

Name: _____ Date: _____

Protocol Perfection: Professional Lab Practices for 7th Grade

Hazard analysis, neutralization math, and secondary containment protocols—analyze 10 high-stakes scenarios to refine safe scientific inquiry skills.

1. A fellow student accidentally knocks over a graduated cylinder containing an unknown aqueous solution. What is your most critical first response to ensure group safety?

- A. Quickly identify the solution by smell to determine the neutralizer.
- B. Immediately alert the instructor and evacuate the splash zone.
- C. Wipe up the spill with paper towels to prevent it from spreading.
- D. Apply a base like sodium bicarbonate to neutralize the liquid.

2. When diluting a concentrated acid, it is scientifically safer to pour the acid into the water rather than the water into the acid.

- A. True
- B. False

3. If a bunsen burner flame turns a flickering yellow 'safety' color and begins to 'strike back' at the base, you should immediately ____.

- A. Increase the oxygen flow by opening the air collar.
- B. Blow on the flame to extinguish it quickly.
- C. Close the main gas source valve entirely.
- D. Adjust the needle valve to increase gas pressure.

4. When utilizing a centrifuge to separate biological samples, what must be done to prevent mechanical failure and potential debris spray?

- A. Operate the machine at maximum speed for the shortest possible duration.
- B. Place tubes of equal mass directly opposite each other to maintain balance.
- C. Ensure the lid is slightly cracked to allow heat to escape during rotation.
- D. Use test tubes of different sizes to create more turbulence.

5. Safety Data Sheets (SDS) are only necessary for professional chemical plants and are not required for middle school science classrooms.

- A. True
- B. False

6. Before heating a test tube over an open flame, the most important directional safety precaution is to ____.

- A. Point the opening away from yourself and all other people.
- B. Hold the tube vertically to ensure even heating of the bottom.
- C. Keep the tube tightly sealed with a rubber stopper.

Name: _____ Date: _____

D. Maintain the tube at a 90-degree angle to the flame.

7. You notice a small crack in a beaker you intend to use for an exothermic reaction. Why is it vital to dispose of this beaker immediately?

- A. The crack will cause the chemical reaction to happen too slowly.
- B. Cracked glass is more likely to absorb the chemicals and contaminate the result.
- C. Thermal stress from the reaction can cause the beaker to shatter completely.
- D. Glassware with cracks automatically lowers the pH of the solutions inside.

8. If a chemical splashes into your eye, you must flush it at the eyewash station for a minimum of 15 to 20 minutes.

- A. True
- B. False

9. When working with volatile organic compounds (VOCs) that produce irritating vapors, the experiment must be conducted in/under a __.

- A. Large open window with a box fan.
- B. Functional laboratory fume hood.
- C. High-ceilinged room with central air.
- D. Plastic tent sealed with adhesive tape.

10. Why is it considered a safety hazard to wear contact lenses during a chemistry lab involving liquid reagents?

- A. The lenses may melt due to the ambient heat of the laboratory.
- B. They can trap corrosive vapors or liquids against the cornea, preventing effective flushing.
- C. Contact lenses chemically react with safety goggle plastic to produce steam.
- D. Lenses interfere with the user's ability to locate the emergency exit.