

Hazmat for First Responders

UNIT 1: Properties and Behavior of Hazardous Materials



ESSENTIAL QUESTION

BIG IDEAS

What are the properties and behaviors of hazardous materials?

- Students will be able to identify the properties of various hazardous materials.
- Students will be able to discuss how various hazardous materials behave.
- Students will understand how hazardous materials react.

GUIDING QUESTIONS

Content

- What are the three states of matter?
- How flammable are various hazardous materials?
- What is vapor pressure?
- What is vapor density?
- What is boiling point, melting point, freezing point, and sublimation?
- What is solubility and miscibility?
- What is specific gravity?
- What is persistence?
- What is reactivity and the reactivity triangle?
- What is the general hazardous materials behavior model?

Process


- What is the sublimation process?

Reflective

- Why is it important to understand the properties and behaviors of hazardous materials?

FOCUS STANDARDS

- KSDE 44070.28. Discuss the three states of matter
- KSDE 44070.29. Discuss the flammability of various hazardous materials
- KSDE 44070.30. Describe vapor pressure
- KSDE 44070.31. Explain boiling point
- KSDE 44070.32. Define melting point, freezing point and sublimation
- KSDE 44070.33. Describe vapor density
- KSDE 44070.34. Define solubility and miscibility
- KSDE 44070.35. Discuss specific gravity

- KSDE 44070.36. Define persistence
 - KSDE 44070.37. Define reactivity and describe the reactivity triangle
 - KSDE 44070.38. Describe the general hazardous materials behavior model
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UNIT 2: Hazardous Materials Identification



ESSENTIAL QUESTION

BIG IDEAS

How are hazardous materials stored, and how can they be properly identified?

- Students will be able to use a wide range of methods and tools to properly identify various hazardous materials.
- Students will understand various methods of storing hazardous materials.
- Students will be able to interpret safety data sheets and use an Emergency Response Guidebook (ERG).

GUIDING QUESTIONS

Content

- What are the seven clues to the presence of hazardous materials?
- What are occupancy types, locations, and pre-incident surveys that may indicate hazardous materials?
- What container shapes may contain hazardous materials?
- What are the placards, labels, colors and markings that designate the presence of hazardous materials?
- What are the written resources available to indicate the presence of hazardous materials?
- What devices are available for monitoring and detecting hazardous materials?
- What is the Emergency Response Guidebook?

Process


- How is the ERG used to obtain information about hazardous materials?

Reflective

- What are the limitations of using the senses to determine the presence or absence of hazardous materials?

FOCUS STANDARDS

- KSDE 44070.5. Discuss the roles of Awareness-level personnel and Operations-Level responders
- KSDE 44070.6. Describe the various types of hazardous materials hazards
- KSDE 44070.7. Explain each of the routes of entry
- KSDE 44070.9. Identify the seven clues to the presence of hazardous materials
- KSDE 44070.10. Discuss the occupancy types, locations, and pre-incident surveys that may indicate hazardous materials
- KSDE 44070.11. Describe the container shapes that may contain hazardous materials
- KSDE 44070.12. Identify placards, labels, and markings that designate the presence of hazardous materials

- KSDE 44070.13. Describe the other markings and colors that may indicate the presence of hazardous materials
 - KSDE 44070.14. Explain the written resources available to indicate the presence of hazardous materials
 - KSDE 44070.15. Discuss the limitations of using the senses to determine the presence of hazardous materials
 - KSDE 44070.16. Discuss the limitations of using the senses to determine the presence or absence of hazardous materials
 - KSDE 44070.17. Discuss monitoring and detection devices
 - KSDE 44070.18. Analyze scenarios to detect the presence of hazardous materials
 - KSDE 44070.19. Interpret representative shipping papers
 - KSDE 44070.20. Interpret a safety data sheet
 - KSDE 44070.24. Discuss the use of the emergency response guidebook
 - KSDE 44070.25. Obtain information about hazardous materials using the ERG
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UNIT 3: Personal Protective Equipment

ESSENTIAL QUESTION

How should Personal Protective Equipment be used when interacting with hazardous materials?

