

CHEM SQUAD VIRTUAL TEACHER MATERIALS

Description

As members of a Dangerous Goods Emergency Response Team investigating a chemical spill accident, students test several “hazardous” substances over two sessions to determine their physical and chemical properties to identify the mystery spill.

Materials supplied by TELUS World of Science - Edmonton:

- Citric Acid
- Alconox
- 10 Spot trays
- 100 pH strips
- 10 Pipettes
- pH Legend cards (to be emailed)
- WHMIS homework printout (to be emailed)
- Observation Chart (to be emailed)

Required Materials Teacher Prepared (keep the chemicals **secret** from students):

- ¼ cup Baking Soda
- ¼ cup Sugar
- ¼ cup Cornstarch
- 1 cup distilled water
- 1 cup of vinegar
- 1 small cup - (1 per group) for distilled water
- 1 small cup - (1 per group) for vinegar
- Photocopy pH legend cards – one/group (in colour), WHMIS Homework sheet – one/student, and Observation chart – one/student

Suggested Materials:

*****Safety glasses are recommended for all activities with chemicals*****

- Student magnifying glasses
- Computer, tablet or phone (for Kahoot game)

Session One: VIRTUAL WHMIS Training

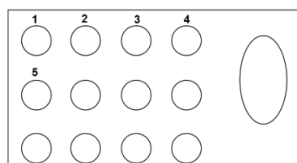
Materials:

- WHMIS Home Hazardous Materials homework photocopied - one/student
- Personal devices (tablets, Chromebooks, laptops, mobile phones, etc.) - one/student - if possible – not necessary.

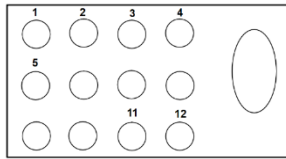
Session Two: Chemical Testing

Lab Prep Instructions:

- Observation chart photocopied (1 per student)
- Prepping Spot Trays:
 - Scoop about 1/4 tsp (5g) of each material in spots 1-5 (see diagram as well as order of the substances below).
 - Repeat the same materials in the same order for spots 7-11. For example, spots #1 and #7 have the same material. #2 and #8 are the same, etc. Leave spots #6 and #12 empty.
- **Do not tell the students what the chemicals are.** Prepare 1 tray for each small group of students.



- **Spot 1 & 7** - Baking soda
 - **Spot 2 & 8** - Sugar
 - **Spot 3 & 9** - Citric Acid
 - **Spot 4 & 10** - Cornstarch
 - **Spot 5 & 11** - Alconox
 - **Spots 6 & 12** - (remain empty for now for truck spill)
- Count out 12 pH strips per group.
 - Provide 1 pH legend card to each group - You will need to photocopy these in color and cut out before-hand.
 - Fill dropper bottles with about 1-2 tbsp of distilled water or pour 1-2 tbsp (30 mL) of distilled water into a cup and provide an eye dropper.
 - Prepare 1 dropper bottle or cup for each group.
 - Fill a second dropper bottle with about 1-2 tbsp (30 mL) of vinegar or pour 1-2 tbsp of vinegar into a cup and provide an eye dropper.
 - Prepare 1 dropper bottle or cup for each group.
 - As prompted by the TWOSE instructor as a final lab task, you will be providing students two sample of the truck spill in spots #6 and #12 for the final “truck spill” testing. (**DO NOT provide these samples until instructed to by the program instructor**).
 - We recommend baking soda as the mystery truck spill but you could choose something different as well (e.g. citric acid oralconox).



- Spot 11 – Mystery truck spill (baking soda)
- Spot 12 – Mystery truck spill (baking soda)