

## **ARE DETERGENTS REALLY CLEAN?**

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### **ABSTRACT**

The market of detergents is estimated to reach USD 205.2 Billion by 2025 with an aggravated yearly development rate (CAGR) of 4.9%. It is a product that is used in every household albeit their financial status in the society. The machine wash or automatic sales have been overpowered by the powder cleansers in this industry, with a 98% offer in the market. Be that as it may, a larger section of the society still prefers the non – automatic or the hand wash detergents. Even after that, the powder detergents dominate this section but only with a small percentage gap. The rest of the commitment originates from the bar detergents. Inside the machine-wash classification, the most astounding development has been given by the powder detergents with an astonishing CAGR of 9.5% since the early 2000s with the other subcategories being liquid detergents within the machine – wash class. Likewise, the hand-wash detergents have demonstrated a noteworthy development pace of 8.8% CAGR since 2005, which has added to the development in the general detergent industry. Given the research, a few issues have raised that points a question to the safety of utilizing these detergents. The main objective of this study was to raise awareness about the potential harms that these detergents are causing to the normal population without them having any clue about it whatsoever. Since it's a staple item, people usually overlook the fine details of the product until and unless they are directly harmed by the product. The conclusion will lay down the facts that are derived from this research by following whether the detergent industry is causing any danger to society or not?

**Keywords:** Detergent Industry, Liquid Detergent, Potential Product, New Product Development, Organic Detergent, Biodegradable, Environment, Recyclable.

### **INTRODUCTION**

In the course of the most recent decade, India has developed hugely thus have the earnings of its kin, with a bigger lump of the Indian demography moving into urban territories looking for better and progressively worthwhile profession alternatives. With this coming, there has been a critical ascent in customer durables also, with the absolute earliest indications of this ascent being

appeared by those which satisfied the most fundamental of requirements, such as washing garments. Accordingly, there has been a flood of purchasers in the detergent industry, with an ever-increasing number of individuals purchasing washing machine detergents. In any case, this establishes just 20% of the populace. There is the remaining 80% of them, around 200 million family units, who still wash their clothes by hand.

Some purchasers have recently progressed from hand – wash to machine – wash. They will, in general, have a restricted budget to spend on detergents. Be that as it may, big names in the washing powder industry like P&G's Ariel and HUL's Surf, are evaluated high and are not ready to tap this portion of the purchasers. The newbies' consumers of the machine wash detergents would be subsequently hesitant to utilize these over the top and expensive detergents for each time they wash their clothes. With the above condition of the customer demography in the Indian washing powder industry, we accept that there could be a critical degree for built-up brands like P&G and HUL to reposition or expand a portion of their detergent lines to focus on this buyer section.

On a progressively explicit note, we mean to concentrate on the dangers of these detergents that the general population is facing currently. It is a product that comes in contact with people daily no matter how they wash their clothes. From hand washes to machine washes, all these procedures require some kind of detergent. The consumer has the right to pick the one that suits their needs in the best manner possible. There are a lot of factors that come in play when a general customer is deciding on which detergent to buy but one of the main factors is always overlooked. A large portion of our society is not aware of this factor only, i.e. that synthetic detergents can be harmful to them if they come in contact with it daily. A couple of indie brands are taking the initiative to launch organic detergents that are very mild regarding their chemical components. These detergents are more expensive as their manufacturing costs are high and these brands don't have the power and funds to produce them on the same levels of bigger brands like P&G. The hiked costs of these detergents are the main factor of them not being appealing to the middle and lower class societies. The big brands have the strength to fund this type of line of detergents where they can sell a detergent to the customer that is organic but is still priced affordably. But due to the lack of customer demands for the organic cleaners, these brands are not keen on taking initiatives like these as they are pretty comfortable with their current sales scenario which is bringing them a large profit without any extra efforts on their side.