BIG IDEAS

- Students will be able to identify Personal Protective Equipment (PPE) that should be used when interacting with hazardous materials.
- Students will be able to properly utilize and store PPE.

GUIDING QUESTIONS

Content

- What respiratory protection devices should be worn when working with hazardous materials?
- What

Process

- What is the proper process for preservation of evidence?
- What is the proper process for donning and doffing different types of PPE?
- How should PPE be inspected, stored, tested, and maintained?

Reflective

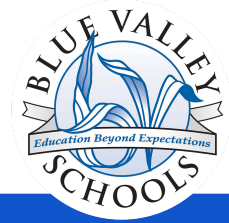
- Which PPE would I choose for different types of hazardous materials incidents?

FOCUS STANDARDS

- KSDE 44070.57. Discuss respiratory protection
- KSDE 44070.58. Discuss protective clothing ensembles
- KSDE 44070.59. Don and doff different types of personal protective equipment
- KSDE 44070.60. Discuss inspection, storage, testing, and maintenance of PPE
- KSDE 44070.61. Given hazardous materials scenarios, determine proper PPE for each incident and report and document the decision

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UNIT 4: Hazmat Crimes, Illicit Laboratories, and Terrorism



ESSENTIAL QUESTION

BIG IDEAS

In what ways are hazardous materials used illegally, and how do emergency personnel respond?

- Students will understand how hazardous materials are used in terrorist attacks and how to respond in the case of an attack.
- Students will be able to identify various types of illicit laboratories.
- Students will understand the process of illicit lab remediation.

GUIDING QUESTIONS

Content

- How are hazardous materials used in terrorist attacks?
- What are some examples of terrorist attacks using hazardous materials?
- What are the different types of hazardous materials attacks?
- What are the hazards of crimes involving hazardous materials or weapons of mass destruction?
- What are the hazards of illegal hazmat dumps?
- What is the first responder's role in an investigation?
- What is the FBI's twelve-step process for collecting evidence?
- What are illicit laboratories?
- What are the different types of illicit laboratories?
- What are the dangers of illicit laboratories?

Process

- What is the process for evidence preservation and sampling?
- How do first responders avoid hazards and booby traps at illicit laboratories?
- What is the process for remediating illicit labs?

Reflective

- How would I respond if called to the location of a terrorist attack involving hazardous materials?

FOCUS STANDARDS

- KSDE 44070.21. Explain how to identify terrorist attacks and illicit laboratories
- KSDE 44070.26. Describe isolation and discuss denial of entry
- KSDE 44070.27. Discuss terrorist incidents
- KSDE 44070.47. Define terrorism
- KSDE 44070.48. Distinguish between a terrorist attack and a routine emergency

- KSDE 44070.49. Discuss terrorist tactics and types of attacks
- KSDE 44070.50. Discuss explosive attacks
- KSDE 44070.51. Discuss chemical attacks
- KSDE 44070.52. Discuss biological attacks
- KSDE 44070.53. Discuss radiological and nuclear attacks
- KSDE 44070.54. Identify hazards of illegal haz mat dumps
- KSDE 44070.85. Discuss various hazards at crimes involving hazardous materials or weapons of mass destruction
- KSDE 44070.86. Discuss the first responder's role in investigation
- KSDE 44070.87. Describe the different response phases at criminal hazardous materials/ WMD incidents
- KSDE 44070.88. Explain the FBI's twelve-step process for collecting evidence
- KSDE 44070.89. Demonstrate evidence preservation and sampling
- KSDE 44070.90. Discuss general hazards at illicit laboratories
- KSDE 44070.91. Identify and avoid booby traps at illicit laboratories
- KSDE 44070.92. Discuss drug labs
- KSDE 44070.93. Describe chemical agent labs
- KSDE 44070.94. Describe explosive labs
- KSDE 44070.95. Discuss biological laboratories
- KSDE 44070.96. Discuss operations at illicit labs
- KSDE 44070.97. Explain remediation of illicit labs

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UNIT 5: Incident Response, Containment, and Decontamination



ESSENTIAL QUESTION

BIG IDEAS

How do first responders respond to an incident involving hazardous materials?

