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| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Law, Public Safety, Corrections, & Security |
| **Course Name** | Correctional Services |
| **Lesson/Unit Title** | Hazardous Materials |
| **TEKS Student Expectations** | **130.333. (c) Knowledge and Skills**  (6) The student uses first aid, infection control, and cardiopulmonary resuscitation in a correctional facility. The student is expected to:  (C) use special requirements for handling hazardous materials to maintain a safe working environment |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | The student will be able to:   * Define key terms * Identify the categories of hazardous materials * List common hazardous materials * Use special requirements for handling hazardous materials to maintain a safe working environment |
| **Rationale** | Correctional officers may encounter hazardous materials in the correctional setting. Students need to understand the special requirements for handling hazardous materials in order to remain safe. |
| **Duration of Lesson** | This lesson should take 1 hour. |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* | * **Hazardous Materials** – materials that, because of their quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or environment * **Hazardous Waste** – waste that, because of quantity, concentration, or physical or chemical, or infectious characteristics, may either cause or significantly increase mortality; increase serious illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. * **Radioactive Materials** – contain atoms with unstable nuclei that spontaneously emit ionizing radiation to increase their stability * **Radioactive waste** – radioactive materials that are discarded. They are usually the product of a nuclear process such as [nuclear fission,](http://en.wikipedia.org/wiki/Nuclear_fission) though industries not directly connected to the [nuclear power industry](http://en.wikipedia.org/wiki/Nuclear_power) may also produce radioactive waste * **Biohazardous materials** – materials containing infectious agents (bacteria, molds, parasites, viruses) that normally cause or significantly contribute to increase human mortality, or organisms capable of being communicated by invading and multiplying in bodily tissue * **Medical Waste** – both biohazardous waste and sharps (devices capable of cutting or piercing, such as hypodermic needles, razors blades, or broken glass) resulting from the diagnosis, treatment or immunization of human beings, or research pertaining to the activities |
| **Materials/Specialized Equipment Needed** | * Hazardous Materials computer-based presentation * Computers with Internet access |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | As a class, discuss what materials might be encountered in a correctional institution that would be considered hazardous. Think about industry, medical facilities, and criminal acts/bodily fluids, cleaning needs, etc. What precautionary steps need to be taken in each of these situations? What are the dangers involved in each of these scenarios? Use the Discussion Rubric for assessment. |
| **Direct Instruction \*** | I. Categories of Hazardous Materials  A. Radioactive Materials – contain atoms with unstable nuclei that spontaneously emit ionizing radiation to increase their stability  B. Radioactive waste – radioactive materials that are discarded. They are usually the product of a nuclear process such as [nuclear fission,](http://en.wikipedia.org/wiki/Nuclear_fission) though industries not directly connected to the [nuclear power industry](http://en.wikipedia.org/wiki/Nuclear_power) may also produce radioactive waste  C. Biohazardous materials – materials containing infectious agents (bacteria, molds, parasites, viruses) that normally cause or significantly contribute to increase human mortality, or organisms capable of being communicated by invading and multiplying in bodily tissue  D. Medical Waste – both biohazardous waste and sharps (devices capable of cutting or piercing, such as hypodermic needles, razors blades, or broken glass) resulting from the diagnosis, treatment or immunization of human beings, or research pertaining to the activities  II. Common Hazardous Materials  A. Fuels (gasoline, butane, propane) and items containing fuel  B. Perfumes, aftershaves, cologne  C. Cosmetics (nail polish/remover, astringent)  D. Aerosols (spray paint, hair spray)  E. Cleaning supplies (ammonia, bleach)  F. Household solvents (turpentine, acetone, mineral spirits)  G. Paints (oil- and solvent-based) and paint thinner  H. Pesticides, herbicides, rodenticides  I. Matches  J. Batteries (lithium, wet cell)  III. Handling Hazardous Materials  A. Protective Measures  1. When possible, use engineering controls such as local exhaust and general ventilation to limit airborne contaminates  2. Wear personal protective gear such as safety glasses, hearing protection, gloves, and respirators  B. Spill Procedures  1. Plan of Action  a. Know the potential locations of spills  b. Establish the quantities of material that might be released  c. Determine the chemical and physical properties of the materials  d. Know the hazardous properties of materials  e. Identify the locations and contents of spill kits. Spill kits include  i. Neutralizing agents such as sodium carbonate, sodium bicarbonate or sodium bisulfite  ii. Absorbents such as vermiculite, “super sorb,” or absorbent pillows or dikes. Paper towels, rags, and sponges may be used, but caution should be exercised because some chemicals may ignite upon contact  iii. Plastic scoops and shovels, disposable mops, disposable protective clothing, and containers to receive the spilled material and all items used in cleanup  C. General Procedures  1. If the spill is flammable, turn off ignition and heat sources  2. Attend to any person who may have been contaminated  3. Notify individuals in area of the spill  4. Evacuate nonessential personnel  5. Avoid breathing the