120 Questions That Could Save Your Life

**Summer 2023\_\_\_**

**Code: \_\_\_513817344\_\_\_\_\_\_\_\_\_\_\_**

**Please, highlight in yellow correct answer, safe the file as ‘SafetyAssignment\_year\_your code’ and send it to Dr. Volkis to** **vvolkis@umes.edu**

Top of Form

**Introduction**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 1. | What elected group's laws and regulations make laboratory safety a legal requirement in the United States of America? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | state |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | federal |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | local |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | county |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | all of the above | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 2. | Which of the following describes some key elements of an appropriate safety training program? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | safety training should be an integral part of the daily activities of laboratory workers |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | formal safety education should be made as relevant as possible to actual work activities |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | informal safety training through collegial interactions are valuable ways to exchange safety information, and sustain an atmosphere in which colleagues reinforce each other's good work habits |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | safety training must be a continuing process |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | all of the above | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 3. | To reduce the probability of accidents: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | use personal protective equipment |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | practice the habit of accident prevention |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | when possible, substitute a less hazardous chemical for a more hazardous one |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | anticipate the possible consequences of the work you do |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | use the smallest quantity of material necessary |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 4. | Examples of personal protective equipment do NOT include: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | long-sleeve shirts |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | goggles and long pants |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | lab coats |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | contact lenses |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 5. | An accident-prevention program must include: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | regular safety inspections |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | formal and regular procedures |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | procedures that ensure proper disposal of waste chemicals |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | regular monitoring |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 6. | Regular inspection of safety equipment such as eye washes and safety showers must be carried out |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | once a month |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | four times a year |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | every week |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | yearly | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 7. | Pollution prevention is an integral component of waste management practices. Which of the following is not included in the hierarchy of pollution prevention techniques? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | source reduction |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | storing less material on-site |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | recycling/reuse/recovery |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | treatment |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | land disposal |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | all of the above | OSHA |

 |

**Section 1. Your Responsibilities**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 8. | Safety in the instructional laboratory is |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the responsibility of the student only |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | the responsibility of the professor only |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | a shared responsibility | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 9. | Who is required to wear eye protection in the laboratory? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | all visitors, unless they are present for less than one minute |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | students but not professors |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | everyone, but only when performing a chemical operation |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | everyone | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 10. | Accidents often result from: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | failure to use common sense |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | failure to follow instructions |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | an indifferent attitude |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | making mistakes |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 11. | General guidelines for preventing accidents include: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | follow all safety instructions carefully |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | never play tricks or indulge in horseplay in the chemical laboratory |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | know where the safety equipment is |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | become familiar with the hazards of the chemicals to be used |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | become familiar with the hazards of equipment to be used |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 12. | True or false: Safety regulations require that contact lenses NOT be worn in the laboratory |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | true |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | false | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 13. | When must special "blast shields" be utilized? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | when any material is heated to above 350 oC |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | when working under reduced pressure |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | whenever students are enthusiastic |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 14. | Clothing worn in the laboratory should: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | be easily removable in case of accident |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | offer protection from spashes and spills |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | be at least fire-resistant |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 15. | Jewelry is a potential safety issue because: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | chemicals can be trapped under it, in contact with sensitive skin |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | it can be damaged by chemical fumes and spills |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | it could be stolen | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 16. | Which of the following types of shoes are recommended by the Americal Chemical Society for general laboratory work? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | cloth-topped "tennis" or "running" shoes |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | sandals |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | woven leather shoes |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | steel-toed shoes |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | high heels |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | none of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 17. | When using gloves as personal protective equipment, which of the following procedures should be followed?  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | inspect gloves for small holes or tears before use |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | wear gloves of a material known to be resistant to permeation by the substances in use |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | decontaminate or wash gloves before removing them |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | replace gloves periodically, depending on the frequency of use |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | remove gloves before handling objects such as doorknobs, telephones, pens, and computer keyboards |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | all of the above | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 18. | Latex gloves |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | may be reused as long as they are clean |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | may be reused only if they have not been permeated |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | should never be reused | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 19. | Cloth or leather gloves are appropriate |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | when working with hazardous chemicals |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | when working around steam |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | never in the laboratory | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 20. | Four fundamental principles underlie all of the work practices in the chemical laboratory. Which of the following is not one of those principles? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | plan ahead |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | do not underestimate risks |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | add ventilation to the lab by opening windows |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | minimize chemical exposure |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | be prepared for accidents | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 21. | Glass tubing should be removed from rubber stoppers |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | only using extreme caution |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | only when it is broken |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | with the help of soap and water |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | never | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 22. | Cleaning glassware can be a safety issue |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | when using soap and water |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | when using strong oxidants |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | when broken glassware is present |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | always | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 23. | Compound A has a boiling point of 200 oC, while compound B has a boiling point of 100 oC. Which is more of a safety concern? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | B because it has a higher vapor pressure |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | A, because it might burn faster |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | just knowing the boiling point is not enough to decide the answer to this question | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 24. | Who's responsibility is it to be aware of chemical hazards? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | only the professor |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | the student, but only after being informed by a professor |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | anyone involved in work in a laboratory | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 25. | What is distillation? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | Distillation is when a liquid is evaporated and then recondensed in another container. |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | Distillation is when material is heated to melting and then separated. |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | Distillation is when a substance is dissolved, heated, and then precipitated. | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 26. | What is the singular most potentially dangerous aspect of distillation? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the reduced pressure required for the procedure |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | the exothermic nature of the reaction |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the use of flammable materials in the presence of heat | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 27. | What is extraction as practiced in the organic chemistry laboratory? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the removal of painful or impacted teeth |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | the removal of one solid material from another |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the separation of one substance from another based on solubility | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 28. | Why does extraction pose a potential safety problem? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the equipment becomes pressurized and often explodes |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | hazardous organic solvents are always necessary |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the equipment becomes pressurized and may suddenly pop open if not handled properly, spraying hazardous chemicals into the air | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 29. | The primary danger of refrigerators in the laboratory is |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | most refrigerators in use in undergraduate laboratories are not explosion-proof |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | they are insecure |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | electricity may fail, leading to warming and loss of containment of hazardous materials | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 30. | Material to be disposed of in the laboratory |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | must always be diluted copiously with water first |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | must always be neutralized first |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | must always be handled in accordance with safety guidelines specific to that class of compound | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 31. | Chemical reactions |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | may be left unattended overnight as long as secondary containment is present |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | may be left unattended overnight provided information is posted in plain sight indicating what the reaction involves and who to contact (including phone numbers) in case of emergency |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | must never be left unattended | ACS |

