

- While recycling is preferable to incineration or landfill by displacing new plastic production, most plastic can be recycled only once or twice
  - Means most recycled plastic eventually ends up in landfill or incinerator
- Recycling delays, rather than avoids, final disposal. It reduces future plastic waste generation only if it displaces primary plastic production

### Beyond Plastics Recycling:

- >500 US cities and counties have legislation discouraging or banning distribution of disposable plastic bags at checkout counters

### Health Risks Associated With Plastics:

- Derived from breakdown of plastic objects, cosmetics, and industrial applications
- Enter body through inhalation and ingestion
- Oxidative stress, organ dysfunction, neurotoxicity, etc

### RECITATION MATH:

- Higher R-square values indicate a stronger relationship between the two variables
- Probability that the slope equals zero (i.e., significance)
  - A significant or p-value below 0.05 indicates there is less than a 5% chance that the slope is equal to zero

### Quantifying Biodiversity:

- richness ( $S$ ), evenness ( $E$ )
- Shannon index ( $H$ )

$$H = - \sum \left[ \left( \frac{n_i}{N} \right) \times \ln \left( \frac{n_i}{N} \right) \right]$$

$n_i$  is number of individuals of  $i$ th species

$N$  is total number of individuals

$\left( \frac{n_i}{N} \right)$  is relative abundance

$\ln$  is natural log

- **Species Richness:** Refers to the number of species in a given area
- **Species Evenness:** Refers to the relative abundance (or dominance) of a species in a given area
- **Relative Abundance:** # of individuals of a species/total # of individuals
- **Proportional Abundance:** A species' rel. abundance/rel. abundance of most dominant species
- **Shannon's Evenness Index** = Diversity Index/ $\ln$ (species richness)
- **Rank Abundance Curve (Whittaker Plot)**
  - Visually depicts both richness (max x-axis) and evenness (slope)
    - Steep gradient indicates low evenness as the high-ranking species have much higher abundances than the low-ranking species
    - Shallow gradient indicates high evenness as the abundances of different species are similar