



Refuse Plastics

Al Hodge

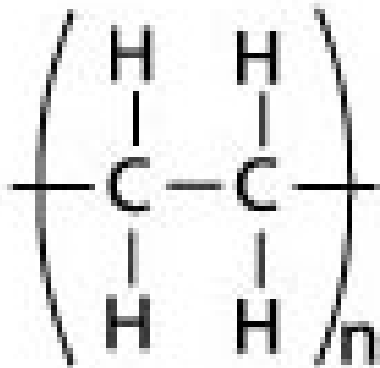
Hodge Plastics Group LLC

47 Year Veteran of the Plastics Industry

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- **PLASTICS THIRD LARGEST INDUSTRY IN USA**
 - **CONTRIBUTES \$451 BILLION ANNUALLY TO US ECONOMY**
 - **DOUBLED EVERY 15 YEARS SINCE 1950**
 - **EMPLOYEES MORE THAN 1 MILLION**
 - **16,000 PLASTIC FACILITIES IN THE USA**
 - **2020 PLASTICS GENERATED 42.7 MILLION METRIC TONS OF PRODUCT USA**
 - **286 LBS/PERSON ONLY 9% OVERALL RECYCLED**
 - **348 MILLION TONS PLASTICS GENERATED WORLDWIDE**

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- **PLASTICS ARE IN TWO FORMS**
 - **THERMOSETS**
 - **NON RECYCLABLE**
 - **THERMOPLASTICS**
 - **RECYCLABLE - MAYBE**
 - **45 DIFFERENT FAMILIES OF THERMOPLASTICS**
 - **POLYETHYLENE AND POLYETHYLENE TEREPHTHALATE (PET) MOST COMMON**

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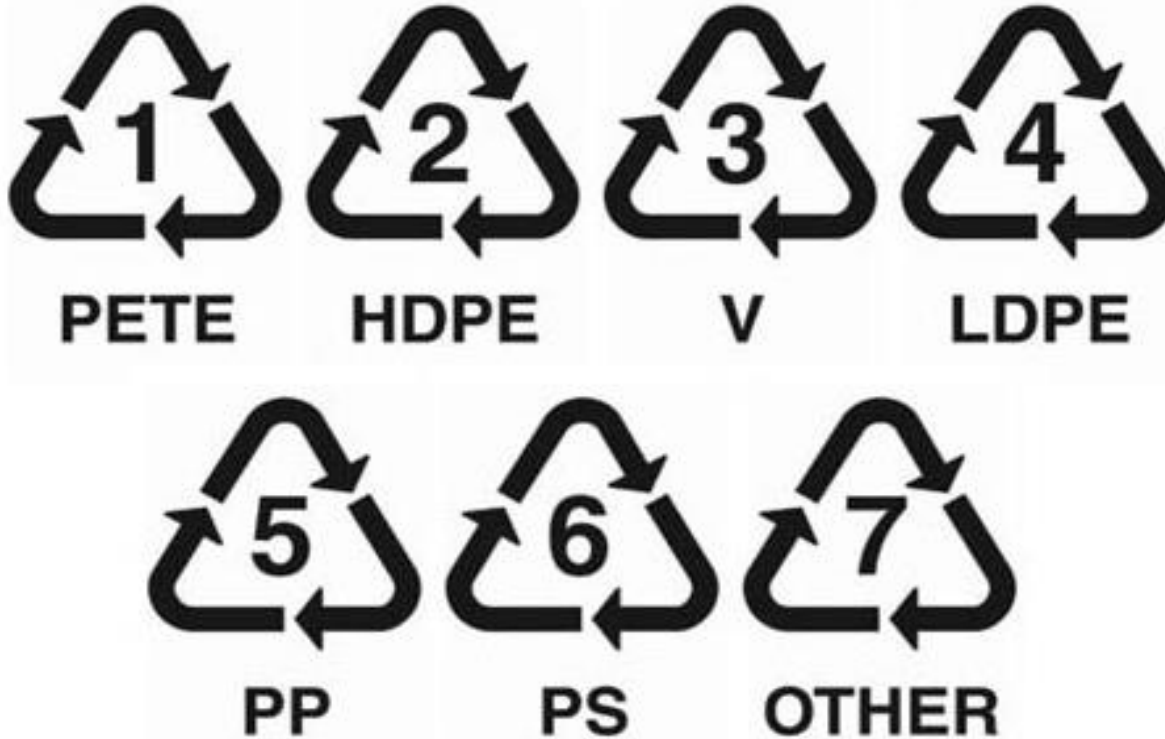
- **PLASTICS PETROLEUM BASED**
- **PLASTICS FINAL COST IN TOTAL PRODUCT QUITE LOW COMPARED TO METAL, GLASS, PAPER**
- **ENVIRONMENTALLY FRIENDLY TO PRODUCE COMPARED TO OTHER MATERIALS**
- **VERSATILE PRODUCT MOLDED, EXTRUDED, FORMED**
- **HALF OF PLASTIC PRODUCTION IS FOR SINGLE USE CONTAINERS**
 - **180 BILLION SINGLE USE TAKE OUT CONTAINERS USA 2020**
 - **14% COLLECTED FOR RECYCLING**

