Eurythenes plasticus, a new species that contained plastic even at the deepest area of the ocean was discovered where?
a. Manila Trench
b. Tonga Trench
c. Mariana Trench
d. Cayman Trench

What were the main solvents found in the Savannah River Site?
a. TCE, PCE, and CCl4
b. CO2, H2O, and OH
c. PCE, TCA, and TCE
d. DDT, PCE, and H2O

Define a gyre and where you might find one.

Explain how humans eat 4-5 thousand plastic particles a year.

What is Bioremediation?
A. Using biographies to remedy imposter syndrome
B. Developing organisms to absorb CO2 emissions
C. Using organisms to remove waste
D. Remedies fires

How big is a macro plastic?
A. > 1 mm
B. > 3 mm
C. > 5 mm
D. > 10 mm

What are methanotrophs?

What are the pros and cons of using plastic?

The size of microplastic usually \_
a. Less than 5mm
b. Between 5mm-10mm
c. Between 50-100mm

First plastic bag pulled from ocean in\_
a. 1965
b. 1970
c. 1975
d. 1980

What is bioremediation?

What are some considerations when emplyoying bioremediation?

Which ocean has a garbage patch?

What kinds of pollutants can be broken down by micro-organisms?

What is bioremediation?

Why is it hard to recycle plastics?

1. What country has the most microplastics in their water from makeup products?
a. United States
b. China
c. England

2. What classifies a microplastic?
a. <5mm in size
b. Completely round in shape
c. Plastic that is used to make microwaves

1. We talked about the biology of plastics, what is one thing (discussed by guest speaker) that biologists use to break down plastics.

1. Describe how plastic moves in the environment (draw a chart if you think it would help). Explain also why the process is not just manufacturer -> consumer -> landfill, describe what can happen in between those steps that makes the process inefficient.

What is not a factor that influences bioremediation?
A. Population
B. pH
C. Temperature
D. Bioavailability

True or false, there are bacteria capable of degrading.
a. True
b. False

What is the SRS?

What are the two categories of bioremediation, and how are they different?

1. When was plastic invented?
a. 1917
b. 1907
c. 1927
d. 1922

2. Which of the following factors don’t influence biodegradation.
a. Ph
b. Temperature
c. Oxygen
d. age

3. How big is the Great Pacific Garbage Patch?

4. What is the SRS and what was their goal

1. Leo Baekeland invented plastic in what year?
A. 1977
B. 1805
C. 1907
D. 1992

2. What is Ideonella sakaiensis?
A. Species of snake
B. Plastic eating bacteria
C. Company that produces water bottles
D. Cleaning crew

3. Name some benefits and some drawbacks about plastic:

4. How does plastic effect the world? What can you do to help prevent those things?

1. True of false, microplastics are harder than sand.

2. What region are microplastics found in the highest concentration?
a. Europe
b. China
c. The US
d. Japan

3. How are wildfires effecting air pollution in the United States?

4. What are some factors that influence biodegradation? How can we speed up the process?

1. What is the average annual consumption of microplastics? (in particles)
a. 39,000-52,000
b. 20,000-33,000
c. 80,000-85,000
d. 13,000-45,000

2. True/False: Plastic production is exponential.

3. List some benefits and drawbacks of the “plastic conundrum”.

4. What factors influence bioremediation? List and explain two ways.

● Describe how microplastics might end up in the environment, from raw
material to consumer.

● How many operational units were at the Savannah River Site in 1989?
○ 418
○ 515
○ 97

● What is the name of the bacteria that breaks down TCEs?
○ Methanotrophs
○ Methane monooxygenase
○ Methanophylls

● \_\_\_\_\_\_\_ is the name of the flotilla of trash in the Pacific Ocean

● What does SRS stand for?

1. What type of plastic material has been banned in the United States?
a. Water Bottles
b. Microbeads
c. Nurdles
d. Bakelite

2. What is the enzyme in bacteria that can break down TCE?
a. Methane Monooxygenase
b. Amylase
c. Deoxyribonuclease
d. Pepsin

3. What are some factors that affect Biodegradation?

4. Explain why it is so hard for legislation to get rid of plastics completely.

1). Which is an example of plastics being introduced in WWII as a cheap alternative?
a). Plastic storage for food/water
b). Hardened plastic combat helmets
c). Silk to nylon sutures
d). Plastic components in weapons

2). Which of these factors influence biodegradation?
a). Concentration of contaminant
b). Presence of other toxic compounds
c). Presence of easier to degrade compounds
d). pH
e). All of the above

3). Plastic production and introduction into the environment is a \_\_\_\_\_ system.

4). What are the benefits and drawbacks facing bioremediation/mycoremediation as a strategy of
tackling pollutants?

How many microplastics do Americans eat a day?
a. None
b. Too many
c. 10,000
d. 40-50,000

How small does a plastic have to be to be considered “micro”?
a. Less than 5mm
b. Less than 10mm
c. Less than 1mm
d. Less than .01mm but greater than .001mm

Short answer: what is the difference between in-situ and ex-situ bioremediation?

Essay: outline the “cycle of plastic”. What prevents it from being a cycle? Is there any way humans can fix it so it becomes a cycle? What is the best solution to plastic waste according to the diagram?

1. A new species was recently discovered in the \_\_\_\_\_\_\_\_\_ named Eurythenes plasticus, it
had microplastics in its gut.
a. Great Barrier Reef
b. Mariana’s Trench
c. Coastal zones of Greenland
d. Kilauea Volcano

2. What is considered to be the most common place for biological treatment?
a. Hospitals
b. Restaurants
c. Transfer Stations (dumps)
d. Waste Treatment plants

Where did Clay Arango say that most plastics end up? (It sinks or floats here) Give one example how it gets there.

What is biodegradation? Give two or more examples of factors that influence biodegradation. Explain how they effect it.

1) What is bioremediation?
a) The use of chemicals to kill off harmful bacteria
b) The use of chemicals to destroy harmful contaminants
c) The use of microorganisms to kill off harmful bacteria
d) The use of microorganisms to degrade harmful contaminants

2) What is microplastic?
a) Plastic pollution measuring less than 5mm in diameter
b) Plastic pollution measuring 5-10mm in diameter
c) Plastic pollution that is able to be absorbed past the blood brain barrier
d) Plastic pollution measuring greater than 5mm in diameter

1) Why is it a problem that the plastic cycle is linear and not a full loop?

1) What are some potential concerns with bioremediation?

What are microplastics?

Recycled Plastic is always re-used.
a. True
b. False

What is NOT a way to reduce wildfires?
a. Cut down on the global Anthropocene warming
b. Burn areas under human watch
c. Throw a gender reveal party
d. Treat wildfires as natural disasters

Give an example of a biological treatment. Explain what it does and how it impacts the rate of pollution.