- Students will understand how to respond to an incident involving hazardous materials.
- Students can utilize various methods to contain hazardous materials following an incident.
- Students will be able to identify various decontamination methods and be able to perform emergency decontamination.

GUIDING QUESTIONS

Content

- What are the main differences between hazardous materials incidents and other emergencies?
- What are some important hazardous materials incident statistics?
- What are notification requirements?
- What are incident priorities?
- What are the different types of decontamination?
- What are the different types of spill control tactics?
- What are dilution operations?
- What is leak control?
- What are concentration and exposure limits?

Process

- What is the procedure for responding to a hazardous materials incident?
- How should hazardous materials be properly handled during and after disasters?
- How are various incident management systems used when responding to a hazardous materials incident?
- What is the process for isolation and scene control?
- How do first responders protect other responders, the public, the environment, and property during a hazardous materials incident?
- What are the processes for the various types of decontamination?
- What is the proper procedure for absorption, damming, diking, diversion, and retention operations?
- What is the process for controlling leaks during a hazardous materials incident?
- What is the process for controlling fire during a hazardous materials incidents?
- What is the process for monitoring and sampling air during a hazardous materials incident?
- What are some rescue methods that can be used during a hazardous materials incident?
- What are various processes for hazardous materials incident recovery?

Reflective

- How would I respond if called to the location of a hazardous materials incident?
- What are the most important items to remember when responding to a hazardous materials incident?

FOCUS STANDARDS

- KSDE 44070.4. Distinguish between hazardous materials incidents and other emergencies
- KSDE 44070.8. Discuss hazardous materials incident statistics
- KSDE 44070.22. Discuss predetermined procedures and emergency response plans
- KSDE 44070.23. Describe notification requirements
- KSDE 44070.39. Describe incident priorities
- KSDE 44070.40. Discuss various incident management systems
- KSDE 44070.41. Identify communication procedures and guidelines for use at hazardous materials incidents
- KSDE 44070.42. Describe each of the steps of the basic problem-solving formula
- KSDE 44070.43. Discuss isolation and scene control
- KSDE 44070.44. Explain the notification process
- KSDE 44070.45. Discuss protection of responders, the public, the environment, and property
- KSDE 44070.46. Describe recovery and termination
- KSDE 44070.55. Describe proper evidence preservation
- KSDE 44070.56. Discuss hazardous materials during and after disasters
- KSDE 44070.62. Define decontamination
- KSDE 44070.63. Identify various decontamination methods
- KSDE 44070.64. Discuss general guidelines for decon operations
- KSDE 44070.65. Describe the different types of victims that may receive decontamination.
- KSDE 44070.66. Describe emergency decontamination
- KSDE 44070.67. Perform emergency decontamination
- KSDE 44070.68. Describe technical decontamination
- KSDE 44070.69. Set up and implement a technical decontamination corridor and undergo decontamination
- KSDE 44070.70. Perform technical decontamination on a non-ambulatory victim
- KSDE 44070.71. Discuss mass decontamination
- KSDE 44070.72. Determine the effectiveness of decontamination operations
- KSDE 44070.73. Explain how to implement decontamination
- KSDE 44070.74. Describe each of the various spill control tactics
- KSDE 44070.75. Perform absorption, damming, diking, diversion, retention operations
- KSDE 44070.76. Perform vapor dispersion
- KSDE 44070.77. Perform dilution operations
- KSDE 44070.78. Discuss leak control
- KSDE 44070.79. Explain fire control
- KSDE 44070.80. Discuss air monitoring and sampling
- KSDE 44070.81. Discuss concentration and exposure limits
- KSDE 44070.82. Discuss rescue operations
- KSDE 44070.83. Describe various rescue methods

- KSDE 44070.84. Discuss recovery operations



Hazmat for First Responders

Course Certification



ESSENTIAL QUESTION

Certifications

What Certifications can be earned through the completion of this course?

- Obtain NIMS 700a Certification
- Obtain NIMS 200b Certification
- Obtain NIMS 100b Certification