

1. **DESCRIPTION:** Students will test and characterize one pure substance and then, based only on data they collect, answer a series of questions about that substance.

A TEAM OF UP TO: 2

EYE PROTECTION: #4

APPROX. TIME: 50 min

(See 2.e.i. below)

2. **EVENT PARAMETERS:**

a. **What students may not bring:** No reference materials, calculators, pens or pencils are allowed.

b. **Students should bring:**

- pHyrion paper
- hand lens
- Battery conductivity tester (no testers will be allowed that run on 120 volts.)
- Beral pipettes or eye droppers
- Containers appropriate for testing conductivity and solubility (e.g., spot plates, beakers, etc.)
- Test tube holder and test tube rack if using test tubes
- Spatula
- Stirring rod
- The team may bring no other items. Supervisors will check the equipment a team brings and have the right to rank the team below the first tier for bringing equipment not on the list.

c. **Event supervisors will provide:**

- 1.0 M HCl
- Distilled (deionized) water
- Two different colored writing implements
- Paper toweling
- The observation sheet
- The questions/scoring sheet

d. **Possible Equipment that MAY be provided:**

- Thermometer
- Balance
- Hot plate
- Anything else the supervisor decides to distribute. If the supervisor feels instructions are needed in order to use something provided, the instructions will be available.



e. **Safety Requirements:**

- Students **must** wear the following or they will not be allowed to participate: closed-toed shoes, **ANSI Z87** indirect vent chemical splash goggles (see <http://soinc.org>), pants or skirts that cover the legs to the ankles, a **chemical apron** with a **sleeved shirt** or a lab coat that reaches the knees. Gloves are optional.
- Students who unsafely remove their safety clothing/goggles or are observed handling any of the material or equipment in a hazardous/unsafe manner (e.g., tasting or touching chemicals or flushing solids down a drain and not rinsing them into a designated waste container provided by the supervisor) will be disqualified from the event.

3. **THE COMPETITION:** The intent of this event is for students to make and record observations. Contestants will be given a sample of one pure substance. Equipment and test chemicals listed will be provided. The supervisor will make the selection of equipment and chemicals. Students and teachers **ARE NOT** to know what substance has been selected before the event. Students will be expected to perform relevant tests using the materials provided. Emphasis in scoring is placed on careful and organized observations. Students **WILL NOT** be asked to identify the solid. Emphasis of this event is on the quality of data collected, answering questions about the substance and providing data to support their answers.