

**Natural Resources
Committee**

Vice-Chair
Flora, Heath

Members
Chau, Ed
Eggman, Susan Talamantes
Garcia, Cristina
Limón, Monique
Mathis, Devon J.
McCarty, Kevin
Muratsuchi, Al
Stone, Mark

California State Assembly

NATURAL RESOURCES AND SELECT COMMITTEE ON WASTE REDUCTION AND RECYCLING



ASSEMBLY MEMBERS FRIEDMAN AND MCCARTY CHAIRS

**Select Committee
Members**

Aguiar-Curry, Cecilia M.
Calderon, Ian C.
Eggman, Susan Talamantes
Gonzalez, Lorena
Irwin, Jacqui
Oberholte, Jay
Stone, Mark
Ting, Philip Y.

INFORMATIONAL HEARING

Monday, November 16, 2020
2 p.m. -- State Capitol, Room 4202

SUBJECT: Plastic in California: Impacts on Communities and the Environment

Background

Plastic is everywhere. From the highest mountain on earth to the deepest parts of the sea, plastic pollutes. Plastic has become one of the world's most urgent environmental challenges. Production has continued to increase rapidly over the last several decades, and far outpaces our capacity to manage it. In 1950, 2.3 million tons of plastic were generated. By 2015, that had ballooned to 448 million metric tons. Half of all plastic ever created was manufactured in the last 15 years. By 2050, production is expected to triple current production and account for one-fifth of global oil production.

Production

While the conversation around plastic has focused on its end of life, plastic pollution starts with fossil fuel extraction, and continues through manufacturing, transportation, usage, and finally disposal. Hundreds of petrochemical facilities throughout the United States create the pellets used in the production of plastic products. About 14% of oil is used in petrochemical manufacturing, a precursor to producing plastic. By 2050, it is predicted to account for 50% of oil and fracked gas demand growth. California ranks third in the nation in oil refining capacity; our 17 refineries have a combined capacity of nearly two million barrels per day.

Oil drilling and refining disproportionately impact low-income communities of color. In the United States, about 56% of the people who live within three kilometers of a large commercial hazardous waste facility are people of color. In California, that figure soars to 81%. In the Los Angeles area, over 580,000 people live within five blocks of an active oil or gas well. Every step in the production of plastic, from extraction to manufacturing, impacts air and water quality and human health.

Ocean Plastic

Plastics are estimated to comprise 60-80% of all marine debris and 90% of all floating debris. According to the California Coastal Commission, the primary source of ocean plastic pollution is urban runoff (i.e., litter). An estimated 8 million metric tons of plastic waste enters the world's oceans annually. By 2040, that number is expected to triple to 24 million metric tons. By 2050, there will be more plastic than fish in the ocean by weight if we keep producing, and failing to properly manage, plastics at predicted rates, according to the World Economic Forum.

Ocean plastic pollution is driven by ocean currents and accumulates in certain areas throughout the ocean. The North Pacific Central Gyre is the ultimate destination for much of the marine debris originating from the California coast. However, plastic generated in California pollutes oceans across the globe, as bales of plastic collected for recycling are exported for processing and recycling. The plastic with value is collected and recycled, and the rest is discarded or incinerated. In countries with inadequate waste management systems, this plastic enters waterways and flows to the ocean. Approximately 150 million metric tons of plastic is already circulating in the marine environment.

Plastic ocean pollution breaks down into small plastic particles (i.e., microplastics) due to sunlight, wind, and waves. These plastic pieces are confused with small fish, plankton, or krill and ingested by birds and marine animals. Over 600 marine animal species have been negatively affected by ingesting plastic worldwide. Scientists at the Australian Research Council Centre of Excellence for Coral Reef Studies at James Cook University found that corals are also ingesting small plastic particles, which remain in their small stomach cavities and impede their ability to consume and digest normal food, contributing to the death of coral reefs.

