

1.2 BIOTIC MATERIALS

Could the decomposition of living matter produce crude oil?

MATERIALS

Per small group of students:

- Clear plastic one-liter soft drink bottle
- One dowel rod
- Funnel
- Dry soil from a garden
- Pond or creek water
- One hard-boiled egg (2g shell and one yolk)
- 10 × 15 cm piece of newspaper, shredded
- Metric ruler
- Masking tape to seal and label bottle

DIRECTIONS

1. Remove any stones or twigs from soil.
2. Prepare a compost mixture by combining shredded newspaper (organic), egg shells (carbonate) and egg yolk (sulfate) with enough soil to fill the bottle.
3. Use the dowel rod to pack the compost mixture in the bottom of the bottle and remove trapped air. This compacted bottom layer should be about 3 cm deep.
4. Continue adding compost mixture to the bottle using the dowel rod to compact it and remove the trapped air. This compacted layer should be within 5 cm from the top of the bottle.
5. Cover the surface of the soil with pond water, filling to the lower threads of the bottle opening.
6. Seal the top of the bottle tightly and place in a window that receives indirect sunlight.
7. Observe the bottle weekly for a minimum of three months while recording observations.

Note: Gas will collect as time passes.

Release gas outside with top of bottle pointed away from face.



REFLECTION

1. What is happening inside the bottle?
2. What kind of bacteria is being produced and why?
3. Are soil and water lifeless parts of the ecosystem? What is biogenesis?
4. What would happen if the bottle was subjected to increased temperature? Decreased temperature?
5. How does this system relate to crude oil and natural gas formation?
6. Could today's scientists create crude oil and natural gas?