fibres an average of 7 times.

Richard Hofrichter, in his writings on ecological justice, accused large corporations like Procter and Gamble, of manipulating the system and the consumer. He harried them for making claims with terms like "degradable" and "environmentally friendly" and otherwise treating the ecological crisis as a public relations crisis.⁷⁴ Yet, consumer behaviour often demonstrated that these strategies actually increased consumer confidence in and support for the large corporations' presence in the marketplace. For example, the Arthritis Foundation in the U.S. and Canada commended Procter and Gamble's researchers for developing a "user friendly" package for "Tide" powder detergent. This new container featured a snap top lid which proved easy for people afflicted with arthritis to use. As expected, "Tide" powder packages soon proudly displayed the Arthritis Foundation's seal of approval.⁷⁵

Regardless of whether or not these corporate strategies represented an overt manipulation of the consumer consciousness, these efforts proved successful. Continued sales and acceptance of products depended upon strong focused leadership, clearly articulated goals, technological expertise, and a willingness to operate within the parameters of a fragmented political bureaucracy.

Governments in Canada delegated considerable regulatory and administrative powers to appointed boards and commissions. As a result, bureaucracies, not legislatures, dealt with issues of hazardous substances, health and welfare, and environmental and resource management. Corporations actively sought appointments to these boards and commissions for a number of reasons. Participation provided corporations with networks and connections which gave them access to information about prevailing and possible future political structures and policies. Corporations incorporated knowledge

⁷⁴Richard Hofrichter. "Cultural Activism and Environmental Justice." in Toxic Struggles. Philadelphia P. A.: New Society Publishers, 1993. p.87.

⁷⁵Procter and Gamble Inc. "Annual Report, 1989." prepared by John G. Smale, Chairman of the Board and Chief Executive, August 10, 1989. p.24.

about and familiarity with procedures and the operations of administrative bodies into their opposition strategies.

Many of these administrative bodies and commissions were hampered and limited by prevailing political structures. For example, the province of Ontario established the Environmental Assessment Board (EAB) in 1976. However, the province excluded EAB involvement in a number of areas such as: highways developments; expansion of colleges and universities; specifically 150 sewage and water treatment plants; almost all provincial government land leasing and housing developments; industrial parks; mining explorations; Natural resources dams and dykes and Ontario Hydro power line installations and power plant operations.⁷⁶ With such extraordinary political control, the EAB had limited scope for effectively directing or setting policies and procedures designed to protect Ontario residents. Moreover, the Ontario environmental ministry conducted investigations about questionable corporate operations and processes in secret. Before the ministry imposed most new pollution control orders, ministry officials and corporate representatives met and engaged in protracted negotiations supposedly to "work out the methodology of pollution control."⁷⁷ The public had no role and no opportunity before the serving of the control order to comment or participate. Furthermore, the process denied the public the right of appeal against these orders. By contrast, corporations received the benefit of appealing against the provincially initiated action through the Environmental Appeal Board or directly to the minister.⁷⁸

In efforts to appease those critics that suspected collusion between corporations and various government agencies, multinational corporations expended millions of dollars on well publicized "social programs." Examples of corporate sponsorship of sporting events, donations to academic institutions, municipal organizations and political

⁷⁶Ross Howard, p. 140.

⁷⁷Ross Howard, p. 148.

⁷⁸Ross Howard, pp. 149-150.

parties abounded. All these tactics not only benefited their recipients, but also benefited the corporations themselves. These large companies received public accolades for their generosity and commitment to operate as "good corporate citizens" in their respective communities.⁷⁹ By maintaining such a benevolent profile, corporations successfully perpetuated opposition to the elimination of their products.

