Trial/Pilot Event

Contact the organizers of your tournament to find out what trial/pilot events will be held.

POLYMER DETECTIVES (DIVISION B) DRAFT

DESCRIPTION: The purpose of this event is to develop an awareness of polymers and plastics and how they affect daily living in a modern society. Students will be expected to demonstrate knowledge of common plastics, i.e., properties and uses, key terms, chemical formulas and structure, and scientists known for their work on these materials. No notes of any kind will be allowed. *Students must bring and use OSHA approved splash goggles with indirect vents and chemical aprons. Open toed shoes are not allowed.*

A TEAM OF UP TO: Team of up to 2 APPROXIMATE TIME: 50 minutes

THE COMPETITION: This event will consist of three parts:

Part I Students may be given up to 3 unknown samples of fibers including cotton, wool, and no more than one synthetic fiber. Students will be expected to identify these by the reaction of these fibers with burn tests, and/or by examination with a microscope. Burn tests should **be** done with a match, lighter or candle.

Part II Students will be expected to characterize samples of the following polymers. The characteristics they will be expected to determine by testing or by observation are density and information about the burn results. If the actual burn tests are done, they MUST be done as a demonstration under a hood or in an approved ventilation system by the event supervisor. The student may be provided written information about the burn test results for the polymers. Emphasis in scoring this part of the event is placed on careful and organized observation and identifying the polymers.

Types of plastic	Industry abbreviations	Resin code	Typical packing uses
Polyethylene Terephthalate	PETE	1	Soda, peanut butter & vegetable bottles
High Density Polyethylene	HDPE	2	Milk, juice & detergent bottles, grocery bags
Polyvinyl Chloride (or vinyl)	PVC	3	Shampoo, salad dressing and water bottles
Low-Density Polyethylene	LDPE	4	Trash bags, food & bread wrap, squeeze bottles
Polypropylene	PP	5	Dairy prod. containers, bottle lids, drinking straws
Polystyrene	PS	6	Foam & clear contains for take out food, meat trays, egg cartons, plates, cups and cutlery

Sample Questions: (1) What is the density of this sample of the polymer? (2) Based on the information provided about the burn test, which type of polymer could this be?

Part III The other part of the competition will consist of a written test. Students will be expected to be able to do the following for the polymers in the list of part II:

A. State common uses of polymers
B. Provided with resin code, tell what the material is.
C. Know information about recycling and disposing the polymer.
D. Know basic information about how the polymers are made.

SCORING: Part I: ~~30~~ **15** points Part II: **40** points and Part III ~~30~~ **45** points. Ties are broken by using highest score from Part II first, then Part I and if needed Part III last. TIME IS NOT A TIEBREAKER!

FREE RESOURCE: American Plastics Council 1300 Wilson Blvd. Suite 800, Arlington VA 22209. 1-800-2-HELP-90. Website: www.HandsOnPlastics.com.