

# The Nonsense of Plastic Straw Laws!

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## *CALIFORNIA'S PLASTIC STRAW LAW DOES ABSOLUTELY NOTHING FOR THE ENVIRONMENT*

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### Introduction

On 20 September 2018, Governor Jerry Brown signed Assembly Bill (AB) 1881 “Food Facilities: Single Use Plastic Straws” into law. The law becomes effective on 1 January 2019 and will prevent full-service restaurants from providing a plastic straw unless the customer specifically requests one.

Before we examine the impact of California’s new AB 1881 plastic straw law, let’s take a look at some of the environmental claims made by proponents of the plastic straw laws.

### Claims by Environmental Community

The Environmental Community has made a number of outrageous claims about plastic straws:

- 500 million straws used per day In the United States. (Bailey)
- Plastic Straws are one of the top 10 items collected in Ocean Cleanups. (Bailey)
- Straws are made from natural resources such as oil, natural gas, and coal which cannot be replaced once depleted. (Bailey)
- Straws are only used for an average of 20 minutes before being discarded. (Bailey)
- Media cites inaccurate statistic on plastic straw weight.
- Plastic straws harm the environment and marine wildlife.

### 500 million straws used per day in the United States?

“How many plastic straws do Americans use every day?” was a question asked by 9-year old Milo Cress. He started a project called “Be Straw Free” and called a handful of straw manufacturers in the United States to get estimates of how many straws are used per day. Through his research he estimated that Americans use about 500 million straws daily. (Langone, 2018)

While Cress has received criticism, particularly for his 500 million statistic, the “Be Straw Free” movement started when he was at a restaurant with a friend and noticed other people taking the straws out of their drink without ever using them. He considered this a waste. He talked to the local restaurant and asked them to adopt a policy to “offer first.” It turned out to save money and make people more aware of the plastic they use. (Connor, 2018)

The environmental movement has adopted 9-year old Milo Cress’s estimate of 500 million straws per day. No independent study was conducted to corroborate this estimate. For the environmental community, the bigger the number, even if not correct, the greater the “perceived” negative impact on the environment by the public. While the environmental community and the news media for the most part accept the estimate, there is some confusion and some contrary estimates.

In an article, author Tracey Bailey, claims “Over 500 million straws are used daily **worldwide** for an average of 20 minutes before being discarded.” (Bailey) [**Bold mine**] So which is it? 500 million per day in the United States only or is it 500 million per day worldwide?

A foodservice disposables research firm, **Technomic**, estimated that in 2017 approximately 63 billion straws were used in the United States per year in the food service industry, which includes restaurants, coffee shops, fast food chains, convenience stores, and cafeterias in hospitals, nursing homes and schools. (Chokshi, 2018) That is about 170-175 million straws per day. (Wise & Hroncich, 2018) If you divide 63 billion straws per year by 365 days, you get 172.6 million per day.

Another market research firm, **Freedonia Group**, estimated that the nation used about 390 million straws per day or 142 billion straws per year. (Chokshi, 2018)

The **Foodservice Packaging Institute**, an 85-year-old trade association, estimates that fewer than 250 million straws are used each day. (Chokshi, 2018)

Let’s face it, NO one knows how many straws are used in the United States per day or per year. The estimates are all over the place.

## Plastic Straws are one of the top 10 items collected in Ocean Cleanups

The Ocean Conservancy in their report entitled “Building a Clean Swell” reported that 144,464 “straws and stirrers” were collected in the United States as part of the International Coastal Cleanup day in 2018.

To put this number in perspective, lets determine the number of straws and stirrers by the number of states:

$$\frac{144,464 \text{ Straws and Stirrers}}{50 \text{ States}} = 2,889 \text{ Straws and Stirrers per State}$$

The United States has a general coastline of **12,383 miles**. The official estimate from the National Oceanic and Atmospheric Administration (NOAA) is **95,471 miles**. The latter includes “*shorelines of outer coast, offshore islands, sounds, bays, rivers, and creeks were included to the head of the tidewater or to a point where tidal waters narrow to a width of 100 feet. For the Great Lakes, the shoreline lengths were measured in 1970 by the International Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data.*” Using both of these numbers let us calculate the number of straws based upon per mile of coastline:

$$\frac{144,464 \text{ Straws and Stirrers}}{12,383 \text{ miles of coastline}} = 11.6 \text{ Straws and Stirrers per mile of coastline}$$

$$\frac{144,464 \text{ Straws and Stirrers}}{95,471 \text{ miles of coastline}} = 1.5 \text{ Straws and Stirrers per mile of coastline}$$

Based upon these numbers, one can conclude that on average between 1 and 12 straws and stirrers are found per mile of coastline. A statistic that hardly represents a national emergency that requires action against the distribution and use of plastic straws or stirrers.