#### Market Overview

The detergent industry in India comprises of two noteworthy classifications i.e., the hand-wash and the machine-wash classes. Powder cleansers and bar-cleanser structure a noteworthy part of the hand-wash segment. Be that as it may, in the machine-wash portion, the powder cleansers

and liquid cleansers are the fundamental sorts. The complete market of engineered cleansers was esteemed at about Rs 112 billion starting at 2012-13 with an exacerbated yearly development rate (CAGR) of 3%. As of now, the market of detergents is estimated to reach USD 205.2 Billion by 2025 with an aggravated yearly development rate (CAGR) of 4.9%. Out of this, the machine wash or the automatic sales has been ruled by powder cleansers, with a 98% offer in the market, which has a size of Rs. 18700 Million. Be that as it may, a lot greater portion of the market is the non-programmed or the hand-wash class, which has a size of Rs. 85466.8 Million and is additionally ruled by the powder cleansers however by a littler rate contrasted with the machine-wash class, about 68%. The rest of the commitment originates from the bar cleansers. Inside the machine-wash class, the most elevated development has been contributed by the powder cleansers, a CAGR of 9.5% since 2005, with the other sub-classification inside the machine-wash class being fluid cleansers. Likewise, the hand-wash cleansers have demonstrated a noteworthy development pace of 8.8% CAGR since 2005, which has added to the development in the detergent industry.

## **CLEANLINESS**

Tidiness has been a significant thought for individuals since civilization started, however, few see the connection among individual and ecological neatness. As per an antiquated Roman legend, detergents get its name after Mount Sapo. This is a place where animals were relinquished to appeal to the gods and other divine beings. The blend of liquefied animal fat and wooden remains that kept running down to the dirt soil close to the stream were utilized to simplify the washing process for ladies living in that region. As per the medical report Papyrus, cleanser making goes back to around 1500 BC, when a blend of animal fats and vegetable oils with soluble salts was utilized to shape a cleanser like material. In antiquated India as well, individuals utilized cleanser arrangements produced using plant or animal fats. Present-day innovation has prompted the production of manufactured detergents that have step by step supplanted soaps in the clothes washing process. The principal detergents were utilized mostly for hand dishwashing and fine texture washing. This was trailed by the advancement of all-purpose clothing detergents presented in the US in 1946. The current detergent market is a profoundly focused one where heaps of brands strive with one another to attract the customer's consideration. Each brand professes to clean whiter, bragging innovatively questionable terms, for example, battling granules, power pearls, and so on. Likewise, with numerous different nations, India also has an assorted scope of detergents accessible off the rack. The yearly utilization of detergent cleaners in India is in the size of a huge number of tones. The formal division, with its expanding capacity to impact shoppers through promotions, is quickly extending its piece of the overall industry. The presentation of little reasonable sachets is further advancing the market for detergents.

## **WHAT ARE DETERGENTS?**

Everyone needs to understand what detergents are and what they are made of as detergents are a common household product that is used daily. Detergents are household unit synthetic cleaning mixes utilized for washing clothes and dishes. They contain wetting specialists and emulsifiers dependent on non-cleanser manufactured surfactants. Manufactured detergent powders are comprised of surface-active compounds, developers and fillers. Moreover, they contain added substances, for example, anti-reposition compounds, optical fiber brighteners (brightening agents), dye agents, blanching compounds, froth controllers, natural sequestering agents, chemicals, perfumes, and substances that direct thickness and guarantee the freshness of the material they are utilized on.

## **SOAP VS. DETERGENTS**

- Soaps are produced using common assets, for example, fats and oils and detergents are concoction mixes produced using engineered materials.
- The calcium and magnesium salts that are soaps cannot be dissolved in water and are insoluble, in contrast to detergents.
- Soaps don't promptly dissolve in hard water as washing detergents do. This property is because of the way that detergents respond to the water minerals prompting the formation of soaps or filth.

