
3rd Place Winners at
Peoria Unified District
Competition
Project Citizen:
Plastic Pollution
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Section One

What is Plastic?

Petroleum Oil is used in 99% of plastics.

Definition of Plastic:

Any of numerous organic synthetic or processed materials that are mostly thermoplastic or thermosetting polymers of high molecular weight and that can be made into objects, films, or filaments.

What Is It Made Of?

Plastic is made of different combinations of petro-chemical polymers.

The Main Bases

- PET (polyethylene terephthalate)
- HDPE (high-density polyethylene)
- PVC (polyvinyl chloride)
- LDPE (low-density polyethylene)
- Polypropylene
- Polystyrene

Chemical Add-Ins

Scientists have found Bisphenol A in more than 90 percent of Americans tested.

PFAS

- Have more than 12000 chemicals.
- Nicknamed “forever plastics” because of their persistence in the environment.

Flame Retardants

- Prevent delay or combustion
- Used mainly in construction materials.

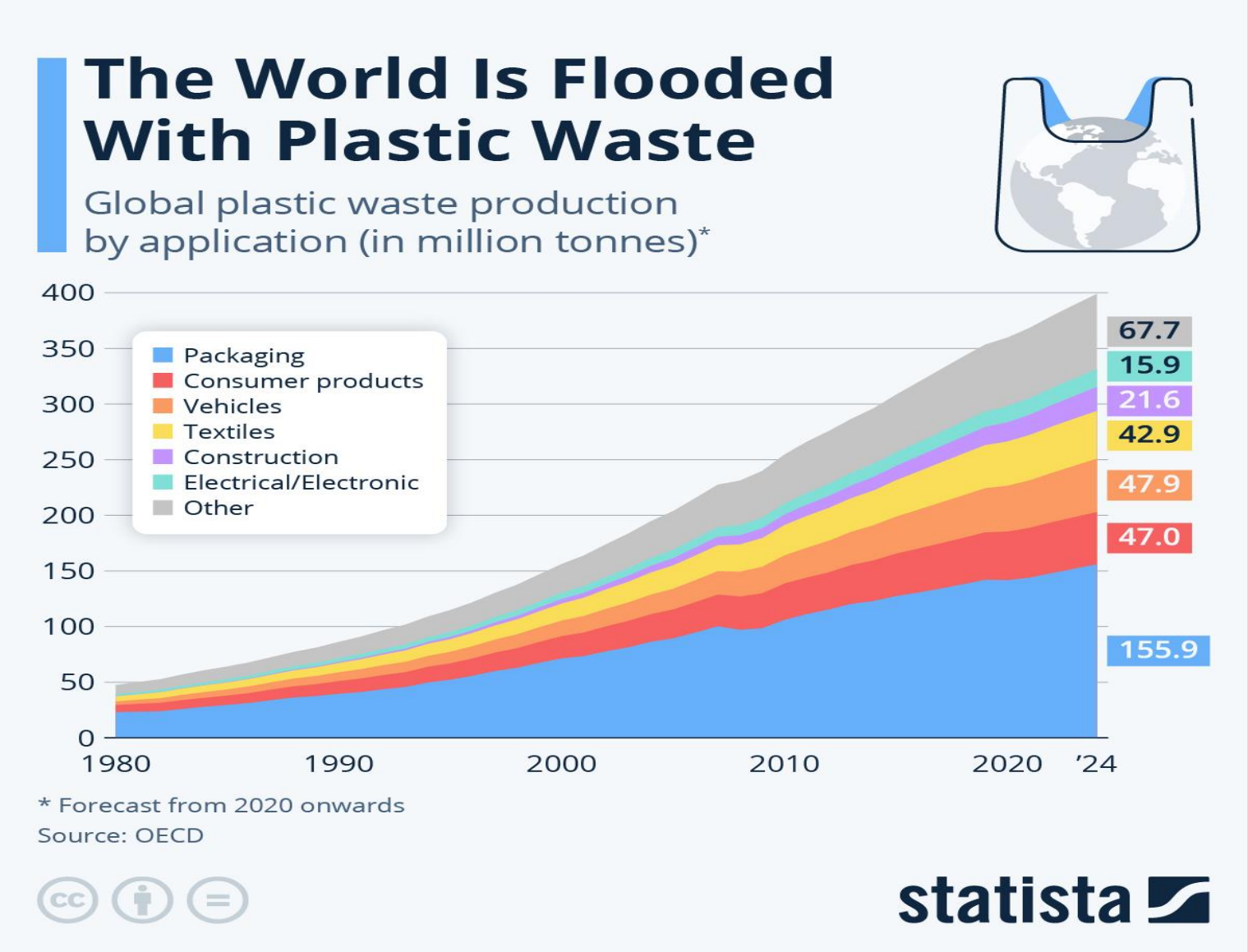
Bisphenols

- Used to make the plastic heat-resistant, hard, clear, and durable.
- Used a lot in basic things like food containers.

