

Ecological And Economic Impact Of The Use Of Disposable Diapers

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Summary:

The diaper garment of common and necessary use used since very remote times to collect human waste and currently also pets, has gone through several stages being currently a disposable product, very comfortable and practical however it is very important to consider the costs for the use of this garment and that can affect the family economy and also in ecological impact since a diaper can take years to biodegrade with environmental consequences.

Keywords : disposable diaper, biodegradation, economic impact, ecology.

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I. Introduction:

The diaper, a necessary garment used since ancient times, has undergone great changes from very simple products such as leaves or animal skins, the simple cloth diaper and the modifications it has undergone to what we know today as ecological diapers. The use of disposable diapers is a custom in all socioeconomic levels since due to the apparent advantages it offers, its use has spread to very remote places, diapers have been created by sizes and increasingly offer advantages, a child uses an average of 6 diapers per day which represents an average of 10 kg of garbage per month, in Mexico, the report is an average of 5000 births per day, which represents 30,000 diapers in a single day and that this represents more than a ton and a half of garbage

Objective : The objective of this article is to make an analysis of the scope and affectation that occurs in the economic aspect at the family level and repercussions on the ecology at a general level due to the use of disposable diapers .

Definition: A diaper is an absorbent undergarment used to sanitize and avoid contamination of the environment due to waste from the body. Diaper comes from cloth or small piece of cloth.

II. History of Diapers:.

Marian Donovan is credited with creating a waterproof diaper which had a plastic cover and an absorbent cloth in 1946, who even patented it and started its sales on 5th Avenue in NY. Then, 10 years later, the project is a totally disposable diaper and he sells the patent to Victor Mills of Procter & Gamble.

Pampers attributes the invention to Mills, they even say that he invented it and tested it with his grandchildren, in the 50s, by the 60s Pampers spreads and reaches department stores, supermarkets and pharmacies. By the 70's they replaced the pins to hold the diaper with adhesive tapes and began to create sizes, by the 80's the material of the diapers converted liquids into gel and had a perfect fit on the legs, by the 90's they were in-ovo with ultra-thin diapers and ultra dry technology.¹

Some relate it as part of the achievements of the space race as a form of waste disposal.

Evolution of diapers: In various cultures such as Aztec, Egyptian and Roman, different materials such as leaves, fabrics or skins were used to cover the child, in 1970 cotton cloth diapers were used in different countries which consisted of rectangles that were folded in a special way.

The diapers are marketed worldwide by a variety of national and regional brands, including brands with a global presence such as Procter & Gamble's famed Pampers and Kimberly Clark's Huggies brands, as well as SCA's Baby Sens. Almost all supermarkets also have them with their own brand

. The commercialization of cloth diapers, which seemed non-existent during the 1980s and 1990s, has resurfaced since the 2000s, especially in online stores and organic stores.

. There are now cotton underwear designed to contain urine leakage. They are washable and reusable. They don't have the long-term injury problems of disposable diapers and are more environmentally friendly

Composition:

The outer liner is made of a layer of polyethylene, essentially the same material found in thin plastic, designed to cover food. The inner lining that touches the baby's skin is usually made of polypropylene, a common material also found in thermal underwear

Some brands strengthen the inner lining with aloe vera and vitamin E.

The absorbent center of the diaper contains wood pulp and superabsorbent polymers (chemical, natural or synthetic, formed by polymerization and consisting essentially of repeated structural units), usually sodium polyacrylate. Introduced in the early 1980s, sodium polyacrylate allowed diapers to be thinner and more effective at keeping the baby dry. This compound can absorb up to 30 times its weight in urine.

Diapers contain a small amount of fragrance between the absorbent center and the outer layers. Perfumes usually contain a citrus-scented component.²

Ecological impact :

What is the ecological impact is something that we must take into account although the disposable diaper is very comfortable in terms of use, remove and dispose of it does not wet, no leaks, different stages, no bad odors, protect the skin from moisture, among so many things, let's see another different point we consider of birth in the early stages a child uses an average of 6 diapers a day, dry boy diapers have a weight of around 20 grams and wet increase weight to about 50 grams per 6 gives us a total of 300 grams of garbage in a week generates more than 2 kg of garbage. In a month more or less 10 kg of garbage, according to INEGI, in 2020 1,629,211 births were registered and in 2021 a total of 1,912,178, this represents more than 5000 births per day in this year 2021, the states with the highest rate of registered births were Chiapas, Guerrero and Puebla.