Summary

Consumers of synthetic laundry detergents actively made choices about the various available products in the marketplace based on utility or performance criteria, price, or time constraints imposed on the household manager. For the producer, consumption translated into sales and profits. However, in the 1960s, public awareness of environmental problems and their costs and consequences increased. Also, after 1978, manufacturers of synthetic laundry detergents coped with higher levels of government enforcement of a variety of protective consumer and environmental regulations. Throughout the discussion period, corporations consistently adhered to their profit goals, and used extensive resources, technology, personnel, talent and influence to do so. If consumer confidence wavered because of adverse publicity or evidence of product toxicity, as in the case of "Rely" tampons, corporations worked diligently to reclaim that confidence. Large manufacturers validated their products by promoting them as "proven and tested" in the company's research facilities. When outside agencies endorsed certain product innovations, corporations publicly displayed these accolades and thus they provided wary consumers with subliminal guarantees about the benefits attached to such products.

⁷⁹Richard Pomfret, p. 140.

Ottawa. NDP, Mulroney's Green Plan December 17, 1990 pp 4-6

Foster, pp 23-25

Kepos, "Procter & Gamble." p.431.

These large business organizations also demonstrated their ability to be flexible in their operational structures and strategies. When persistent opposition to their products or processes threatened their marketplace acceptance in the 1960s and 1970s, corporations creatively employed other methods to counter that opposition. Unlike the consumer advocacy groups and other proponents of non-synthetic technologies, corporations maintained a visible and active presence within political and economic spheres. When necessary, competitive corporations found collective action from within their ranks an even stronger mechanism and expression of opposition. Opposition from the producers also indicated their general hostility to government intervention in their corporate activities. Consequently, political accommodation became an effective tool to protect corporate interests.

Yet, while significant opposition to the elimination of synthetic laundry detergents persists in Canada, the proponents for change continue to weaken that opposition. Their efforts and strategies sometimes prove futile or frustrating, but they succeed because their presence serves as a constant reminder to individuals that human health and environmental security cannot be taken for granted. Manufacturers may find that continued efforts to defend synthetic laundry detergents in the marketplace are a poorer investment than efforts to find synthetic substitutes and alternatives.



Conclusion

Social, economic and political circumstances in Canada after the Second World War gave rise to the development and rapid acceptance of synthetic laundry detergents. Changing lifestyles, increases in household disposable incomes, stability of employment, and population increases created unprecedented consumer demand for a wide array of goods and services. Business leaders and entrepreneurs saw lucrative opportunities and invested heavily in capital plants and technological innovation to satisfy the needs and desires of a voracious marketplace. Through research and development soap manufacturers and the chemical and oil industries successfully adapted wartime synthetic surfactant technology and produced synthetic laundry detergents. These new "wonder products" performed the cleaning function more efficiently and conveniently than simple soap-based products. Because of the chemical additives, synthetic detergents operated well in hard water conditions, removed heavy oily dirt without re depositing soil onto fabrics and they also had applications for cleaning the variegated synthetic materials and textiles introduced into the marketplace. Corporations aggressively marketed and adapted these new products in order to create and sustain consumer acceptance and to generate sales. Within twenty years, synthetic laundry detergents enjoyed better than 85 per cent of the soap and cleaning products mark share in North America.

Over time, consumer behaviour changed. During the early portion of the discussion period, 1947-late 1950s, consumers eagerly consumed synthetic laundry detergents and other newly introduced goods and services with no inkling or knowledge that these choices imposed costs and consequences beyond their immediate utilitarian function. By 1975, married women represented almost 40 per cent of the permanent labour force up from approximately 20 per cent in 1959. All Canadians and various categories of households coped not only with busier life styles, but also with an ever

increasing amount of technology in their daily encounters. Until 1978, their choices demonstrated a preference and a perceived need for efficient, reliable goods and services such as synthetic laundry detergents. By this time, more baby boomers had entered the marketplace and their distinct attitudes, values and beliefs found expression in their consumer and life style choices. Although many Canadian shoppers continued to choose these chemically complex products over the non-synthetic laundering alternatives, after 1978, other factors determined consumer choices. Most household managers based their choice on utility criteria, influences of the advertising media, habit or other related reasons such as cost or access to the product. Manufacturers in concert with retailers and other forms of distribution actively and aggressively promoted synthetic laundry detergents. After 1978, per capita consumption of synthetic laundry detergents declined. Canadian consumers now increasingly chose alternative laundry products which did not impose a burden on the environment. Ironically, manufacturers, who measured their success in monetary terms, continued to forecast annual increases in production sales although production units had fallen. These forecasts were likely derived from operational efficiencies and not increased per capita sales.

