

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Outsmart the Lab: Your 7th Grade Advanced Safety Challenge

Risk assessment, experimental protocol analysis, and hazard mitigation — essential cognitive skills for managing complex laboratory environments safely.

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**1. You are designing a titration experiment involving unknown concentrations of sodium hydroxide. Which specific safety protocol takes precedence when calculating the required depth of your secondary containment?**

- A. The GHS reactivity rating of the alkaline solution
- B. The maximum volume of the largest primary container
- C. The flash point of the accompanying titration indicator
- D. The distance between the lab bench and the nearest eyewash

**2. When working with volatile organic compounds that emit invisible vapors, the most critical engineering control to utilize is the \_\_\_\_\_.**

- A. Biosafety Cabinet
- B. Centrifuge Shield
- C. Chemical Fume Hood
- D. Laboratory Desiccator

**3. True or False: If a graduated cylinder breaks during an experiment, the technician should immediately neutralize any spilled liquid before attempting to collect the glass shards.**

- A. True
- B. False

**4. While heating a solution, you observe a 'bumping' phenomenon where the liquid splashes violently. To synthesize a safer future procedure, which addition is most effective?**

- A. Increasing the flame temperature of the Bunsen burner
- B. Sealing the test tube with a rubber stopper
- C. Adding porous boiling chips to the cool liquid
- D. Stirring the solution with a mercury thermometer

**5. In the event of a large-scale chemical splash to the torso, the victim must remain in the safety shower for a minimum of \_\_\_\_\_ minutes to ensure full decontamination.**

- A. Two
- B. Five
- C. Ten
- D. Fifteen

**6. True or False: Standard surgical masks provide sufficient respiratory protection against concentrated hydrochloric acid fumes because they create a physical barrier.**

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- A. True
- B. False

**7. Evaluate the risk: You notice a classmate is using a pH meter with a slightly frayed electrical cord near a sink. Which specific hazard is most likely to cause an immediate acute injury?**

- A. Thermal runaway from the battery
- B. Electrocutation via a grounding path
- C. Secondary chemical contamination
- D. Radiological exposure

**8. The 'PASS' acronym is used for fire extinguisher operation. The 'S' in the third position stands for \_\_\_\_\_.**

- A. Safety
- B. Squeeze
- C. Spray
- D. Sweep

**9. When diluting a concentrated acid for a reaction, what is the safest analytical procedure to prevent an exothermic reaction from splashing acid?**

- A. Pour the water into the acid quickly
- B. Add the acid to the water slowly
- C. Mix both simultaneously in a sealed flask
- D. Heat the acid before adding it to cold water

**10. True or False: An SDS (Safety Data Sheet) only needs to be consulted after an accident has occurred to determine the proper first aid.**

- A. True
- B. False