 |

**Section 2. Chemical Hazards**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 32. | Major factors in toxicity include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the route of exposure |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | dose |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | personal factors such as age and gender |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 33. | The four routes by which toxic chemicals can enter the body include: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | inhalation, ingestion, absorption, and injection |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | inhalation, constipation, instigation, and investigation |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | inhalation, indigestion, transmission of bodily fluids, and interjection | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 34. | Acute poisoning |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | is characterized by rapid assimilation of the substance |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | always has a sudden effect |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | is usually fatal |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | is characterized by repeated exposure over months or years | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 35. | Chronic poisoning |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | is characterized by repeated exposure over months or years |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | always has a sudden effect |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | is usually fatal |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | is characterized by rapid assimilation of the substance | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 36. | Synergy is |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the effect of one substance making another less toxic |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | the effect of two substances in combination being more toxic than the effect predicted based on the sum of the individual components |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the result of allergens in the environment | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 37. | Some toxic chemicals |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | can be assimilated directly through the skin unless proper protection is taken |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | can be ingested by transferance from hand to mouth after leaving the laboratory |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | can be inhaled even if the substance has a very high boiling point |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 38. | Allergic reactions |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | always require a second exposure |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | are examples of synergism |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | do not always involve the immune system | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 39. | What does MSDS stand for? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | Material Safety and Density Sheets |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | Material Security and Data Sheets |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | Material Safety and Data Sheets |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | Maternal Safety and Dada Sheets | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 40. | Where can information regarding specific chemical safety be found?  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | OSHA Laboratory Standards |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | MERTKA |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | MSDSs | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 41. | MSDSs |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | are written by manufacturers and government agencies |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | are written in a defined format by contractors for OSHA |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | are written by government agencies only | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 42. | OSHA stands for |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the Occupational Safety and Health Administration |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | Only Some Hazards are Actual |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the Occupational Safety and Hazard Agency | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 43. | OSHA is |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | a federal agency |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | a private company contracted by the US government |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | a state organization | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 44. | The CAS registry number is |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | a unique identifying number for each chemical |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | a rating of toxicity |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | a rating of flammability | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 45. | An LD50 of 20 in mice indicates that |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | 50% of a test population of 100-kg mice would be expected to die within a certain time period if exposed to 20 g |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | 50% of a test population of 100-kg mice would be expected to die within a certain time period if exposed to 20 ppm of the vapor |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | 50% of a test population of 100-g mice would be expected to die within a certain time period if exposed to 2 mg | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 46. | PEL stands for |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | personal exposure limit |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | permissible exposure time length |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | permissible exposure limit | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 47. | A PEL of 10 ppm indicates that |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | 10 parts per million of this substance in the water is safe for the average adult |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | the maximum allowable workplace air exposure to this substance for an adult worker for 8 hours a day, 40 hours a week, for a year is 10 ppm |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the maximum allowable workplace air exposure to this substance for an average healthy adult worker for 8 hours a day, 40 hours a week, for a working lifetime is 10 ppm |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | 10 parts per million of this substance in the air is enough to kill you | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 48. | STEL refers to |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the safe telecommuting exposure limit |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | the standard task exposure limit |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the maximum allowable exposure on a short term basis after which the PEL or TLV is considered violated | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 49. | TWA, as regards to safety, stands for |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | Time-Weighted Average |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | Trans World Airlines |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | Total Workplace Assessment | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 50. | TLV refers to |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | Tender Loving Volatiles |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | Threshold Limit Value |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | Total Loss of Volition | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 51. | The label DANGER on a chemical container most accurately signifies |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | that the hazards can cause serious injury |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | that users should be careful when using, handling, or storing the chemical |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | that the hazards can cause less than serious injury | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 52. | The label WARNING on a chemical container most accurately signifies |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | that the hazards can cause less than serious injury |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | that users should be careful when using, handling, or storing the chemical |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | that the hazards can cause serious injury | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 53. | The label CAUTION on a chemical container most accurately signifies |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | that the hazards can cause less than serious injury |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | that the hazards can cause serious injury |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | that users should be careful when using, handling, or storing the chemical | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 54. | Labels on bottles containing hazardous chemicals must indicate |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | one of the signal words, Danger, Warning, or Caution |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | the name of the chemical |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the precautionary measures that will protect users |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | the principal foreseeable hazard when used in an industrial workplace |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | first aid instructions |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 55. | The label CORROSIVE on a chemical container indicates |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | that the material is an oxidant |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | that the material can degrade rapidly upon exposure to air |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | that contact destroys living tissue as well as equipment | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 56. | FLAMMABLE means |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | easily ignited and capable of burning rapidly |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | capable of autoignition at or only slightly above room temperature. |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the opposite of "inflammable" | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 57. | "Fatal if swallowed" indicates |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | that the substance will cause death if ingested |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | that the substance will cause death if a sufficient amount is ingested |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | that 50% of a population of test animals that ingested this substance died | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 58. | teratogens |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | are substances that cause birth defects or fetal death |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | are naturally occurring pyrophoric poisons |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | are substances that only pregnant women should be particularly concerned about | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 59. | Examples of oxidizing agents include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | KNO3, KMnO4, and Na2CrO4 |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | H2, C, gasoline, acetic acid |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | NaCN, phenol | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 60. | Examples of reducing agents include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | KNO3, KMnO4, and Na2CrO4 |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | H2, C, gasoline, acetic acid |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | NaCN, phenol | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 61. | Examples of corrosive chemicals include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | HCl, H3PO4, KOH, Cl2 |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | metallic sodium, NaH, PH3, H2C2 |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | NaCN, phenol | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 62. | Examples of water-reactive chemicals include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | metallic sodium, NaH, PH3, H2C2 |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | acid/base pairs, redox pairs |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | ethanol, n-hexane | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 63. | Examples of air-reactive include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | metallic potassium, metallic sodium |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | NaCN, phenol |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | ethanol, n-hexane | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 64. | Examples of highly toxic chemicals include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | acid/base pairs, redox pairs |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | NaCN, phenol |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | ethanol, n-hexane | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 65. | Examples of less toxic chemicals include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | acid/base pairs, redox pairs |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | ethanol, n-hexane |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | NaCN, phenol | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 66. | Examples of self-reactive chemicals include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | picric acid, trinitrotoluene,CH3N2 |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | NaCN, phenol |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | metallic potassium, metallic sodium | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 67. | Examples of incompatible chemicals include |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | picric acid, trinitrotoluene,CH3N2 |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | acid/base pairs, redox pairs |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | NaCN, phenol | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 68. | Organic solvents are potential hazards because |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | most organic solvents are volatile and flammable |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | most organic solvents absorb directly through the skin |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | most organic liquids burn |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 69. | Solvents such as THF and ethyl ether are particularly hazardous because |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | they are flammable |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | they form explosive peroxides when exposed to air |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | they penetrate the skin |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 70. | Exposure to dilute aqueous hydrofluoric acid is indicated by |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | an immediate burning sensation |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | no immediate pain, but then, after several hours, excruciating pain |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | rapid reddening of the affected area | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 71. | When diluting an acid with water, |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | do it quickly, so that a cool fountain of toxic material is ejected from the flask |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | always add acid to water, not water to acid, so that the heat of reaction can be controlled |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | do not stir the flask, because it might break | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 72. | Phosphoric acid |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | should never be tasted |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | though a component of soft drinks, reacts vigorously with water when in concentrated form |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | is a weak acid, so it is not toxic | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 73. | Nitric acid |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | is a reducing agent |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | is a strong oxidizing agent |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | causes skin irritation only in concentrated form | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 74. | Perchloric acid |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | is a very powerful oxidizing agent |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | should not be used by undergraduates unless they are closely supervised |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | can react explosively with organic compounds |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 75. | Spilled mercury |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | is dangerous in liquid form, because it absorbs directly through the skin |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | is dangerous because its vapor can be inhaled, and it is a cumulative poison |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | is an acute poison | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 76. | True or false: Formaldehyde is an allergen as well as a suspected carcinogen |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | true |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | false | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 77. | Organic peroxides are particularly dangerous |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | when concentrated |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | when ethyl ether or tetrahydrofuran is left open to the air and allowed to evaporate |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | when heated |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 78. | Examples of compounds that can form dangerous explosive peroxides include: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | cyclooctene |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | cyclohexene |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | para-dioxane |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | ethyl ether |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | isopropyl ether |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | decalin |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | g)  | tetrahydrofuran |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | h)  | tetralin |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | i)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 79. | Cryogenic liquids are materials with boiling points of less than −73 oC (−100 oF). Liquid nitrogen, helium, and argon, and slush mixtures of dry ice with isopropanol are the materials most commonly used in cold traps to condense volatile vapors from a system. In addition, oxygen, hydrogen, and helium are often used in the liquid state. The primary hazards of cryogenic liquids include: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | pressure buildup |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | embrittlement of structural materials |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | fire or explosion |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | frostbite |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | asphyxiation |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | all of the above | OSHA |