In the Canadian marketplace, three multinational, vertically integrated firms dominated the soap and surfactant industry in terms of sales as well as employment and capital assets by the 1970s. Their connections to other industrial branches such as chemical suppliers, transportation, oil refining, packaging and media further entrenched their position of dominance. Beginning in the 1950s, these companies expanded their operations through acquisitions and mergers and quickly diversified their product lines. Throughout the discussion period, they continued to invest massive amounts of capital in existing and new product research and development, advertising, consumer research and political lobbying efforts. All these strategies aimed at protecting the corporations' market share and generating profits. Moreover, these corporations demonstrated expertise and an admirable ability to respond quickly to changing social, economic and

political events during the period 1947-1992. In a scant fifty years, the synthetic laundry detergent industry transformed into a multi-million dollar business.

When political and social concerns about various product ingredients, such as phosphates, FWAs and EDTA, became more widely publicized during the 1960s and 1970s, the corporations channeled their resources into product and container reformulations, as well as scientific study and research. They justified certain product ingredients on the basis of a lack of scientific evidence which could provide irrevocable proof that these questionable chemical components created hazards to the health and environmental security of Canadians. Unlike government bureaucracies, corporations remained steadfast in their focus and goals of maximizing profits and maintaining synthetic laundry detergents in Canadian households. Since governments at all levels shared jurisdiction for health and environmental welfare, their responses to issues of resource degradation, health concerns, municipal waste handling and numerous other issues sometimes lacked any unilateral direction or authority. However the efforts of the DOE and the CCA during the late 1960s-1970s produced increased regulatory programs and initiatives, legislation and information which heightened consumer and producer sensitivity to issues of environmental and social health. Significantly, the costs of enforcement and pursuing remedial and rehabilitative programs and initiatives also operated as a mechanism of opposition. Eliminating synthetic laundry detergents from the marketplace had unknown and immeasurable social, economic and political consequences. Keeping these products in the marketplace postponed the necessity for change. By the 1960s, consumers and governments acknowledged the negative consequences attributed to the continued use and disposal of synthetic laundry detergents. Producers, however, persisted even until 1992 in refuting the evidence of scientists, health authorities and other groups that publicized the dangers attributed to synthetic laundry detergent use and disposal. Individual Canadians gained an increasing awareness, and perhaps some sense of apprehension or urgency, about the enormity and

complexity of the issues that had to be addressed. Many looked to government agencies and other legislative devices to address these issues, but others chose independent action such as community activism.

In spite of the growing concerns about human health and ecological security during the 1960s and 1970s, large numbers of Canadian consumers continued to make voluntary consumption choices which posed a burden on the environment and hence the wider population. Producers of synthetic laundry detergents remained steadfastly committed to maintaining these products in the marketplace and thereby ensuring the corporation's survival. Furthermore, if producers converted their operations into non-synthetic production, which required possibly less technological expertise, many other competitors could have entered the marketplace and jeopardized the economic advantage which corporations wished to protect. Consider also the extensive use of fragrances, bleaches and preservatives such as EDTA in the thousands of other goods currently manufactured by these multinational corporations and their affiliates.⁸⁰ If legislation banned the use of these ingredients in laundry detergents, such ingredient restrictions could have implications for other consumer goods such as personal care products, cosmetics, processed foods and so on. Multinational corporations, with diversified product lines, therefore worked to protect their existing production methods and technological processes. The elimination of certain products or specific product ingredients would not only create tremendously increased market-place competition but would also require a massive readjustment and reorganization of corporate structures.

A fragmented political structure allowed corporations more leverage when countering criticism about the negative effects of synthetic laundry detergent products. After the 1970s, when individual or group activism increasingly challenged these

⁸⁰De Santa, pp.9-11. Processed cake mixes, packaged cereals and numerous other foods use EDTA to prolong the shelf life of the product. Without these chemical preservatives, processed foods would be classified as "perishable" goods. This in turn would entail regular and costly re-stocking.

corporations and called for moderation or elimination of certain products or ingredients. they achieved only limited success. Usually lack of financial resources, low memberships and, compared to the corporate presence, little political representation characterized most of these initiatives.