In addition to the physical impacts of plastic pollution, chemicals present in the ocean in trace amounts (e.g., from contaminated runoff and oil and chemical spills) bind to plastic particles where they enter and accumulate in the food chain.

Microplastic

Microplastic refers to plastic particles that are less than 5 millimeters in length (about the size of a sesame seed). They come from a variety of sources, generally from larger plastic debris that degrades into smaller and smaller pieces over time, and microfibers, which are small plastic fibers that are shed from polyester fabrics, such as polyester fleece, and from plastic-based textiles like upholstery and carpet.

Microplastics have become ubiquitous in the environment. They are floating in outdoor and indoor air, even in areas far from any identifiable source. The particles are small enough to be

carried by wind currents. Like all plastic in the environment, these particles accumulate toxins like pesticides, heavy metals, and other chemicals. A recent study conducted in 11 national parks found that over 1,000 metric tons (comparable to over 100 million plastic water bottles) fall on the country's western protected lands each year as dust and in rainfall. They make up a measurable portion of household dust. In the Pyrenees Mountains, scientists found a daily rate of 365 particles per square meter at an altitude of 4,500 feet. Plastic is now acting as an air pollutant. Humans are breathing plastic particles, and the science is lacking about the impact this may have on public health.

Microplastics are in our water, even making their way into our drinking water. In 2018, the State University of New York completed a study of 259 bottles of water from 11 different brands purchased in 19 locations in nine countries and found microplastics in 93%. It is unclear if the particles were in the water prior to bottling or if they entered the water during the bottling process. Regardless, plastic is also prevalent in tap water. Researchers at the State University of New York and the University of Minnesota tested 159 drinking water samples from cities and towns across five continents. Eighty-three percent of those samples worldwide contained microplastic. In the United States, 94% of the samples contained microplastic, including a sample collected from the United States Environmental Protection Agency headquarters. People ingest the fibers when they drink and eat foods prepared by using tap water. Again, we do not know how these particles impact human health.

Microplastics consumed by marine organisms make their way into the animals' tissues and are beginning to show up in the fish that humans eat. UC Davis and Hasanuddin University in Indonesia researchers sampled fish from fish markets in Makassar, Indonesia, Half Moon Bay, California, and Princeton, New Jersey. One-quarter of the fish sampled in all locations contained plastic. In California, 80% of the plastic debris in the fish consisted of microfibers.

Management

Currently, the responsibility to manage the proliferation of plastic in our waste stream falls on the state and local governments. An estimated 35 million tons of waste are disposed of in California's landfills annually. CalRecycle is tasked with diverting at least 75% of solid waste from landfills statewide by 2020. Local governments have been required to divert 50% of the waste generated within the jurisdiction from landfill disposal since 2000. AB 341 (Chesbro), Chapter 476, Statutes of 2011, requires commercial waste generators, including multi-family dwellings, to arrange for recycling services for the material they generate and requires local governments to implement commercial solid waste recycling programs designed to divert solid waste generated by businesses out of the landfill.

Plastic accounts for around 12% of California's disposed waste stream, or over 4.5 million tons. Three of the four most prevalent types of plastic in California's landfills are forms of plastic film, which includes items like agricultural mulch film, pallet wrapping, grocery bags, and trash bags. Recycling figures are harder to estimate, as California has only recently begun collecting data from recycling facilities, but it appears that less than 15% of the plastic generated in California is recycled.

Recycling plastic into new products is helpful, but not a solution. Recycling is generally only feasible for some of the more common, and least toxic, forms of plastic, like the kind used for beverage containers. Many forms of plastic are commonly treated with toxic flame retardants and plasticizers, which make them difficult to recycle. The abundance and variety of the types of plastic in our recycling system make it difficult to sort, and high contamination rates in bales of recycled plastic have caused many countries, including China, to stop accepting recycled plastic from the United States unless it meets stringent contamination rates. The most significant challenge to recycling remains its low scrap value and lack of market demand. When oil prices are low, recycled plastic cannot compete with virgin plastic in the marketplace.