## **DETERGENTS AND OUR HEALTH**

An examination attempted to comprehend the Indian consumer's learning of the hurtful impacts of detergents on the wellbeing and condition demonstrated that 77.6 percent of respondents had encountered some sort of skin irritation because of the utilization of detergents. The larger part of this population was dhobis and provincial women. Conventional clothing detergents leave substance buildups on garments. These enter our bodies either through the skin or lungs. They cause numerous medical issues, including sensitivities, skin diseases and, in uncommon cases, malignant growth. The scents utilized in clothing detergents can demonstrate unfavorably susceptible and be profoundly aggravating to the lungs, causing genuine health impacts on individuals with asthma or chronic heart issues.

Nonstop and over the top contact of the skin to detergents prompt drying, fissuring and spotting of the keratin layer. This can lead to expanded porousness, which causes sensitization, which with time may form into dermatitis. The older population is increasingly defenseless to diseases that can further lead to skin issues like eczema.

## **DO DETERGENTS CONTRIBUTE TO WATER POLLUTION?**

Phosphates are the major cause of water contamination which, thus, accounts straightforwardly for 42 percent of human and animal ailments. As per Prof Narinder K. Kauschik, Professor Emeritus for natural science at the Canadian University of Guelph, the primary issue with phosphate-based cleaners is that they advance the eutrophication of oceanic habitats.

Prof Kauschik uncovers that in Canada and numerous cities of USA public pressure has prompted the guideline of phosphates in detergents since the mid-1970s. As indicated by him, these nations have burned through \$8.5 billion during the 1970s to overhaul sewage treatment plants to expel inordinate phosphates. Canada effectively implemented fitting guidelines to control phosphate outflow into water frameworks by constraining the measure of phosphates in clothing cleansers to 0.5 percent.

## **PHOSPHATE CONTROL IN INDIA**

The Law of Environment Protection in India (1989) perceives phosphorus as a poison compound. Regardless of that, its use is on the ascent. In India, per capita utilization of cleansers in 1994 was 2.8 kg for each annum. This is anticipated to ascend to more than 4 kg/capita by 2005. As of now, the capital has been increased by more than twice. In provincial territories, the utilization of cleanser bars is required to grow 7-8 percent yearly. The figures are of concern since top-notch cleansers have as much as 35 percent STPP in them. Indeed, most clothing detergents in India are phosphate-based, however, there is no control or guideline for phosphate use in detergents. The way that the phosphates in these cleansers can cause eutrophication of conduits forecasts a troubling circumstance since these water bodies are the essential sources of water for a huge segment of the populace. Up until now, India's activity towards controlling propelled eutrophication has been tended to and managed uniquely through sewage treatment plants (STPs). Regardless of a few activity designs, the issue remains to a great extent overlooked. The ever increasing request of phosphate – loaded detergents in provincial regions is certain to heighten eutrophication of neighborhood water bodies that fill in as the essential water asset. Indeed, even metropolitan urban communities like Delhi, Calcutta, Mumbai, and Chennai are just mostly sewered. All the more explicitly, just 43 percent of class I urban areas and 12 percent of class II urban communities are sewered, of which just 37 percent of sewage is somewhat treated in class I urban areas and 5 percent in class II urban areas.

Research led by RakaSharan of IIT Kanpur on the Socio-statistic setting of detergent customers: A case of Kanpur (India) found an expansion in cleansers being utilized all through India. Dhobis, along with rural and urban ladies broadly use phosphate-containing detergents. There are different principles and guidelines like the law of Environmental Protection in India (1989), and

the Hazardous Waste Rules, which sort phosphine and phosphorus and its mixes as dangerous synthetic concoctions. Such guidelines, notwithstanding, are not connected to household detergents.

### **LABELING PREREQUISITES SET BY BIS**

The Bureau of Indian Standards (BIS) has set out the benchmarks for labeling the detergents in an ecofriendly manner in India. Particular regulations have been set to establish an Ecomark based on the safety, performance, and quality of the detergents in the market. The benchmarks' propose is to replace phosphates present in the detergents with an eco-friendly substitute. These regulations also shed pressure on the manufactures of detergents to use biodegradable ingredients while formulating the detergent. It is also suggested that the detergents should be packed with recyclable and biodegradable packaging.