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UNIVERSAL RECYCLE SYMBOL ALL PRODUCTS – Created 1970

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RESIN CODES DEVELOPED 1988 BY SOCIETY OF PLASTICS INDUSTRY – ASTM

IMPROVE INDUSTRY IMAGE AND APPEAR ENVIRONMENTALLY RESPONSIVE

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- **PET POLYETHYLENE TEREPHTHALATE**
- **#1 PLASTIC PRODUCED AND CONSUMED**
 - Carpet
 - Films
 - Food packaging
 - Liquid's packaging (bottles)
 - Oven-ready food trays
 - Polyester - Clothing
 - Textiles





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HDPE HIGH DENSITY POLYETHYLENE

- Bottles
- Food Containers
- Grocery bags
- Composite lumber
- Picnic tables
- Plastic bags
- Motor oil Containers
- Pipe and other industrial applications



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- **POLYPROPYLENE**

- **Very Versatile Plastic**
 - **Used In Low Temperatures**
 - **Freezer for Ice cream**
 - **Microwavable**
 - **Yogurt Containers**
 - **Bottle Caps**
 - **Bottles – Syrup**
 - **Butter Containers**
 - **Clarified Containers for Juice**
 - **Take Out Food and or Reusable Containers**
- **Unfortunately – Seldom Recycled**
- **7.65 Million Metric Tons Produced 2019**





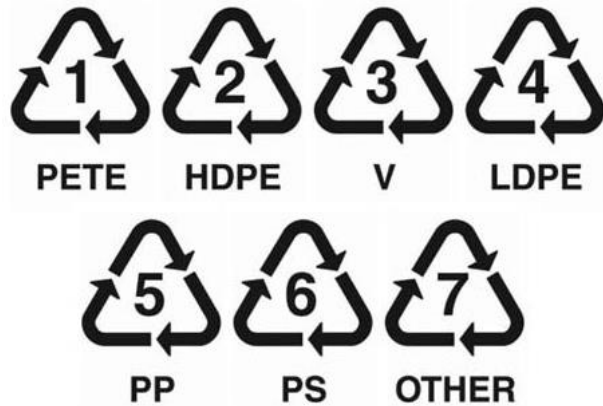
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POLYSTYRENE #6



- Plastic cutlery
- Protective packaging
- Plates, bowls, disposable trays
- Vending cups
- Solo Cup
- Thermal insulation
- Egg cartons
- Yogurt containers
- Seldom recycled- no market