The research concerning consumer interest groups, environmentally-focused forums and advocates for synthetic substitutes demonstrates a growing social awareness and heightened consciousness and concern for environmental and social security. Many of these groups and individuals believe that before significant improvements to general personal and environmental health can proceed, consumers must actively and consciously question their consumption choices. They urge consumers to take the time to search for alternative products. Yet, convenience and costs, whether in terms of time or money, continue to be the primary factors determining consumer behaviour. Advocates for health and environmental security have limited influence and generally focus on single localized issues. Similarly, the small businesses that spoke out during the Task Force committee meetings could not substantiate their arguments with definite scientific findings or data. Where corporations operated collectively to protect their interests and investments, the small businesses and advocates for environmental protection did not. Advocates argued that if consumers boycotted non-essential synthetic laundry detergents and chose environmentally benign laundering substitutes, manufacturers would adjust their product lines and processes accordingly. Capital investment in non-synthetic substitutes could replace capital investment in new complex chemical elements. These groups acknowledged that the numbers of producers in the marketplace might increase which would then necessarily require economic adjustment. Significantly, the scope and extent of these adjustments and transition to "green" manufacturing processes would have far reaching social, economic and political consequences which no advocacy group addressed.

An examination of opposition to the removal of one consumer product like synthetic laundry detergents from the Canadian marketplace opens a window of comparison for other products and services purchased, consumed and discarded in other areas of the world. Globally, the quest to produce increasing amounts of goods for expanding populations requires the development and application of powerful new technologies and substances. Manufacturers of goods and services regard ongoing growth of markets and protection of capital assets as their central organizing principle. However, continual growth is unsustainable. Economic expansion depends upon the environment by using raw materials and non-renewable resources in its production activities. Consumption of the massive amounts of goods and services gives back waste materials and degraded energy to the environment.⁸¹ Earth's quantities of water, air and land remain static and non-renewable. Continued economic expansion along these lines threatens to obliterate human living space.

Transition to a world with less convenience and less reliance on synthetic technologies will cause social, economic and political upheaval. Old values and belief systems will be challenged, defended and reshaped. However, the costs of change and transition, while substantial, promise a healthier environment for future generations.

⁸¹Lester W. Milbrath. "Becoming Sustainable: Changing the Way We Think." in Building Sustainable Societies: A Blueprint for a Post-Industrial World. Dennis C. Pirages, editor. New York: M. E. Sharpe, 1996 pp 289-294.

Appendix A**GLOSSARY**

Anti Re deposition Agent: A harmless soluble powder that holds dirt particles in suspension once they have been removed from cloth. Without this ingredient dirt particles would re deposit on the fabric or material being laundered.

Bleach: Bleach traditionally used in washing powders is hydrogen peroxide, released when sodium perborate dissolves in hot water. Bleach can chemically break down stains that resist physical removal by the surfactant. It functions in two ways: by changing the structure of the coloured stains so they no longer absorb light in the visible spectrum; and by removing the chemical groups that bind the stain to the fabric. The most effective bleaches are strong oxidizing agents such as chlorine bleaches. However, these bleaches damage fabrics and dyes.

Biodegradable: The capacity of any substance to be broken down or disintegrate into innocuous products by the action of living beings (micro organisms) in a reasonable and demonstrable period of time. The primary mechanism of 'break down' is through the actions of micro organisms such as bacteria, yeast, fungi and algae. When used to describe packaging or product criteria of degradability, the term means the chemical decomposition of materials into smaller molecules or the incorporation of materials into living organisms, i.e. composting materials.

Builder: Builders may constitute as much as 30 per cent by weight of a synthetic laundry detergent. They control water hardness by removing the positively charged metal ions, calcium and magnesium, found in hard water. If these ions are not removed they will combine with the negatively charged surfactant and precipitate out of solution. This makes the surfactant useless and the laundry dull. Phosphorus, traditionally the builder used by manufacturers of synthetic laundry detergents, is a limiting nutrient in aquatic environments (see **eutrophication**).