In spite of the setting down of this Ecomark plan which empowers detergents that are environmentally friendly and free of any phosphates, not even a single manufacturer has come up with a detergent that complies with the Ecomark plan. As per Professor Kauschik, the industry has essentially undermined the said plan. As per the labeling prerequisites set by BIS, every package of any type of detergent should convey data on the name/grade of the material utilized, the source of production, and a disclaimer that quotes: Detergents can cause skin irritations. Avoid extended contact. Wash clothing and hands thoroughly after use". The info should convey information regarding the main ingredients utilized in the detergent solution as well.

A previous test conducted by the Consumer Voice on detergents demonstrated that only one out of the 14 chosen detergent brands followed the regulations set down by the BIS.

### **DETERGENT PACKAGING**

Detergents are usually packed in plastic pouches or containers. This is one of the biggest issues in the packaging department of any product in India. Plastic is used as it's a very durable material but the manufacturers pay very little attention to the pollution they are causing to the planet. The packaging field in India is one of the largest users of plastic as the most commonly used material for packaging is Plastic. More and more companies are coming with a variety of smaller packages of detergents, ranging from sachets to bigger packets. This is done to get the customer to try their products by using the smaller sachets. It seems cost-effective for the customers as they don't have to spend a lot of money if they want to experiment with new products. They can buy the sachets and then decide if they want to go for bigger packets of the same product. These techniques are applied by all the big detergent brands out there which feed into heaps of waste generation. A lot of bigger brands also offer multi-layer packaging to their customers to ensure

better safety of their products, but the problematic issue with this initiative is that it leads to an increased amount of plastic packaging. The worst part is, that most of these packing is not of the recyclable kind and end up filling landfills and causing pollution.

### **THE INDIAN DETERGENT INDUSTRY – IGNORING THEIR RESPONSIBILITIES LIKE THEY IGNORE THE BIS REGULATIONS**

The problems surrounding the environmental security and the regulations regarding the detergents usage should be acknowledged by the Indian detergent industry as soon as possible. A proactive way to decrease the environmental threats is the industry decreasing the dangerously high phosphate levels from the high number of 30 percent down to 5 percent. Industry delegates have declined to do as such on grounds that the measure of phosphate utilized in northern nations is higher when contrasted with that in India. What this disregards is that India depends just on sewage treatment plants (STPs) which are not completely utilitarian even in metropolitan urban areas, while in the northern nations, STPs are introduced for every other couple of households. The phosphate content in the detergent should also be presented to the customer, so at the end of the day, the decision of whether to use a product or not is completely in their hands. This is also a fundamental right of a consumer where they should know about the complete list of ingredients are going in the product they are using. The industry should also comply with the disclaimer policy where they give a fair warning to the customer about the dangers of using these detergents for a prolonged period. The detergent industry hasn't set any policies following these regulations as there is no legal and compulsory legislation. Fertilizers manure and detergents are the major sources of the extensive run – off of phosphates into water bodies. Discoveries demonstrate that, during the dry seasons, when the run-off from farming is nonexistent, and the run-off from manure is down to one - fifth out of the whole yearly rate, detergents are the main source of extra loading of rivers by a huge percentage of 7.3. Eutrophication can cause an immensely poisonous impact due to the low flow rates of water bodies during the dry seasons in India.

As indicated by Prof Kaushick, the strict guidelines in North America and Europe make it obligatory for the global detergent manufacturers to create cleansers with ostensible phosphate content (or even without phosphates at all). Similar organizations exonerate themselves of this obligation in India, where they produce cleansers with high phosphate ratio. The business fervently contradicts any guidelines of phosphate use in detergents. A detergent is termed as environment-friendly only when the manufacturers utilize lesser synthetic ingredients while formulating the detergents. The lethality of these detergents can be knocked way down if the companies use lesser compounds like fragrance, color, and whitening agents. In India, the customers give a lot of significance to the packaging of products which is why the detergent companies come up with more and more elaborative ways of packing their product. This is a

practice that should be severely decreased as this leads to an increased amount of environmental issues.