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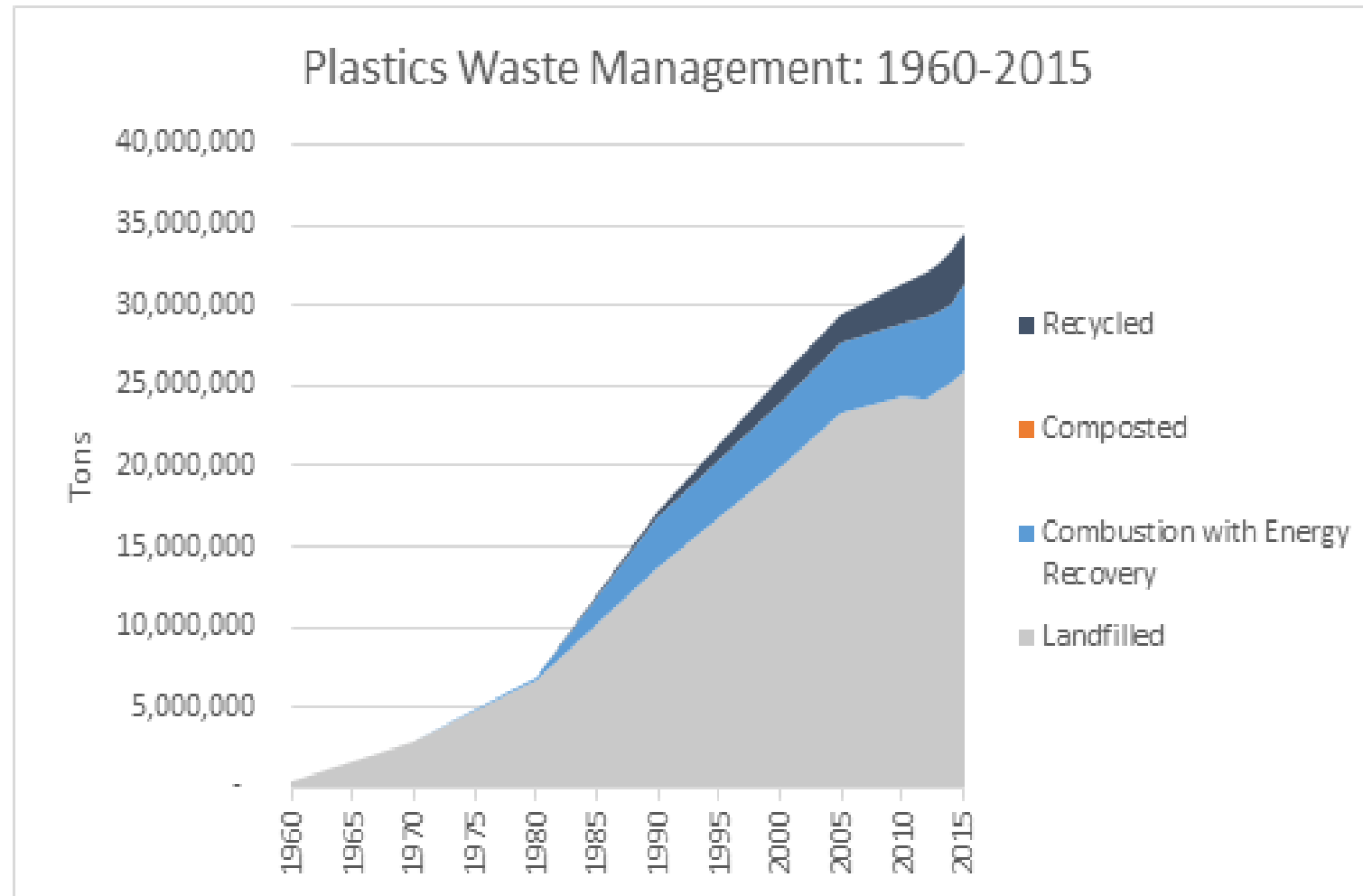


- **#3, #4, #6, #7 Have No Markets For Recycle**
- **59% of USA Households Have Recycle Services**
- **94% Americans Favor Recycling**
- **9% of Plastics Are Being Recycled**
- **34.7% of All Waste Gets Recycled**