EDTA (Ethylene Diammine Tetra Acetic Acid): This chemical component is sometimes used in synthetic laundry detergents and functions as a builder. Manufacturers preferred using EDTA because it is stable and can operate at a high pH. Although it is a non-phosphate builder, it does not degrade in sewage effluence. It is a "banned" substance under the ECP guideline for laundry detergents.

Appendix A**GLOSSARY**

Endotoxin: (see also Toxic/toxin) An endotoxin is a toxin that remains within the bacterial protoplasm which produces it.

Enzymes (Proteolytic Enzymes): These chemical substances attack protein stains of fabrics deriving from such things as blood and egg. These stains are difficult to remove without the addition of an active enzyme ingredient in the laundry detergent. Enzymes break down the molecular structure of the stain into fragments that the surfactant can remove more easily. Enzymes are protected from interaction with other chemicals and substances of the detergent while in storage by being encapsulated within a coating that dissolves in wash water.

Eutrophication (Oxygen Depletion): High levels of phosphates (chemical compounds with phosphorus bases) cause aquatic plants to grow too quickly. When the plants die, the decaying process uses up oxygen in the aquatic medium which in turn suffocates and kills aquatic life such as fish, flora and other organisms.

Fluorescer (Fluorescent Whitening Agent (FWA)): Natural white cotton has a slight yellow tinge. Consumers prefer their laundry to have a bright white or blue-whit appearance. The fluorescer is an optical brightener that adheres to the fabric and emits a blue-whit light when it is exposed to ultra-violet radiation from sunlight.

LAS (Linear Alkyl Benzene Sulphonate): See also surfactant. LAS is the surface active agent used in most soapless detergents. Because it is biodegradable, LAS sulphonate does not produce suds in lakes and streams as other surfactants do.

NTA (Nitrilotriacetic acid): NTA is commonly used as an alternative to phosphate builders. Although NTA (a nitrogen compound) operates effectively as a builder, it influences the transport of heavy metals in aquatic environments. NTA adds nitrogen to the aquatic environment which may lead to eutrophication.

Pollution: This term is used to mean contamination of the environment by undesirable materials.

Appendix AGLOSSARY

Polycarboxylates: It is only since the beginning of the 1980s that polycarboxylates have been used in detergents and cleaning agents. In low-phosphate and phosphate-free detergents they are used as assistants especially for avoiding encrustation and soil re deposition.

Non-P or phosphate free: Phosphate builders are added to synthetic laundry detergent formulations because they increase the efficiency of the surfactants. When various localities banned the use of phosphates (**tripolyphosphate**) these products were replaced with inorganic compounds such as soda ash, sodium silicates, sodium aluminosilicates and citric acids. However, the "non-p" ingredients can be more caustic than phosphates causing skin and eye irritation. They also proved to be moderately to highly toxic when ingested.

Sodium Carbonate: This substance helps to keep the detergent powder loose and pourable even when stored in a humid environment. This chemical also softens water.

Sodium Silicate: These substances help prevent corrosion of the metal parts in the washing machine.

Sodium Sulphate: This substance is used as a filler to add bulk to conventional synthetic detergents. It also functions as a flow aid that helps to evenly disperse active ingredients through the washing process. The majority of laundry detergents available in Canada contain 35 per cent sodium sulphate by weight of product.

Surfactant: (See also LAS) A surface active agent or surfactant decreases the surface tension between water, fabric and oily dirt.

Toxin: (Toxic/toxicity) A toxin is any of several intensely poisonous substances produced by certain bacteria.

