

4.2 BUILD A MODEL OIL WELL

How can crude oil be most efficiently removed from a model oil well?

MATERIALS

Per small group of students:

- Plastic container
- Straws (re-usable and regular, both straight and with curve)
- Funnel
- ½ cup sand
- ½ cup aquarium gravel
- Clay
- ¼ cup water
- Food coloring (optional)
- ¼ cup vegetable oil
- Turkey baster/bulb or pipettes

DIRECTIONS

1. Review the **Engineering Design Model** as a way to complete the challenge.
2. **Ask** how we can build a working model of an oil well? Constraints: use the materials to create a model that includes the following elements:
 - a. permeable, oil-bearing rock layer(s)
 - b. trap, impermeable rock layer(s)
 - c. pipe and drill bore hole
 - d. action that will produce oil to the surface without a spill
3. **Imagine** and discuss possible designs.
4. **Plan** by creating a drawing, then get the materials.
5. **Create** and test the prototype. Measure the amount of oil obtained and compare with other designs.
6. **Improve** the design.

