Selena Buttery Report on Findings Last Two Weeks

1. Main Goal: Focus on finding studies/datasets that are non-english?
    a. Accomplishments
        i. Found Sub-Micron plastics study in Okinawa

Sub-Micron Plastics Study in Okinawa:

What was Studied:

- Researchers in Okinawa, Japan, an island chain with strong tourism and ocean currents, wanted to understand what kinds of tiny plastics (called *sub-micron* plastics) are floating around the coast.

How they Studied it:

- The scientists collected water samples from the surface of the ocean around Okinawa. Then, using Raman spectroscopy (a powerful microscope technique that can identify plastic types based on how they scatter light), they analyzed plastic particles that were between 2 to 20 microns in size.

What they Found:

- Most of the plastic particles were made of polyethylene (about 75% of them).
- Others included polystyrene and polypropylene, used in foam packaging and takeout containers.
- Many particles were weathered, meaning they'd been floating and breaking down in the environment for a long time.
- Shapes were irregular—some were jagged fragments, some looked like slivers or flakes.

Why it Matters:

- Be inhaled or ingested by people through sea spray or seafood.
- Pass through biological barriers, possibly entering the lungs, brain, or placenta (as seen in other studies).
- Harm local ecosystems by being eaten by fish, coral, or plankton.

Since Okinawa is an island environment, it's a strong comparison for other islands like Hawai‘i that face similar plastic pollution challenges from both local waste and ocean currents.

Data Repositories:

- Marine Microplastic Data (available to download as JSON or CSV files)
  - https://experience.arcgis.com/experience/b296879cc1984fda833a8acc93e31476/page/Page?views=Data-Table
- compiled concentrations, size, polymer info for sediments (useful for environmental exposure context)
  - https://doer.el.erdc.dren.mil/microplasticdatabase.html

Research Papers:

- https://pmc.ncbi.nlm.nih.gov/articles/PMC11342020/
  - Systematic scoping of human tissue detections (placenta, lung, blood, etc.), summarizes methods and gaps. Good starting place to see what tissues have been reported positive and which analytical methods were used.
- https://pmc.ncbi.nlm.nih.gov/articles/PMC11359514/
  - Focused on placental detection and implications for fetal exposure. Documents studies finding plastics on both maternal and fetal sides of placenta. Useful if you care about transplacental accumulation.
- https://www.nature.com/articles/s41591-024-03453-1
  - High-impact, recent evidence of micro/nano particles in human brain (and kidney/liver) using complementary, rigorous analytical methods (Py-GC/MS, μ-FTIR, EM-EDS). Important for claims about systemic accumulation and barrier crossing