Name: _____ **Date:** _____

Escape the Lab: 8th Grade Tactical Safety Protocol Quiz

Evaluate complex chemical interactions and emergency response logic in this high-stakes formative assessment for advanced learners.

---

1. When neutralizing a concentrated acid spill on a stone tabletop, why is it scientifically critical to use a weak base like sodium bicarbonate rather than a strong base like sodium hydroxide?

A. Strong bases are less effective at changing the pH level of mineral surfaces.
B. The reaction between a strong acid and a strong base is highly exothermic and can cause splattering.
C. Weak bases catalyze the evaporation of the acid to prevent staining.
D. Strong bases will react with the atmospheric nitrogen and create toxic fumes.

2. If a student's clothing catches fire, the most effective immediate action is to move quickly toward the nearest safety shower to extinguish the flames.

A. True
B. False

3. When diluting a concentrated acid for an experiment, the 8th grade safety protocol requires you to _____.

A. Pour the water into the acid slowly
B. Pour the acid into the water slowly
C. Mix both simultaneously in a beaker
D. Heat the water before adding the acid

4. You notice a small star-shaped crack (star crack) at the base of a Pyrex beaker before beginning a high-heat distillation. What is the most likely outcome if you proceed?

A. The glass will expand and seal the crack naturally upon heating.
B. Thermal stress will cause the crack to propagate, leading to catastrophic failure of the vessel.
C. The crack will only be an issue if the liquid inside is a non-polar solvent.
D. Beakers are designed to withstand pressure even with minor structural defects.

5. The GHS (Globally Harmonized System) pictogram featuring a flame over a circle specifically identifies a substance as a(n) _____.

A. Flammable liquid
B. Explosive material
C. Oxidizing agent
D. Corrosive gas

6. Safety data sheets (SDS) are only required for chemicals that are classified as highly toxic or radioactive.

Name: _____ **Date:** _____

A. True
B. False

7. While using a centrifuge to separate a blood-analog suspension, the machine begins to vibrate violently and emit a rhythmic thumping sound. What is the correct analytical conclusion?

A. The motor is reaching its maximum RPM and requires more power.
B. The mechanical load is unbalanced, causing a shift in the center of mass.
C. The samples are too viscous and are creating air resistance.
D. The lid seal is failing and creating a vacuum seal.

8. If an unknown chemical splash makes contact with your eyes, the minimum recommended duration for continuous irrigation at the eyewash station is _____.

A. 5 minutes
B. 10 minutes
C. 15 minutes
D. 60 minutes

9. A fume hood is designed to protect the user from biological pathogens and should be used as a primary sterile environment for cell culture.

A. True
B. False

10. Why is it prohibited to wear contact lenses during experiments involving volatile organic compounds (VOCs), even if wearing safety goggles?

A. The lenses may melt due to the ambient temperature of the laboratory.
B. Capillary action can trap vapors between the lens and the cornea, causing prolonged exposure.
C. Contact lenses can react with nitrogen in the air to cloud the student's vision.
D. The weight of the lens prevents the eye from blinking fast enough during a splash.