Phthalates

- Used mainly in PVC plastics.
- Increases flexibility and durability.
- Used commonly in hygiene and food containers.

Problem Identification

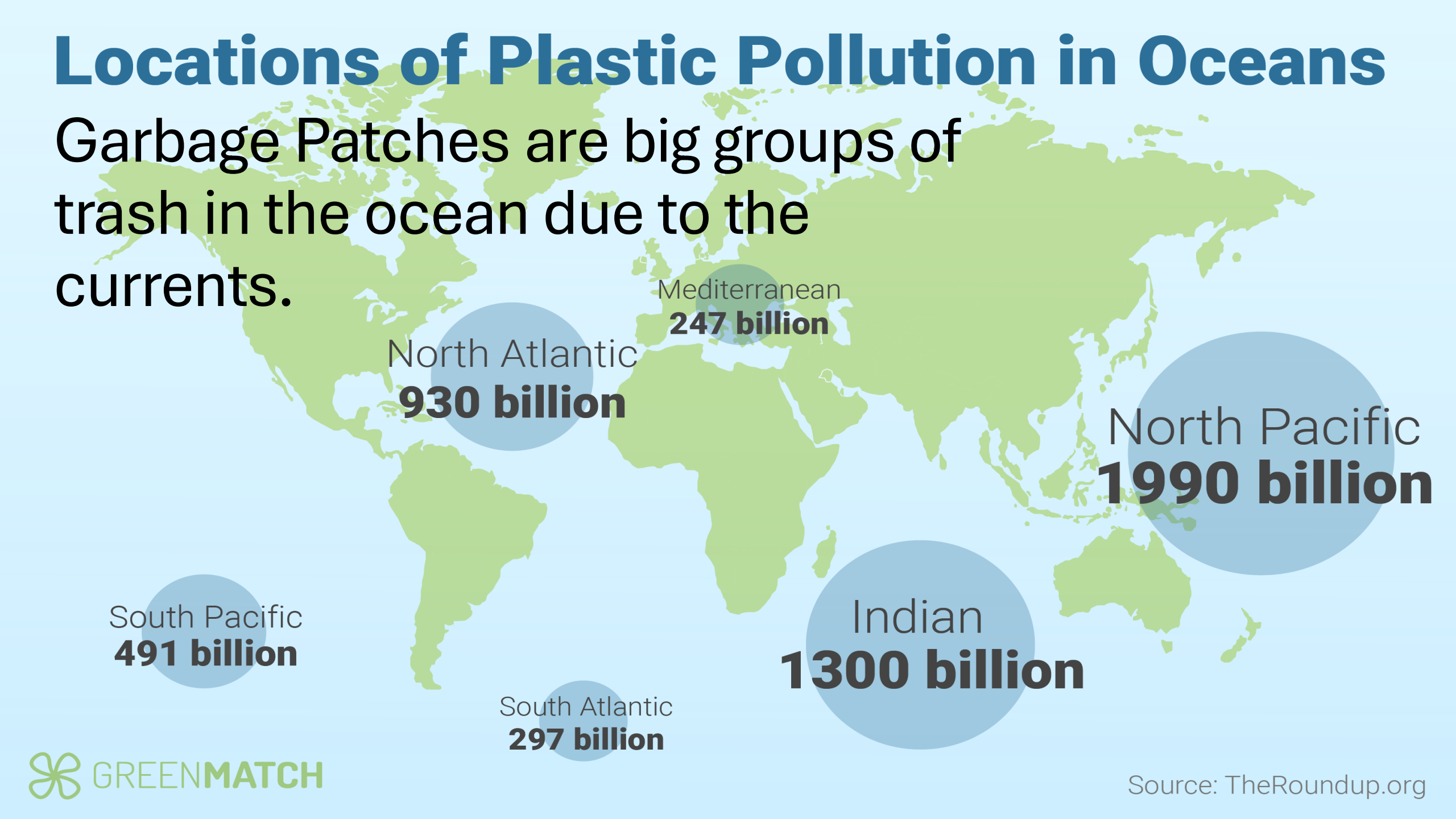


Did you know that plastic pollution has grown exponentially since the 1980's?