 |

**Section 3. Recommended Laboratory Techniques**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 80. | There is a definite correlation between orderliness and level of safety in the laboratory. In addition, a disorderly laboratory can hinder or endanger emergency response personnel. Which of the following housekeeping rules should not be adhered to? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | never obstruct access to exits and emergency equipment |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | properly label and store all chemicals |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | clean work areas, including floors, regularly |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | secure all compressed gas cylinders to walls or benches |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | store chemical containers on the floor  | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 81. | "Secondary Containment" refers to |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | holding high school students beyond the fourth year |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | an additional pan or some sort of equipment that will catch and contain a spill if the primary vessel containing a hazardous material accidentally breaks |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | keeping undergraduates away from donuts at seminars | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 82. | What quantity of liquid chemical describes the general transition between maximum amounts to keep at workbenches and amounts to be stored? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | 250 mL |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | 500 mL |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | 1.0 L |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | 1.5 L |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | 2.0 L | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 83. | Chemicals being transported outside the laboratory or between stockrooms and laboratories should be in break-resistant secondary containers. Secondary containers with carrying handle(s) are commercially available in a variety of sizes. These containers may be made from which of the following? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | rubber |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | plastic |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | metal |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | any of the above | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 84. | All containers or laboratory glassware having chemicals in them should be properly labeled. When should you place a label on a container? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | after adding a chemical to the container |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | prior to adding a chemical to the container |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | after the container has been emptied |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | during use of the chemical in the container | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 85. | When Professor Hanson had to use his home kitchen fire extinguisher when sautéing onions, it was because |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | he failed to recognize the importance of the term "flash point" |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | he thought it would be a good way to test the extinguisher |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | he was smoking too close to the oil | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 86. | Laboratory hoods are NOT to be relied upon for protection from |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | implosion |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | reducing exposure to harmful vapors |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | explosion | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 87. | A simple Kimwipe taped to the bottom of a hood sash so that it can blow in the wind |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | is a reasonably good way to tell if the hood is working properly |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | though inexpensive, is a much more sensive measure of airflow than most electronic airflow indicators |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | cannot be relied upon as an indicator of airflow | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 88. | The failure of a belt-driven roof-mounted hood motor is indicated by |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | loss of airflow into the hood |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | the sounding of the hood alarm |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | a disturbing noise from above |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | inordinate silence |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | reverse flow of air out of the hood |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | any of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 89. | On hoods where sashes open vertically, work with the hood sash in the \_\_\_\_\_ position.  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | highest possible |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | most comfortable viewing |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | lowest possible |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | mid-point | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 90. | The proper person to notify in the case of a malfunctioning hood is |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the laboratory supervisor |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | laboratory coworkers |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | facilities personnel |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | the stockroom manager |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 91. | Flammable liquids burn only when their vapor is mixed with air in the appropriate concentration. When handling flammable liquids you should  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | use adequately ventilated work areas |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | minimize the creation of flammable vapors |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | ground metal lines and vessels to avoid static-generated sparks |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | keep containers closed except during transfer of contents |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | avoid nearby sources of ignition |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | all of the above | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 92. | Hazardous electrical voltages may be as low as |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | 10 V AC |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | 5V DC |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | 25 V AC |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | 25 V DC | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 93. | Centrifuges are particularly unsafe if |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | not balanced |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | starting to walk off the table |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | a clinking sound is heard |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | opened prior to coasting to a full stop |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 94. | High pressure air |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | is good for cleaning glassware |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | is good for evaporating organic compounds to dryness |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | can penetrate the skin without making any visible opening, causing it to balloon (ewwww!) | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 95. | Ultraviolet light should be considered dangerous if |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | it has a wavelength longer than 250 nm |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | it has a wavelength shorter than 250 nm |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | it is seen to have a greenish glow |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | it has a wavelength longer than 400 nm | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 96. | When heating a reaction, |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | the equipment should be assembled in such a way that heat can be removed rapidly and easily at any time |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | flames should be avoided |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | always be careful not to exceed the smoking temperature of the oil if an oil bath is used |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 97. | The best liquid for use in a dry-ice bath is |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | ethyl ether |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | acetone |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | isopropyl alcohol | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 98. | When working at reduced pressure, |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | surround the apparatus with shielding |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | place a cold trap between the apparatus and the vacuum pump |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | always be aware of the danger of implosion |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | be alert to bumping (sudden boiling) |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | all of the above | ACS |