The question that the environmental community never asks: "How did that straw or stirrer get there in the first place?" The answer to this question determines what can we do or not do about it. For example, there are five possibilities:

1. Litter as a result of recreational use of beaches and coastal areas.
2. Litter originating in the continental USA and conveyed to the ocean via storm drains and rivers.
3. Litter originating in foreign countries because of inadequate waste disposal and lack of modern storm drain infrastructure washed out to sea and conveyed by ocean currents to our shores.
4. Marine debris originating as flotsam or jetsam from ships.
5. Catastrophic events such as tsunamis, hurricanes, and other storm events that result in washing a lot of land-based material to the ocean.

Of the five possibilities listed above, items 3, 4, and 5 cannot be impacted by anything we can do. Item 2 is already being attacked by the Federal Clean Water Act which requires localities to install trash traps in all storm drains that drain into rivers and the ocean. Therefore, only item 1 is where something can be done. And we have through anti-litter signs and laws. Yet we keep finding litter on the beach that gets left behind.

The question of where the straw or stirrer originated and how it got on the beach is an important question, because if the majority of these straws and stirrers did not originate from the U.S. Mainland then all of our efforts to limit usage of straws and stirrers will yield NO meaningful results.

### **What Natural Resources are used to make Straws?**

A straw is a tube used for sucking up a beverage. (Merriam-Webster, 2018) The original paper straw was invented and patented in 1888 by Marvin Stone. (Mooney, 2018) These straws were made from wax-coated paper which was coiled around a form and secured with an adhesive. The wax coating was important to keep the paper from absorbing the liquid. Obviously, these straws had a limited lifetime and eventually became soggy and useless. (Schueller, 2018) In 1906 a machine was invented to roll the straws instead of rolling them by hand. As a result, the straw took off in popularity. (Bubba, 2018) In the 1960s, paper straws were largely replaced by plastic straws made from polypropylene plastic. (Schueller, 2018)

*“Polypropylene is a resin made by polymerizing, or stringing together, molecules of a propylene gas. When a very large number of these molecules are chemically hooked together, they form this solid plastic material. Polypropylene was first developed in the mid-1950s and has many properties, which make it suitable for use in straw manufacturing. This resin is light-weight, has fair abrasion resistance, good dimensional stability, and good surface hardness. ... Most importantly for this application, it has good thermoplastic properties. This means it can be melted, formed into various shapes and, upon reheating, can be melted and molded again. Another key attribute of this plastic is that it is safe for contact with food and beverage.” (Schueller, 2018)*

Polypropylene is made from liquid or gaseous propene which is derived from the distillation of hydrocarbon fuels and then combined with catalysts to produce plastic. (Reference, 2018) (Creative Mechanism, 2016)

### **Straws are used only for an Average of 20 minutes?**

Most articles make a statement that plastic straws are used on average for 20 minutes and plastic stirrers about 4 seconds. (Mallos, 2018) None of the articles that cite these numbers identify the source of this statistic.

The statistic is often used to compare the brief use of single-use straw against the hundreds of years that straw will survive in the **landfill** and perhaps never decompose. That talking point is in almost all articles opposed to plastic straw use. Those who promote this talking point fail to realize that the raw materials, oil and natural gas, from which products plastic straws are made, were in the ground for thousands if not millions of years. So, all that we are doing is putting back into the ground (e.g. landfill) what we extracted from it in the first place, but we put it back in a different and more stable form. (van Leeuwen, 2014)

### **Media articles cite inaccurate statistic on plastic straw weight**

The Environmental Community often states that the overriding goal of the plastic straw laws is to reduce the quantity of plastic in the environment and that single-use straws used by consumers will save non-renewable resources. But how much plastic is really used by plastic straws?

Straws come in various sizes from 5.75” to 10.25” with a variety of diameters from 0.14” to 0.47”. Since the manufacture and distribution of the various straw sizes is unknown, it is impossible to identify the most commonly used straw size with its corresponding weight. Knowing the weight of the most commonly used straw will assist us to determine how much plastic are we really talking about.

“Straws on average weigh so little — about one sixty-seventh of an ounce or .42 grams — that all those billions of straws add up to only about 2,000 tons of the nearly 9 million tons of plastic waste that yearly hits the waters.” (Borenstein, 2018)

**An internet search for the “average weight of a plastic straw” produces an incorrect result of 0.42 grams. Many environmental articles on plastic straws also cite this incorrect number. What this means is that most writers on environmental issues never researched where the number came from, and if they did, did not understand what they were reading, and what that number meant; nor, did they do any independent weight measurements.**

**The average weight of 0.42 grams for a #14 straw is incorrect.** The number was obtained from a study that cut the end of the straw at approximately 30° angle and used the straw as a scoop to pick up chemicals in a laboratory to reduce the risk of cross contamination during laboratory experiments instead of using more expensive spatulas. The 0.4208 grams referred to the amount of material picked up by the straw and not the weight of the straw. (Lobuono, Turano, & Kirschenbaum, 2014) Therefore, 0.42 grams weight cannot be used to calculate the total weight of straws manufactured or used in the United States.