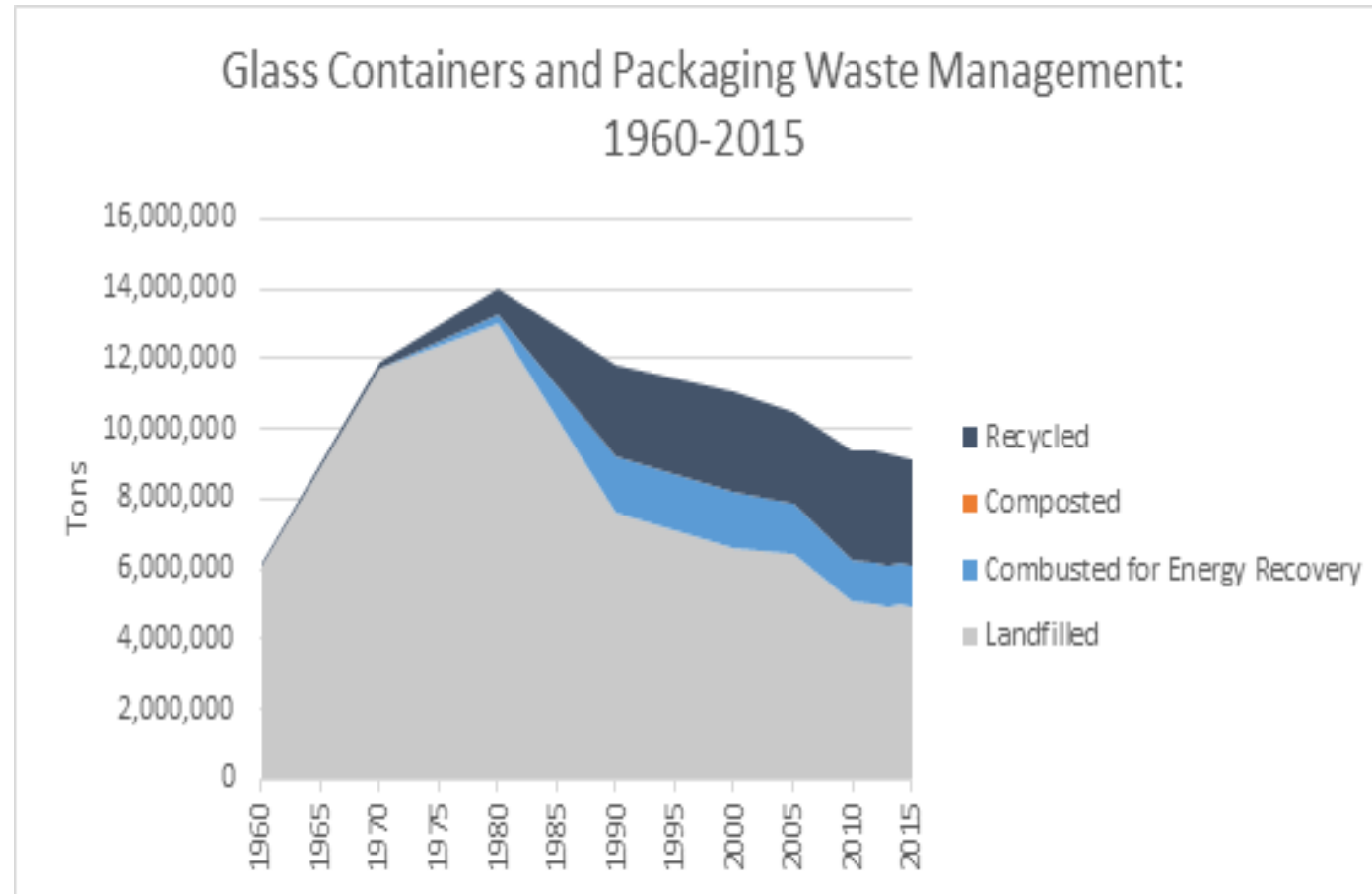
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- **PS SOLUTION FOR LARGE GROUP EVENTS**
- **DART CONTAINER (SOLO CUP)**
 - **BASED IN MASON, MI**
 - **LARGE PROCESSOR OF PS, PP, PET AND PLA FOOD CONTACT PRODUCTS**
 - **WILL PICKUP PS SOLID PHASE AND FOAM PHASE CUPS, BOWLS, PLATES AND WILL TRANSPORT THEM TO PS RECYCLE FACILITY INDIANA – NO COST**
 - **MUST BE USE CLEAR BAGS**
 - **FREE AS POSSIBLE OF OTHER PLASTICS**
 - **A2 PROVIDE RECYCLE BINS, INSTRUCTIONS EDUCATE THE PUBLIC**
 - **MAKE ARRANGEMENTS WITH DART**