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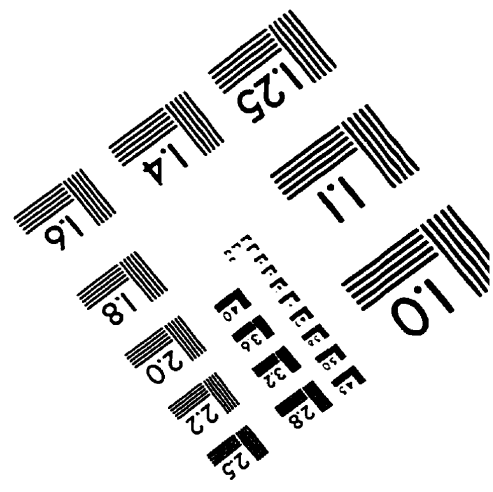
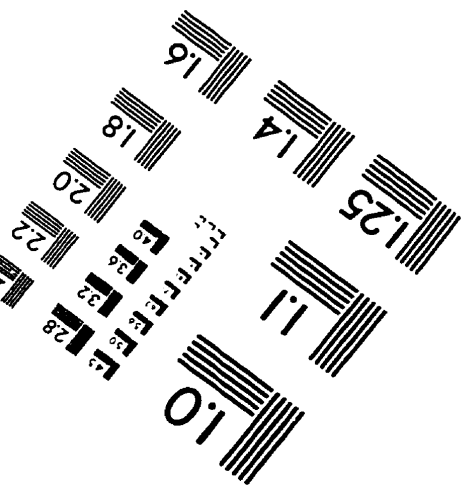
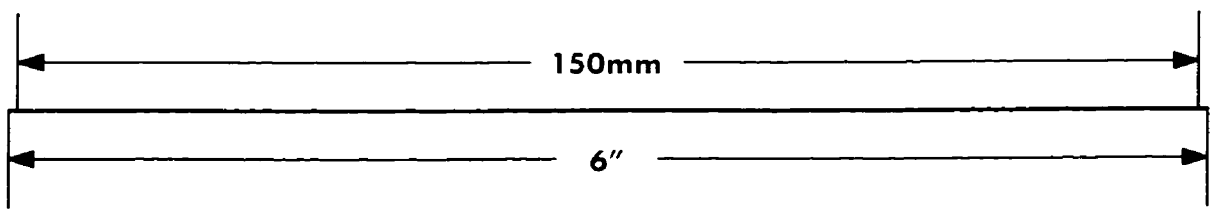
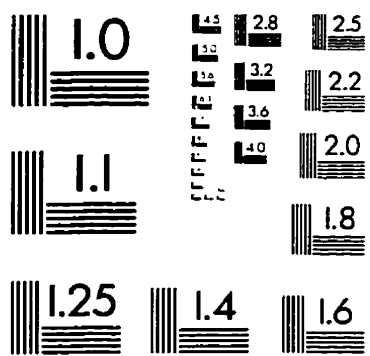
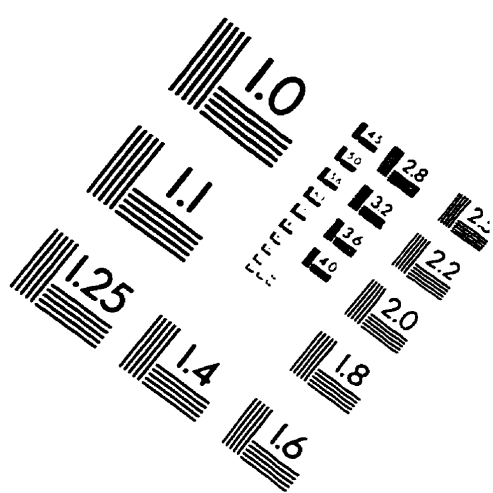
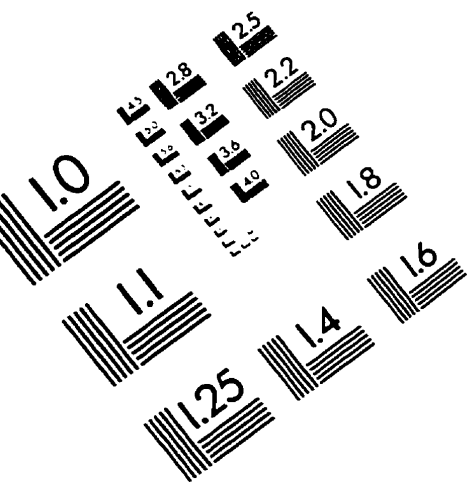
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