I measured a quantity of ten 8” straws which weighed 0.4 oz using a postal scale or 0.04 ounce or 1 gram per straw. Using this 8” straw with its 0.04 oz. weight, we can calculate the number of tons of straws used for the different quantity estimates discussed above.

**Table 1. Weight of Straws per day**

<b>Straws (millions/day)</b>	<b>Estimated Weight Per Straw (oz)</b>	<b>Weight (lbs./day)</b>	<b>Weight (tons/day)</b>
<b>172.5</b>	0.04	431,250	215.6
<b>250.0</b>	0.04	625,000	312.5
<b>390.0</b>	0.04	972,500	486.3
<b>500.0</b>	0.04	1,250,000	625.0

In 2013, about 299 million tons of plastic were produced worldwide. If you take the worst-case number from Table 1, 625 tons of plastic straws per day, multiply that by 365 days per year and divide that by 299 million tons you get a fraction of 0.00076296 or about 0.076% per year. As you can see, plastic straws are only a tiny fraction of all plastic produced per year worldwide. (Gourmelon, 2015)

### **Plastic straws harm the environment and marine wildlife**

The main argument that environmentalist’s make is that plastic straws do not biodegrade and take hundreds of years to break down. In addition, they claim that thousands of straws end up in the ocean.

In fact, a scuba diver in Australia found 319 straws in a single 20-minute dive and the next day found another 294 in the same place. (Spark, 2017) What the article fails to mention, is where these straws came from? Did these straws originate from third-world countries lacking modern landfills and storm drain infrastructure or did these straws originate from the continent of Australia? The point is, did these straws originate from third world countries lacking modern landfill and storm drain infrastructure or from a modern country with state-of-the-art landfills and storm drains infrastructure?

The main argument made for harm to marine wildlife is finding a single sea turtle that had a straw stuck in its nostril. The sea turtle, an endangered species, was found by a team of scientists in Costa Rica who successfully dislodged the straw and released the turtle back into the ocean. The team filmed their efforts and the video has been seen by millions. (Spark, 2017)

### **AB 1881 “Food Facilities: Single Use Plastic Straws”**

Governor Jerry Brown signed AB 1881 “Food Facilities: Single Use Plastic Straws” into law on 20 September 2018. The law becomes effective on 1 January 2019. The law would prevent full-service restaurants from providing a plastic straw unless the customer requests one. The law defines a full-service restaurant where food is consumed on the premises and the following actions are undertaken by an employee of the establishment:

- The customer is escorted to an assigned seating area.
- The customer’s food and beverage orders are taken at the assigned seating area.
- The food and beverage orders are delivered directly to the consumer.
- Any requested items associated with the food or beverage order are brought to the consumer.
- The check is delivered directly to the consumer at the assigned eating area. (Calderon & Bloom, 2018)

Based on the definition of a full-service restaurant, the law specifically excludes fast food restaurants, cafeterias, and other establishments where you order your food at a counter, seat yourself, and either serve yourself or have the food brought to you. What does this mean? It means the law might reduce the use of a few straws at full-service restaurants – where 100% of the “used” straws are disposed of in the trash and end up in the landfill. This means that the AB 1881, by itself, has no impact on decreasing the quantity of straws ending up in the environment. After all, that straw found on the beach is more likely to come from a fast food restaurant than a full-service restaurant.

**California’s AB 1881 “Food Facilities: Single Use Plastic Straws” law is much ado about nothing. The law will save a few plastic straws in full-service restaurants and will have no effect on the distribution and use of plastic straws from fast food restaurants, cafeterias, and self-service restaurants. The law will have NO impact on the environment.**

The new law does have fines built in for restaurants that violate the provisions of this law. The first two violations will result in a notice of violation and any subsequent violations are punishable by a fine of \$25 per day for a maximum of \$300 annually.

Another paragraph states: “Nothing in this section shall prevent a city, county, city and county, or other local public agency from adopting and implementing an ordinance or rule that would further restrict a full-service restaurant from providing a single-use plastic straw to a consumer.” This paragraph allows local jurisdictions to pass ordinances further restricting or even banning the use and distribution of plastic straws in full-service restaurants or even other establishments. Some local jurisdictions have already done so.

## Conclusion

California’s AB 1881 only reduces plastic straw use in full-service restaurants by customers who choose not to ask for a straw. Most customers would likely ask for one. The full-service restaurant might save some dollars by not giving all their customers straws with their drinks, but customers who choose to use straws, those straws are disposed of in the trash and will end up in the landfill and will never end up in the environment of have a negative impact on wildlife.

The best one can say for California’s misguided law is that it will encourage some customers to forgo using a straw. But the law, without more restrictive local ordinances, will DO ABSOLUTELY NOTHING for the environment nor prevent straws from being littered and negatively affecting wildlife.

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