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- **RECYCLE FACTS - USA**
 - **91% OF PLASTICS HAVE NEVER BEEN RECYCLED**
 - **USA 1,500 PLASTICS BOTTLES PER SECOND**
 - **28.9% ARE RECYCLED**
 - **22 BILLION WATER BOTTLES SENT TO LANDFILLS**
 - **TAKES ABOUT 500 YEARS FOR A PET BOTTLE TO DECOMPOSE**
 - **WORLD USES 1 MILLION BOTTLES PER MINUTE**
 - **THROWS AWAY 25 BILLION PS STYROFOAM CUPS ANNUALLY**
 - **USE 100 BILLION PLASTICS BAGS**
 - **AVG ONE BAG PER 200 ARE RECYCLED**



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- **PET THAT HAS BEEN RECYCLED:**
 - **2.9 BILLION LBS COLLECTED 2018**
 - **28.9% RECYCLE RATE**
 - **48% RECYCLED PET GOES TO NON-BOTTLE APPLICATIONS**
 - **CARPET FIBER, STRAPPING TEXTILES.**
 - **6% FOR BOTTLE PRODUCTION**
 - **54% FOR ANY USE**
- **TEN STATES WITH BOTTLE DEPOSIT PROGRAMS – HAVE RECYCLED RATES 65 – 95%**



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- **RECYCLING – NOT A SIMPLE PROCESS**
- **ITS EASIER TO RECYCLE CERTAIN TYPES OF PLASTICS AND NOT EASY FOR OTHERS**
- **RECYCLING IS A BUSINESS AND THERE IS MORE DEMAND FOR CERTAIN TYPES OF RECYCLED PLASTICS THAN FOR OTHERS.**
- **RECYCLING FACILITIES HAVE A STRONGER INCENTIVE TO RECYCLE PLASTICS THAT THEY CAN SELL**
- **IT COST \$28/TON TO LANDFILL PLASTICS**
- **\$147/TON TO RECYCLE PLASTICS**



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RECYCLING STAGES

- 1 – SORTING THE PLASTICS
- 2 – IDENTIFYING AND CLASSIFYING THE PLASTIC
- 3 – SHREDDING THE PLASTIC
- 4 – WASHING WASTE PLASTICS
- 5 – EXTRUDING AND FILTERING THE PLASTIC



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**FIVE WHIRLPOOLS OF PLASTICS SOUP
FLOATING IN THE OCEANS**

**EIGHT MILLION TONS OF PLASTIC ARE
FLOWING IN THE OCEAN EVERY YEAR**

**315 BILLION TONS OF PLASTICS IN
OCEAN NOW**

**85 – 100% OF OCEAN BIRDS HAVE
PLASTICS IN THEIR STOMACHS**

**2050 MORE PLASTICS IN THE OCEAN
THAN FISH BY TONAGE**

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- **OCEAN POLLUTION IS CATEGORIZED BY SIZE**
 - **MICRO – MESO – MACRO**
- **FIVE COUNTRIES THAT LEAD IN PLASTIC OCEAN POLLUTION**
 - **CHINA, INDONESIA, PHILIPPINES, THAILAND AND VIETNAM**
 - **CHINA 9.72 M US TONS**
- **THESE FIVE DUMP MORE PLASTICS INTO THE OCEAN THAN ALL OTHER NATIONS COMBINED**
- **USA RESPONSIBLE FOR ABOUT 750,000 LBS. ANNUALLY**
- **CURRENT TREND CONTINUES PLASTICS IN THE OCEAN WILL DOUBLE OVER THE NEXT 10 YEARS**

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- PLASTIC FOOD PACKAGING - **SECOND COMMON TRASH ITEM** COLLECTED DURING BEACH CLEANUPS
- CIGARETTE FILTERS **# 1 ITEM COLLECTED** ON BEACH CLEANUPS – MADE OF PLASTIC



Plastics 2020

- MICROPLASTICS MEASURE 5MM OR LESS (.197")
- 94% OF TAP WATER IN USA TESTED POSITIVE FOR MICRO PLASTICS
 - 2.5 MICRONS (.000098 INCHES)
- 93% BOTTLED WATER
- USA CONSUMING 121,000 MICROPLASTIC PARTICLES PER YEAR FROM DRINKING WATER
- EFFECT ON THE HUMAN BODY IS UNKNOWN – WORLD HEALTH ORG