 |

**Section 4. Safety Equipment and Emergency Procedures**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 99. | Before you help another person in an emergency, |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | act first, think later |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | evaluate the potential danger to yourself |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | reread the safety policies for the laboratory | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 100. | When an emergency occurs: |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | report the nature of the emergency to yoru instructor and, if necessary, to the appropriate fire or medical facility |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | tell others in the vacinity about the nature of the emergency |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | when calling 9911, stay on the line and follow the dispatcher's instructions. Be prepared to tell them your location, phone number, where you will meet emergency crews, general medical status of any hurt or trapped individuals, whether an explosion has occurred, and whether there is a chemical or electrical fire |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | do not move any injured individuals unless they are in immediate danger |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | meet the ambulane or fire crew at the place indicated |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | stay off the phone once you hang up so that it is free for emergency crews to call you |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | g)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 101. | The best way to fight a fire |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | is with a fire blanket |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | is to prevent it in the first place | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 102. | A small fire |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | can quickly grow to become a larger fire |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | often can be extinguished by suffocating it |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | can generally be dowsed with a wet towel to put it out |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | all of the above | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 103. | The fire alarm should be pulled and the fire department should be called |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | if in your estimation it is important to do so |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | whenever there is a fire of any size whatsoever |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | only when a fire is out of control | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 104. | The NFPA provides and advocates for scientifically-based consensus codes and standards, research, training and education related to fire protection. NFPA 45 is the standard on fire protection for laboratories using chemicals. NFPA stands for what? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | National Fire Protection Association |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | National Fire Protection Agency |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | National Fire and Programming Agency |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | National Fire Procedures Advocates | NFPA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 105. | All chemical laboratories be equipped with fire extinguishers. Which one of the four types of extinguishers most commonly used should not be found in a chemical laboratory? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | Water |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | Carbon Dioxide |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | Dry Chemical |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | Met-L-X | NFPA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 106. | A "Class-A" fire extinguisher can be used to treat fires involving \_\_\_\_\_ as fuel sources.  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | flammable or combustible liquids |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | electrical equipment |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | ordinary combustibles (woods, plastics, etc.) |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | combustible metals | NFPA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 107. | A "Class-B" fire extinguisher can be used to treat fires involving \_\_\_\_\_ as fuel sources.  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | ordinary combustibles (woods, plastics, etc.) |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | flammable or combustible liquids |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | electrical equipment |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | combustible metals | NFPA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 108. | A "Class-C" fire extinguisher can be used to treat fires involving \_\_\_\_\_ as fuel sources.  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | ordinary combustibles (woods, plastics, etc.) |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | electrical equipment |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | flammable or combustible liquids |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | combustible metals | NFPA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 109. | A "Class-D" fire extinguisher can be used to treat fires involving \_\_\_\_\_ as fuel sources.  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | flammable or combustible liquids |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | electrical equipment |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | ordinary combustibles (woods, plastics, etc.) |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | combustible metals | NFPA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 110. | Fire extinguishers have numerical and ABC ratings on them that look something like "1-A:10-B:C". If an extinguisher has a "6-A:80-B:C" rating, it can put out \_\_\_\_ fire as a "3-A:40-B:C" extinguisher. |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | twice as much |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | an equal amount of |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | half as much |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | three times more | NFPA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 111. | When operating a fire extinguisher, remember the mnemonic PASS. PASS represents the steps used to properly operate the extinguisher and it stands for which of the following?  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | Pin, Aim, See, Swing |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | Pull, Access, Seize, Sweep |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | Plan, Access, Squeeze, Swing |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | Pull, Aim, Squeeze, Sweep | NFPA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 112. | True or false: Never use a fire blanket until after the fire is extinquished. |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | true |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | false | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 113. | Chemicals being transported outside the laboratory or between stockrooms and laboratories should be in break-resistant secondary containers. Secondary containers with carrying handle(s) are commercially available in a variety of sizes. These containers may be made from which of the following? |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | rubber |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | plastic |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | metal |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | any of the above | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 114. | For small liquid spills that only affect a small area of skin, immediate flush with flowing water for at least  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | 5 minutes |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | 10 minutes |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | 15 minutes |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | 30 minutes | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 115. | True or false: Solid chemicals that are spilled on the skin can usually be brushed off with no adverse consequences. |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | true |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | false | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 116. | Larger spills of a hazardous liquid on the skin  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | can usually be wiped off without serious problem |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | require immediate use of the safety shower |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | should be dealt with by taking off all the affected clothes immediately, then running to the nearest shower | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 117. | True or false: Kitty litter is often effective for cleaning up spilled liquids. |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | true (hey, it works for kitty!) |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | false (who are you trying to kit?) | ACS |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 118. | A large cloud of "smoke" and a WHOOSHing noise in the NMR room indicates |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | it's time to get a new NMR |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | your sample is burning |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | the NMR is on fire |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | it's time to hit the emergency ventilation button and leave the room immediately. Find the nearest professor and tell them, "Better tell Bob that the NMR has quenched." | AMMRL |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 119. | The culture of laboratory safety depends ultimately on the working habits of individual chemists and their sense of teamwork for the protection of what group?  |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | individual chemists |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | neighbors |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | c)  | wider community |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | d)  | the environment |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | e)  | co-workers |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | f)  | all of the above | OSHA |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 120. | True or false: Finishing this quiz means I don't have to read the American Chemical Society pamphlet *Safety in Academic Chemistry Laboratories*. |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | a)  | true |
| http://www.stolaf.edu/depts/chemistry/safety/transp.gif | b)  | false (not so fast--now it's time to REREAD the sections you haven't mastered!) | BH |

 |

Bottom of Form