- Packaging – 155.9 M tons
- Other – 67.7 M tons
- Vehicles – 47.9 M tons
- Consumer Products – 47.0 M tons
- Textiles – 42.9 M tons
- Construction – 21.6 M tons
- Electrical - 15.9 M tons
- Total – 717.4 M tons

Locations of Plastic Pollution in Oceans

Garbage Patches are big groups of trash in the ocean due to the currents.



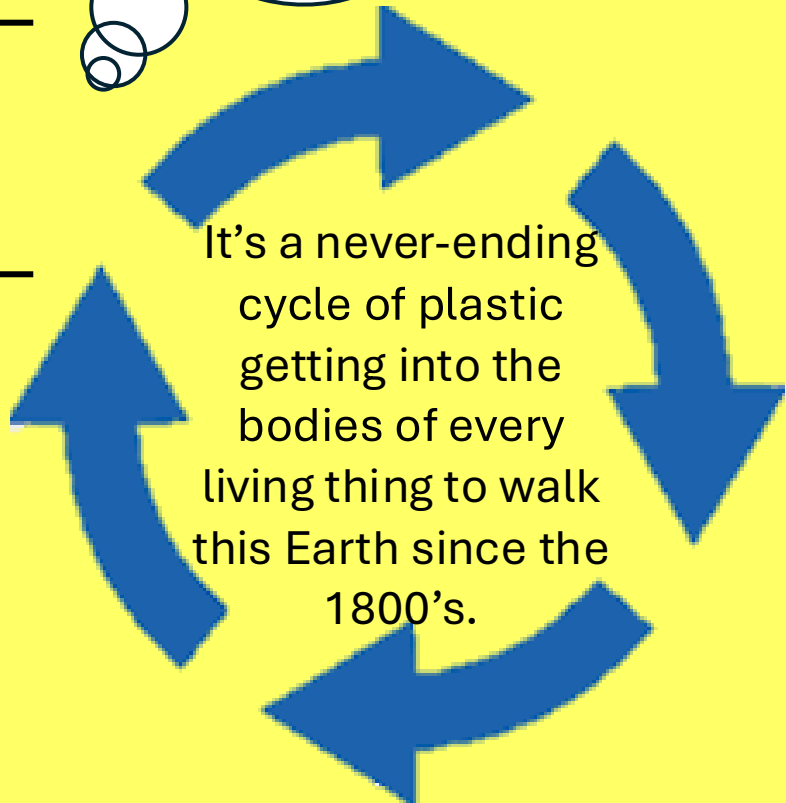
GREENMATCH

Source: TheRoundup.org

How Do the Chemicals get into our Bodies?

Water	• The micro-plastics and nano-plastics gets into the ocean and pollutes the water we drink.
Air	• The micro-plastics and nano-plastics get into the air by the wind blowing it around for us to breathe in.
Food	• The micro-plastics and nano-plastics get into our food by getting into the soil where the plants take in the plastic for us to eat. • Animals also get infected with the plastic pollution, which we eat. • Most of our food is packaged in plastic which contaminates it.

In the U.S. 94% of tap water tested had plastic in it!



What Does Plastic Pollution do to Your Body?

- Helps cause hepatocellular carcinoma, pancreatic cancer, pancreatic ductal adenocarcinoma, biliary tract cancer, and some endocrine-related cancers
- The chemicals have been found within our hearts, lungs, livers, spleens, kidneys, and brains
- One study recently found microplastics in the placentas of newborn babies
- Microplastics have also been known to affect the brains of babies and cause reproductive harm

"Chemicals in plastics were potentially associated with as many as 350,000 heart disease deaths globally in 2018."? (Elizabeth Weise)

Plastic pollution has been known to cause many different types of diseases, including cancer.

Between 400,000 and 1 million people in developing countries die annually from diseases and accidents linked to mismanaged plastic waste.

What is Being Done, Other Countries

Top 10 Countries Fighting Plastic Pollution: 1. Sweden 2. Germany 3. South Korea 4. Japan 5. Netherlands 6. Canada 7. Rwanda 8. Costa Rica 9. India 10. New Zealand

1. More than 95% of the total Sweden's plastic waste is either recycled or incinerated by their efficient waste management facility. While only 21% gets recycled or incinerated in the U.S.