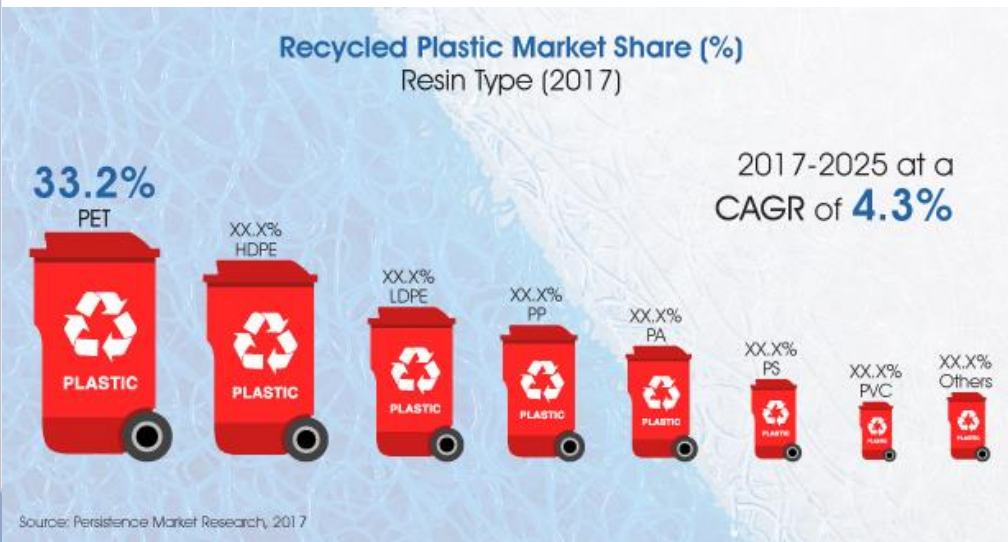
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- **HURON RIVER LARGEST LEVEL OF MICROPLASTICS WHEN COMPARED TO 28 OTHER LARGE GREAT LAKE TRIBUTARIES**
- **70% OF MICROPLASTICS IN RIVERS COME FROM SYNTHETIC CLOTHES AND TEXTILES**
 - **POLYESTER, SPANDEX, NYLON AND ACRYLIC**



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- **380 MILLION TONS OF PLASTIC PRODUCED WORLDWIDE**
 - **3 - 4% ANNUAL GROWTH RATE**
- **RECYCLING GROWTH OUTLOOK**
 - **PET 2 – 5% USA \$10.5 BILLION BUSINESS 2025**
 - **HDPE 4 - 5% USA \$2.5 BILLION BUSINESS 2020**
 - **60% PLASTIC WASTE MED-LOW VALUE**
- **ALL ABOUT BENJAMINS**
 - **VIRGIN HDPE NATURAL .60/LB**
 - **RECYCLED NATURAL ADDS ,20/LB**



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- **INCINERATION**

- **ATTACKED BY ENVIRONMENTALISTS**

- **NEW TECHNOLOGY CALLED PYROLYSIS**

- **Plastics are shredded and melted at lower temperatures than gasification and in the presence of even less oxygen. The heat breaks plastic polymers down into smaller hydrocarbons, which can be refined to diesel fuel and even into other petrochemical products—including new plastic**
- **600 PYROLYSIS USA PLANTS WILL HANDLE 6.5 MILLION TONS OF PLASTIC WASTE YEAR**
 - **UNDER A FIFTH OF THE CURRENT PLASTIC WASTE GENERATED IN USA**



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- **POLYLACTIC ACID – PLA**
- **TYPICALLY, CORN STARCH BASED**
- **COMPOSTABLE NOT BIODEGRADABLE**
- **MUST BE SORTED BY ITSELF**
- **#7 CODE – LARGE CARBON FOOTPRINT**
- **DIFFICULT TO COMPOST**
- **EXPENSIVE RESIN COMPARED TO PET**
- **THERMALLY UNSTABLE AT 140F**

