Name: _____ **Date:** _____

Answer Key: Corrosive Chemicals & Reactive Risks: 11th Grade Lab Safety Quiz

Learners sharpen their hazard-mitigation skills by analyzing Safety Data Sheets and applying containment protocols to complex chemical scenarios.

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1. When working with concentrated hydrofluoric acid or other volatile organic compounds, what is the primary reason for utilizing a laminar flow hood versus a standard chemical fume hood?

Answer: B) The laminar flow hood prevents particulate contamination of the sample.

Laminar flow hoods protect the 'product' or sample from contamination, whereas chemical fume hoods are designed to protect the 'person' by venting harmful vapors away from the user.

2. According to OSHA GHS standards, a pictogram featuring a 'flame over circle' (oxidizer symbol) indicates that the substance itself provides oxygen, potentially causing other materials to combust.

Answer: A) True

Oxidizers do not necessarily burn themselves, but they provide oxygen that can lead to intense combustion of flammable materials, requiring special storage away from reducers.

3. If an alkali metal such as Sodium or Potassium catches fire, which class of fire extinguisher must be used to neutralize the specific hazards of combustible metals?

Answer: D) Class D (Specialized Dry Powder)

Class D extinguishers are specifically designed for combustible metals; water or CO_2 can actually cause a violent reaction or explosion when applied to an alkali metal fire.

4. You are performing a titration and accidentally splash a diluted solution of sodium hydroxide into your eyes. What is the minimum recommended duration for using the eyewash station?

Answer: C) 15 to 20 minutes

Standard safety protocol for chemical exposure to the eyes requires continuous flushing for at least 15-20 minutes to ensure all residual chemicals are diluted and removed.

5. When diluting a strong acid, it is scientifically safer to pour the acid into the water rather than pouring water into the acid.

Name: _____ **Date:** _____

Answer: A) True

Adding acid to water (AA) allows the water to absorb the heat generated; adding water to acid can cause the mixture to flash-boil and spray concentrated acid out of the beaker.

6. On a Safety Data Sheet (SDS), which section specifically outlines the Personal Protective Equipment (PPE) requirements and occupational exposure limits for a chemical?

Answer: C) Section 8: Exposure Controls/Personal Protection

Section 8 of the GHS-compliant SDS provides critical info on engineering controls and specific PPE like glove material types or respirator needs.

7. While using a centrifuge to separate a biological suspension, you hear a loud rhythmic thumping. What is the most likely safety error performed?

Answer: A) The samples were not matched in mass and balanced across the rotor.

An unbalanced centrifuge can create high-speed vibrations that damage the equipment and potentially cause it to disintegrate or 'walk' off the benchtop.

8. If a small mercury thermometer breaks, it is appropriate and safe to use a standard vacuum cleaner to ensure all droplets are removed from the floor.

Answer: B) False

Vacuuming mercury vaporizes the metal, increasing the risk of inhalation toxicity. Specialized spill kits or mercury-binding powders must be used instead.

9. Which of the following describes the 'Pass' technique correctly regarding the use of a fire extinguisher?

Answer: A) Pull, Aim, Squeeze, Sweep

PASS stands for Pull the pin, Aim at the base of the fire, Squeeze the handle, and Sweep from side to side.

10. In a laboratory setting, what is the specific purpose of a secondary containment tray?

Answer: B) To catch leaks or overflows from the primary container to prevent wider contamination.

Secondary containment is a critical engineering control that ensures if a bottle or flask fails, the chemical remains trapped in a small, manageable area.