What is Being Done, Other Countries

2. An overview of *Pfand* system in Germany, a deposit return scheme in the country for take-back of plastic bottles and containers shows that recycling has improved a lot. Compliance with environmental standards and advanced recycling facilities guarantee that more than 65% of German plastics are recycled.

What Is Being Done, Other Countries

3. South Korea is indeed determined to reduce plastics found in the environment through intensified waste sorting. People are expected to sort their garbage into different categories; additionally, fines are provided for all violators.

Many people don't think that plastic pollution is an issue we should be concerned about. However, there are many issues, and those issues can even affect the health of those who aren't even born yet as well as reproduction in general. This was stated by a trusted professional, Sherri Mason who has won awards for her research and teaches about this issue at Gannon University.

Government Policies

Arizona is not doing much other than our EPA's national recycling strategy:

- In 2024, the EPA completed a "Recycling Needs Survey and Assessment" to identify gaps in the U.S. recycling system and guide future investments.
- The EPA launched the Solid Waste Infrastructure for Recycling Grant Program and the Recycling Education and Outreach Grant Program to fund improvements in processing, sorting, and public education.

EPA is working for the nation
Not specifically Arizona…
And though this is something that affects more than one
nation we need to focus on one thing at a time
We plan to make sure that Arizona is being focused on.

The government, state and federal should be involved in this because this is a worldwide issue that doesn't just affect ordinary people, but everyone. If they aren't actively helping, they should at least be aware of this ongoing issue.

Section Two

EPR Policy

There are multiple policy alternatives for this problem, but one of the most significant ones is the Extended Producer Responsibility (EPR). EPR is a policy approach with far-reaching effects, including their idea to make packages sold on store shelves more recyclable and informing citizens about what and how to recycle.

EPR Policy

Pros:

- Increased recycling
- Increased collection rates
- Reduction in overall waste and management costs.
- Encourages producers to design better products
- Reduces waste in landfills and the environment.

Cons:

- Increases costs for consumers
- Packaged goods price to increase

Policy Alternative

Another policy working on this issue is “Pop Cycle”. This policy is working to reduce plastic pollution by selling art pieces, and other useful objects, that have been made from plastic.

Policy Alternative

Pros

A small percentage of the plastic that would otherwise be rotting and polluting in landfills is now being used in everyday objects.

Cons

- More plastic will continue to be manufactured
- Majority of that plastic will remain in landfills.

Colorado:

- A statewide EPR law called The Producer Responsibility Program for Statewide Recycling Act was passed in Colorado
- In this program producers must join a Producer Responsibility Organization that manages recycling programs on behalf of producers and is designed to expand recycling access.

Other States

Other States

Oregon

- One of the first EPR programs in the U.S. and its mostly focused on packaging and paper waste.
- It requires producers of packaging and paper to support recycling systems.
- Their goals for recycling rates include 24% by 2028, 50% by 2040, and 70% by 2050)

Other States

California:

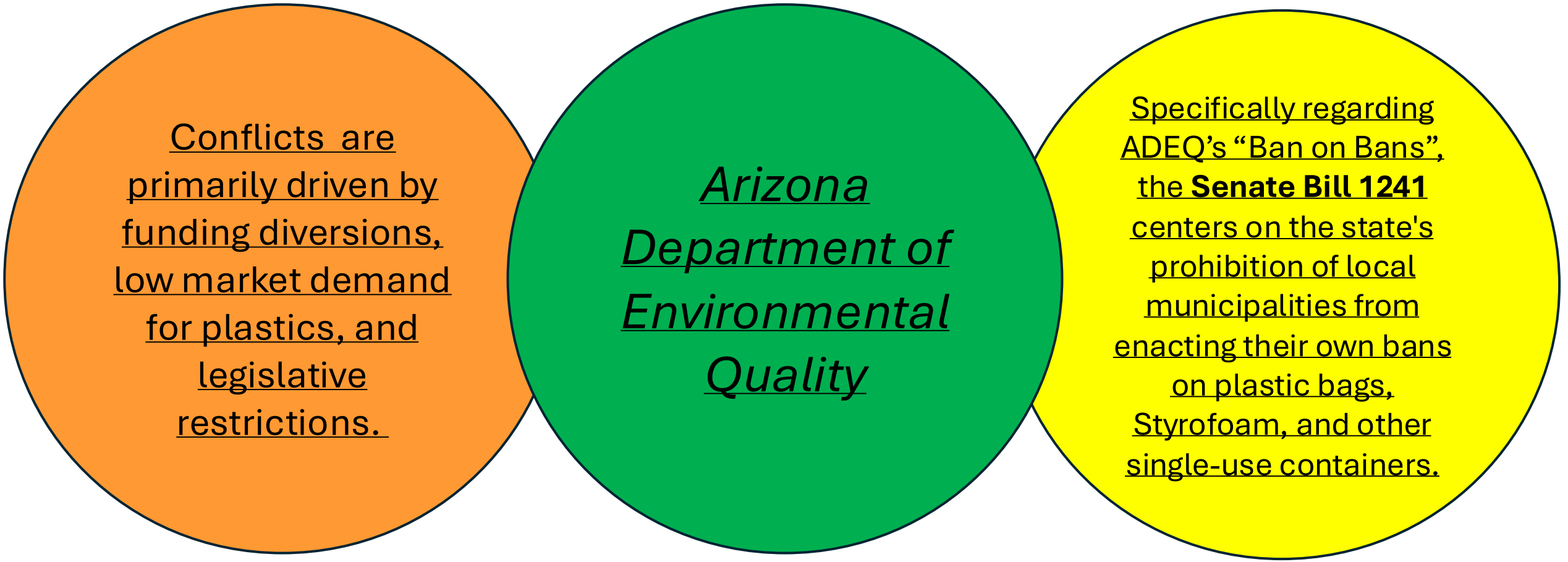
- Less than 9% of plastic is recycled in California, meaning most ends up in landfills or the ocean.
- California's effect into this problem is requiring producers that sell packaging to reduce the amount of single use plastic and ensure that all of it's recyclable or compostable.
- They have policies ensuring a 10 cent charge for plastic grocery bags to reduce usage
- They aim to achieve by 2032 25% less single use plastic packaging sold, 65% recycling rates of single use plastic packaging, and 100% of single use packaging to be recyclable and compostable.

Circular Impact: ADEQ's Recycling Grants at work

- Arizona's government especially the Arizona Department of Environment Quality (ADEQ) runs statewide recycling programs that include plastics.
- They work with partnerships that expand recycling efforts.
- They also work with education and resources for the public about recycling and waste reduction (the "Recycling Toolkit")
- ADEQ funds to Arizona communities, businesses, tribes, and organizations to improve recycling and reduce waste.
- Arizona currently does not have major statewide laws that ban or limit single use plastics.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Circular Impact: ADEQ's Recycling Grants at work



But Wait!

Even with what the ADEQ is doing, Arizona is still ranked one of the worst states when it comes to the environment.

We need to get our trash act together!

Section Three

The Best Policy Choice

- Ban plastics that are non-biodegradable or non-compostable for single use plastic
- Use substitutes for other plastics (ex: glass, paper)
- Reusable plastics that don’t hurt us as severely.
- Compost bins more easily accessible to the public
- Reimburse (Tax Credits) to small businesses and business chains
- Return and earn policy for recyclables (like in Germany)

THE TRUTH ABOUT PLASTIC WASTE

IT WOULD TAKE
67 SHIPS A YEAR
TO CLEAN UP
LESS THAN 1%
OF THE GREAT PACIFIC GARBAGE PATCH

91% OF THE WORLD'S PLASTIC WASTE IS NOT RECYCLED

EACH YEAR, MORE THAN
100,000
MARINE ANIMALS ARE KILLED BY OCEAN PLASTIC WASTE

GLOBAL PLASTIC POLLUTION IS FORECAST TO
DOUBLE
BY **2040**

EVERY DAY, THE EQUIVALENT OF OVER
2,000
GARBAGE TRUCKS OF PLASTIC IS DUMPED INTO OUR OCEANS, RIVERS, AND LAKES

PLASTIC PRODUCTION HAS
MORE THAN DOUBLED
IN THE LAST
TWO DECADES.