Nonpetrochemical surfactants or vegetable oil soap bars can be utilized instead of synthetic surfactants. Sodium bicarbonate and sodium citrate can be used instead of phosphates leading to a much healthier version of a detergent. The detergent manufacturers can also achieve a better formulation by adding less or none additives like colors and perfumes. One of the conventional options in contrast to detergents is known as reetha. Reetha is known for its washing properties and is also utilized in various shampoo formulations. There is also an option of making a homemade detergent utilizing soap and other cleaning articles. Utilizing soap is also another healthy alternative as it is made out of animal fat which makes it an exceptional cleanser due to its emulsifying properties, unlike general detergents. As soaps are salts of weaker acids, they can easily get transformed into free fatty acids from mineral acids. These free fatty acids have a lower solubility which is why the residue is known as a precipitate or soap scum. This leaves them ineffective in acidic water. The formation of these insoluble salts in hard water can be solved by combining them with chemicals easily available in almost all the households like washing soda. The combination of the basic compound with the salt can help one get better results while cleansing their clothes.

Detergents can never be clean from all the dangerous chemical compounds mixed with them. Likewise, detergent utilization can also not be all pollution-free. The most significant thing is that the customer should be informed about the pollutants in detergents and how even the smallest cleansing product cannot be pollution-free. By utilizing 'green detergents' that don't contain trivially added substances like aromas, shading and lighting up specialists and negligible bundling we can guarantee a cleaner situation.

## **CONCLUSIONS**

A huge percentage of the detergent using population is not aware of the perils of using these detergents for an extended period. Factors like mildness on hands, the vibrancy of colored clothes, fragrance present in the solution, convenience of usage, and the availability in market are more significant to the customers using hand wash or machine wash detergents. There is an ample number of opportunities for newer brands to introduce and launch newer detergents in the market. The customer base is not blindly loyal where they don't use any other brand of detergent at all. The detergent consumers these days believe in using whatever suits their needs the best and it shouldn't be a problem at all in getting them to try a new variant if the product has all the properties of a good detergent but with the organic or healthy formulation. The companies just need to make sure that the customers are well aware of the extra benefits of using a green



detergent which can give them an edge over all the big detergent brands in the market. There is a positioning gap in the current detergent market where there is an untapped opportunity for the newcomers in the detergent field as customers desperately need a machine washing detergent that falls into the affordable side of the spectrum, can be used for washing white and colored clothes both and has a good performance overall. These are a lot of factors to fulfill but with the right direction and resources, the companies can launch organic detergents which fulfill all the prerequisites mentioned above. The affordable brands like Fena, Ghari, and Rin have detergents that are priced nominally but all of them cannot be used in a semi-automatic or automatic washing machine. This is the reason why these customers need an affordable detergent that performs up to an adequate level. At the end of it all, it's a simple choice of supporting the environment. The detergent manufacturers can take the initiative by themselves of making healthier and less polluting detergent solutions so the earth can be safe from the toxic impacts of these harmful detergents. Similarly, the government can also be stricter in applying the safe detergent regulations so these companies are not able to wash their hands from their responsibilities of making an environment-friendly product. These type of initiatives can lead to companies producing green detergents without adding any extra or unnecessary additives like aroma, colors, and whitening agents while keeping their packaging minimalistic and biodegradable/recyclable. All these practices by the companies and the government can lead to a better environment that is beneficial for all the parties involved in the industry.

## **LIMITATIONS**

The results of this study cannot represent the entire general population. Due to restricted resources, this study is based on theoretical applications more than practical measures. There are still a lot of uncovered factors regarding the detergent industry which are out of the scope of this study. That is the reason that this study is not all-inclusive as there is still a huge portion of the population which either is not aware of the harms of using detergent or don't use detergents at all. The results of this study cannot represent all the groups residing in India without previous testing in different cultural situations. This study can be used in the future by helping other researchers in knowing which aspects to uncover and what questions to ask. Other researchers can expand and boost the outcomes of this study by examining all the studies and regions related to the detergent industry which were left remaining in the current study.

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