Name: _____ **Date:** _____

Answer Key: Protocol & Precaution: 9th Grade Lab Safety Logic Quiz

Challenge students with scenario-based analysis of SDS data and hazard containment during their next bell-ringer or pre-lab assessment.

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1. A student is heating a test tube over a Bunsen burner. To adhere to standard safety protocols, how should the test tube be positioned?

Answer: B) Pointed at a slight angle away from themselves and others

Heating a closed container can cause pressure buildup and explosion; pointing the opening away prevents 'bumping' or splashing chemicals onto individuals.

2. If a concentrated acid is spilled on the laboratory bench, the first step is to immediately neutralize it with a strong base.

Answer: B) False

Neutralizing a strong acid with a strong base is an exothermic reaction that can release intense heat and cause splattering. Spills should be contained and reported to the instructor for proper remediation.

3. When diluting a concentrated acid, you should always add the ___ slowly to the ___ to safely dissipate the heat of reaction.

Answer: B) acid; water

Adding acid to water (AA - Add Acid) allows the large volume of water to absorb the heat generated, preventing the acid from boiling and splashing.

4. While searching the Safety Data Sheet (SDS) for a new reagent, you see a '4' in the red diamond of the NFPA 704 symbol. What does this indicate?

Answer: C) Extreme flammability with a low flash point

In the NFPA 704 'fire diamond', the red quadrant represents flammability, and the scale runs from 0 (minimal) to 4 (extreme).

5. Which piece of safety equipment is most appropriate for extinguishing a fire that has ignited the clothing of a fellow student?

Answer: D) Fire blanket

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While a safety shower can work, a fire blanket is designed to wrap around a person to smother flames efficiently while minimizing the risk of inhaling extinguisher chemicals.

6. Safety goggles are only required when working with corrosive liquids, not when handling dry solids or glassware.

Answer: B) False

Goggles must be worn whenever heat, glassware, or chemicals (regardless of state) are used, as solids can shatter and glassware can implode/explode.

7. You accidentally break a mercury thermometer. Which action is the most scientifically sound next step?

Answer: C) Notify the instructor to use a specialized spill kit

Mercury is a heavy metal neurotoxin; it requires specific disposal protocols and should never be vacuumed safely as that disperses vapors.

8. Before beginning a titration using a glass burette, you should inspect the equipment for 'stars' or 'hairlines' which are types of ___.

Answer: C) glassware stress fractures

Stress fractures like stars or hairlines indicate the glass is structurally compromised and may fail under thermal or physical stress.

9. Contact lenses are generally discouraged in the lab because they can trap chemical vapors against the cornea.

Answer: A) True

Vapors can be absorbed by contact lenses, causing prolonged exposure and making it difficult to flush the eyes effectively during an emergency.

10. A 9th-grade student needs to identify an unknown gas produced in a reaction. What is the correct technique to assess its odor?

Answer: C) Wafting the air toward the nose with a hand motion

Wafting (hand-fanning air) ensures only a small, diluted amount of the vapor reaches the nose, protecting the respiratory system from irritation.