MORE PLASTIC WASTE IS
MISMANAGED AND LITTERED
THAN IS
COLLECTED FOR RECYCLING

HALF OF ALL PLASTIC IS USED JUST ONCE

ROUGHLY **85%** OF
SINGLE-USE PLASTIC PACKAGING ENDS UP IN
LANDFILLS OR AS UNREGULATED WASTE

ALMOST **2/3** OF PLASTIC WASTE COMES FROM APPLICATIONS WITH LIFESPANS OF
LESS THAN 5 YEARS:

PACKAGING **40%**
CONSUMER PRODUCTS **12%**
TEXTILES **11%**

akepa
thesustainableagency.com

Sources: OECD, Nordic Council of Ministers and Systemiq, Our World in Data, WEF, UN, UNEP, UNESCO, NOAA

Advantages

- Cleaner environment
- Less danger to natural habitats
- Protect wildlife
- Less pollution in oceans
- Less chemical exposure
- Reduces litter
- Prevents ecosystem damage
- Less microplastic ingestion
- Raises awareness about plastics and the effects it has on people
- Our medicines will be protected because the pills or vitamins won’t be contaminated by the plastic bottles
- Eliminates hard-to-recycle materials
- Lower greenhouse gas emissions

Disadvantages

- 400 million tons of plastic are produced each year, which cost around $3.7 trillion and 400 million tons of biodegradable alternatives cost 20% - 100% more.
- Producers of plastic bags will have a big decline in business
- Things like plastic bags take many years to decompose, therefore we will probably never be fully rid of plastic.
- Some bioplastics are not truly eco-friendly
- Compostable plastics can contaminate traditional plastic recycling streams
- Many compostable materials require specific high-temperature industrial facilities to break down

The Prices of Making Plastics

It cost $0.60 cents, up to 1.20$ per pound to make normal plastic. And with a cheaper production, there is less care about recycling which leads to lots of landfill, and ocean pollution. Also, the cost of regular plastic produced in just one year, including environmental and health damage exceeds 3.716 billion dollars.

For bio-plastics it usually is 2-7$ per kilogram, which makes them more expensive than the traditional petroleum-based plastics. Bio-plastics are pricier than your normal plastics because of the raw materials they use like corn, and sugar cane which is more money than the low costing fossil fuels.


Section Four

Action Plan

Make a club

Communicate to government officials such as Katie Hobbs and Councilman Edwards

Raise Awareness

- Clean-ups
- Bake sales
- Yard sales
- Parties/Workshops
- Website with petition/donations/information
- Social media sites (tick-tock, YouTube, Facebook, Instagram, etc.)
- Donation bins
- Talk to kids in schools

Contribute ideas and substitutes

Bamboo, paper, stainless steel, wood, biodegradable and compostable plastic, etc.
Natural is better!
Biodegradable plastics are made of plant parts that we do not eat or use at all, so why not put them to use?

Laws we want enacted

- We will petition the public and talk to Katie Hobbs and Kate Gallego to hopefully get these laws enacted.
- Ban non-biodegradable or compostable plastics
- Reimburse businesses producing plastic so they don't lose money
- Compost bins easily accessible at multiple public places and every house has a compost bin

Action Plan: Completed

1. Make a club:

We have made the E.P. (End Plastic) Club at Frontier Elementary and are going to carry it on to Sunrise Mountain High School

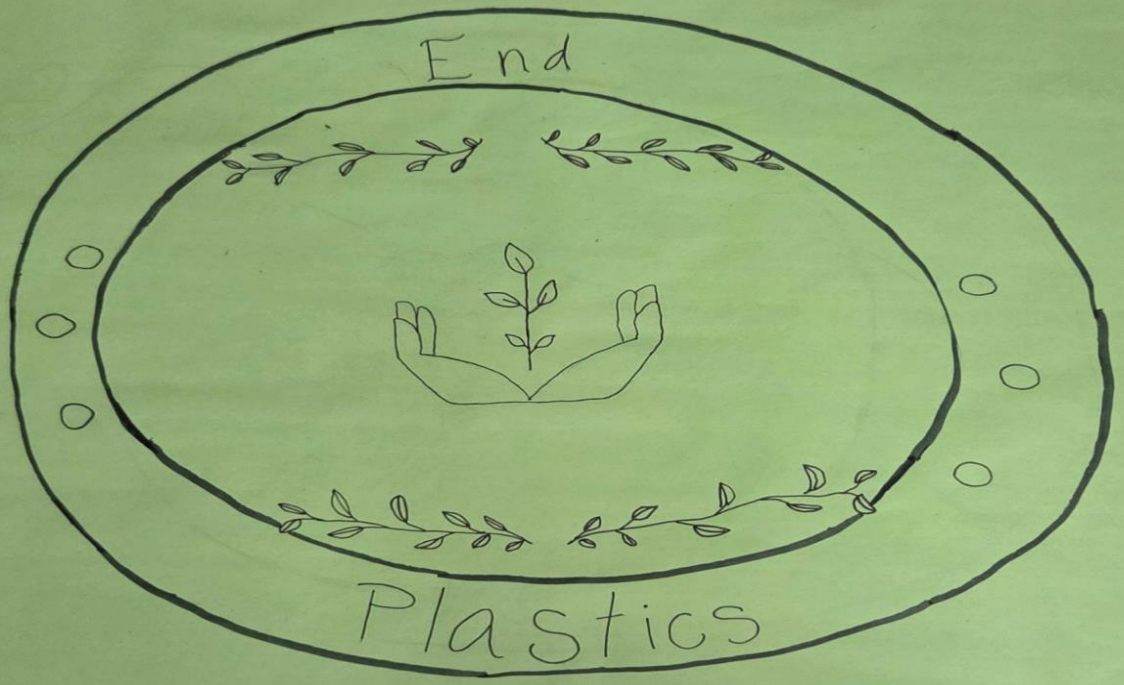
2. Raise Awareness:

We have started talking to students at our school and are in the process of planning many fundraiser and cleanups, so we can get the community putting toward this cause

3. Communicate to government Officials:

We have emailed Councilman Edwards regarding plastic reduction and seeing whether we can start at local government to stop this or if we need to go higher, eventually we will anyways

Join E.P. Today!

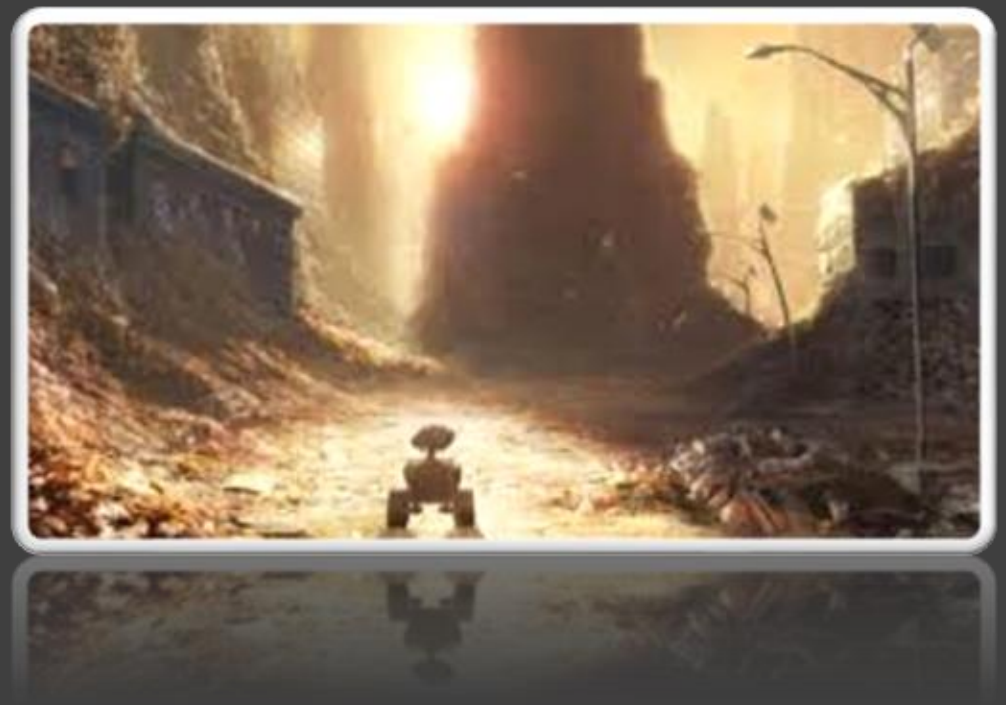


Let's Make a Difference

Action Plan: Next Steps (School)

- Go around classrooms to raise awareness and get people involved
- Meet with Councilman Jon Edwards about what we can do locally
- Sustainability check around Frontier Elementary
- Add compost bins around our school
- Get healthier substitutes for unnecessary plastic at school

Call to Action



Plastic was made to make life easier for businesses and anyone really. However, it has made life for many devastatingly worse, people die, animals die, ecosystems and habitats die, life as we know it will be gone, kind of like the movie “WALL-E”. We have made a club and started raising awareness to people and plan to continue doing so life doesn’t disintegrate.

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