Considering a national average of 5000 births and if we consider an expense of 6 diapers in a day for each newborn, we are talking about 30,000 diapers and this represents 1,500,000 grams of garbage or 1,500 kg, that is, about a ton and a half of garbage, and we can talk about other amounts if we have that in 2021 1,912,178 births are reported only on the first day of life 11,473,068 diapers and that at the end of the day represents 573,653,400 grams of garbage, or 573,653.40kg of garbage or more than 570 tons of garbage.

These figures are only in one day in our country Mexico, a ton and a half of garbage that does not go to a recycling process, ends up in landfills and according to the composition we mention a plastic cover where there are materials that take up to 500 years to degrade, currently there are ecoprotec diapers on the market which in their description do not say they are friendly to the planet since they only take 3 years to degrade, This sounds good but let's remember that we would have a daily production of more than a ton and a half of garbage, but this is only for newborns, but this adds every day a new birth which results in impressive amounts, and remember that as the stage changes, the grammage of the diapers increases 20 – 30 more grams plus the excreta ^{3,4}.

There are also data on the total number of diapers that a single child gets to use in the period while controlling sphincters and it is mentioned that it can be a figure greater than 5 thousand, since in a single year he will use approximately 2190, around 18 months according to his neurodevelopment he can control sphincters by this time he will have used on average 3285 diapers.

It is also worth mentioning that wood pulp is used in the production of diapers, which means the felling of many trees, which can also have a negative impact on the environment

Costs related to the use of disposable diapers:

In relation to the use of diapers, it is considered average consumption of 6 diapers per day, in a week 42 diapers will be used, it gives us a total of 180 diapers per month, and in a year: 365 days x 6 gives us a total of 2190 diapers. We did a search in self-service and online stores, pharmacy or supermarket chains and sales by free market and amazon making a quote of diapers in different stages, ranging from newborn to extra-large, jumbo or stages 6 and 7, I do not consider the name of the brands because it is not the objective of the work ,However, we find in the smallest for newborns the lowest price is 3 pesos, an intermediate one at 4.60 pesos and the most expensive in the smallest stage is quoted at 9.40 pesos each diaper if we see them in other terms we have a cost from 18 pesos per day to 27.60 and can reach up to 56 pesos per day, At the moment it doesn't have an impact, but if we take those costs to a week, we have 126.00, 193.20 to 392.00 pesos and if this is in a month we will have expenses of 540, 828.00 to 1680.00 pesos. Something very important per month they usually change stage then the cost increases, and the unit prices range from 4.80 to 8.40 which represents a cost per day from 28.8 to 50 with a monthly expense of 864.00 to 1500.00, and later another change of stage increases the cost a little more, the use

of trainer diaper represents a unit expense of 7.00 to 9.60 with a monthly expense of 1260.00 to 1728 pesos. The most expensive diaper is the little swimmers with a cost of 15.20 to 16.60 per piece. That they would certainly use it solely for swim class

Eco-friendly diapers :

They are generally cotton cloth diapers, with a very special design to adjust as required by the user through snaps that will allow an adjustment and can be used from newborns to one year or older, they use an insert that is the one that receives the fluids or an interchangeable cover of bamboo paper. Cotton fabric offers designs for boys or girls with eye-catching prints.

Costs per free market from 99 to 127 pesos according to diaper quality up to 250 pesos per piece, the roll of bamboo paper with 100 sheets a cost of 149.00 pesos, they also promote bags to dispose of diapers at 99 pesos per package. Those who question its use base it on the material, which is often not pure cotton, but combinations with rayon, which in the washing release very small microfibers that go down the drain and mean contamination and those particles can contaminate the water.

Cloth diapers :

Diapers have been part of the lives of many of us initially, the cotton cloths that were traditionally used and have evolved in their form and currently those cloth cloths with a decorated cover and an insert to absorb liquids and waste have given rise to what we currently know as ecological diapers. 5

Protecting our planet:

One proposal is to change disposable diapers for cloth diapers, which can be washed, calculating that in 30 active months the use of a baby's diaper requires about 25 cloth diapers.

In relation to disposable diapers to dispose of them, landfills are proposed where they are discarded and covered with layers of soil. Incineration is an option but it is recommended not only in the backyards of the houses but in special incinerated energy generators, home composting is not recommended.

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