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- **ALLIANCE TO END PLASTIC WASTE**
 - **EXXON, DOW, TOTAL, SHELL, CHEVRON PHILLIPS, PROCTER & GAMBLE, BASF**
 - **PURPOSE TO SUPPORT ALTERNATE MATERIALS, DELIVERY SYSTEMS AND RECYCLING PROGRAMS**
 - **CONVERT PLASTICS INTO FUEL OR ENERGY**
- **HASBRO TO ELIMINATE PLASTIC PACKAGING**
- **PepsiCo BY 2025**
 - **RECYCLE CONTENT TO 25% ALL PACKAGING**
 - **ALL PACKAGING TO BE RECYCLABLE, COMPOSTABLE, BIODEGRADABLE**



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- **STATE OF MICHIGAN LEGISLATURE/ADVOCACY PLASTICS**
- **MICHIGAN SOLID WASTE LAW. PART 115 HD 4454-4461**
- **PASSED BY STATE HOUSE AND NOW BEING CONSIDER BY THE SENATE**
- **ENCOURAGE RECYCLING AND REDUCED LANDFILL WASTE**
- **25 OUT OF 83 MICHIGAN COUNTIES CURRENTLY MEET STATE RECYCLING STANDARDS**
- **AVG MI HOUSEHOLD RECYCLES 226 LBS. ANNUALLY. USA AVG 550 LBS.**
- **EGL ESTATIMATES MI HAS 24 YEARS OF PERMITTED LANDFILL CAPACITY**
- **AL H SAYS WHERE WILL RECYCLE FACILITIES COME FROM**
 - **COST, NUMBER REQUIRED, TIME TO BRING ON LINE**

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- **FEDERAL LEGISLATURE TO CONTROL PLASTIC WASTE**
- **SOMEWHAT OF A DIFFICULT AND MOVING TARGET**
- **OFTEN FAR REACHING**
- **REDUCE**
 - **REWARDING EFFORTS TO DECREASE UNRECYCLED CONTAMINANTS IN ECOSYSTEM ACT**
 - **REVENUE SOURCE FOR \$3.5 TRILLION SPENDING BILL MOVING THROUGH CONGRESS**
 - **ADDS \$.20 PER POUND ON RESIN**
- **PLASTICS INDUSTRY ASSOCIATION**
 - **GEARING UP THE FIGHT TO OPPOSE REDUCE**
 - **SITE JOB LOSS AND HIGH COST TO CONSUMERS**

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WHAT TO DO – INDIVIDUALLY

- **USA THROWS AWAY 30 MILLION TONS OF PLASTIC ANNUALLY**
- **By the way: PAPER IS NOT THE ANSWER**
 - **PAPER PULP MILLS ARE ENVIRONMENTAL DISASTERS**
- **CUT DOWN ON PLASTICS USE**
 - **USE RECYCLED SHOPPING BAGS**
 - **NO STRAWS**
 - **LIMIT SINGLE USE PLASTICS**
- **REFUSE, RESIST, REUSE, RECYCLE**



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- RECYCLE PLASTIC BAGS AT STORE LOCATIONS
- NOT AT RECYCLE CURBSIDE BINS
- COUPLE OF RECYCLE FACILITIES IN RANGE OF ANN ARBOR
 - PETOSKY PLASTICS – INDIANA
 - HILEX POLY - INDIANA





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- **STOP UTILIZING PET WATER BOTTLES WHEN POSSIBLE**
- **UTILIZE REUSABLE DRINK CONTAINERS**
 - **IN ALL SITUATIONS COFFEE, SODAS, WATER**
- **RECYCLE #1, #2 PLASTICS, PAPER/CARDBOARD, GLASS, ALUMINUM**

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- **WHAT TO DO – LOOK AT THE BIG PICTURE**
- **PLASTICS INDUSTRY HAS A BLIND EYE TO THE SITUATION**
 - **THEY FIGHT ALL ANTI PLASTIC INITIATIVES WITH BIG DOLLAR SUPPORT**
- **SUPPORT PACKAGING THAT USES 15 – 20% PCR CONTENT**
- **PET CONTAINERS THAT ARE 100% RECYCLED**
- **SUPPORT LAWS THAT BAN PLASTIC AND PAPER BAGS**
- **KEEP CURRENT TO UNDERSTAND THE MEDIA SOURCE**



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Thank You