vapors of spilled materials  6. Establish exhaust or ventilation  D. First Aid procedures  1. Eye contact – if a chemical is splashed, immediately wash your eyes and the inner surface of eyelids with water for 15 minutes. Seek medical attention. Remove contacts if wearing any  2. Minor skin contact – flush with water and remove contaminated clothing  3. Major skin contact – if spilled over a large area, remove contaminated clothing while using the shower. Wash off the chemicals with a mild detergent or soap and water  4. Ingestion – call Poison Control and seek immediate medical attention  E. Spill Kits  1. Spill  a. Any time that blood or other possibly infectious materials (OPIM) have contaminated items or areas  b. Contamination with dried, caked-on blood or any fluids visibly contaminated with blood  2. Contents  a. Neutralizing agents  b. Absorbents  c. Plastic scoops and shovels  d. Disposable mops  e. Disposable protective clothing  f. Containers to receive the spilled material  g. Bottle of disinfectant  h. 2 pairs of gloves  i. Rags  j. Paper towels  k. Clear plastic bag  l. Red biohazard bag  m. Alcohol wipes  3. Procedures for use  a. Remove contents from the spill kit package  b. Open the plastic bags so items can be easily deposited without touching the outside of the bag; set the to the side  c. Remove all jewelry and put on gloves  d. Place contaminated sharps in a sharps container from the medical department  e. Remove sharps from a spill if applicable  i. Do not touch the sharps with your hands  ii. Place the sharps in the sharps container  iii. Avoid contaminating the outside of the sharps container  f. Place paper towels on spills  i. If soiled paper towels are saturated, place them in a red biohazard bag  ii. If not saturated, place them in a clear plastic bag  g. Apply disinfectant liberally to the infected area  i. Place the used bottle of disinfectant in a clear plastic bag  ii. Allow the disinfectant to sit on the surface  h. Use the rags to soak up the disinfectant  i. Place saturated rags in a red biohazard bag  ii. Place non-saturated rags in a clear plastic bag  i. Seal the red biohazard bag while keeping it upright to  prevent fluids from leaking out  j. Remove gloves  i. Pinch the glove approximately ½-inch from the cuff and turn the glove inside-out  ii. Do not touch exposed skin with the outside of the glove’s surface  iii. Slide your free hand underneath the cuff of the remaining glove and turn it inside-out  k. Seal the clear plastic bag  l. Wash your hands thoroughly  i. Use warm water  ii. Use antibacterial soap  iii. Scrub well  iv. Rinse thoroughly  4. Contaminated linens  a. Put on gloves  b. Seal soiled linen in a water soluble bag  c. Place the water soluble bag inside a yellow biohazard bag  d. Take the yellow “contaminated linen” bag to laundry for  treatment |
| **Guided Practice \*** | Divide the students into groups. Have each group develop and present a news cast on hazardous materials. Allow them to be creative in the type of news cast they present. They may choose to cover a hazardous materials spill, first aid regarding hazardous materials, types of hazardous materials, or proper handling techniques. Students will use the information covered in this lesson and/or material they research on their own. Use the Group Evaluation Rubric, Peer Evaluation Rubric and the Presentation Rubric as needed for assessment. |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | None |
| **Lesson Closure** | None |
| **Summative/End of Lesson Assessment \*** | * Hazardous Materials Quiz and Key * Discussion Rubric * Group Evaluation Rubric * Peer Evaluation Rubric * Presentation Rubric * Writing Rubric   **Accommodations for Learning Differences:**  For reinforcement, students will research the classifications of hazardous materials. Once they have established the classes, they will then work in groups to determine which of these types of materials may be used in the correctional setting. They also need to establish which areas of the prison may use those items. Use the Group Evaluation Rubric for assessment. |
| **References/Resources/**  **Teacher Preparation** | * City of Los Alamitos [www.ci.los-alamitos.ca.us](http://www.ci.los-alamitos.ca.us/) Environmental Health & Safety, The Florida State University [http://pub.extranet.fsu.edu/sites/safety/safetywiki/Wiki%20Pages/Ch](http://pub.extranet.fsu.edu/sites/safety/safetywiki/Wiki%20Pages/Chemical%20Storage.aspx) * American Postal Workers Union, AFL-CIO [www.apwu.org](http://www.apwu.org/) * Texas Department of Criminal Justice Correctional Officer Academy Curriculum, Hazardous Materials video |
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| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** | Social Studies Standards  V. Effective Communication  A. Clear and coherent oral and written communication  1. Use appropriate oral communication techniques depending on the context or nature of the interaction.  2. Use conventions of standard written English. |
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| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** |  |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication**  **90 Second Speech Topics** |  |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | Students will write a policy for handling hazardous materials in one of the areas of the prison that may utilize them on a daily basis. For example, students may choose laundry services. They need to create a policy on how to handle storage, spills, and contact with materials that would be considered hazardous in the laundry service; such items might be detergent, bleach, disinfectant. Use the Writing Rubric for assessment. |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | SkillsUSA |
| **Service Learning Projects** |  |
| **Lesson Notes** |  |

1. Visit the Texas College and Career Readiness Standards at <http://www.thecb.state.tx.us/collegereadiness/CRS.pdf>, Texas Higher Education Coordinating Board (THECB), 2009. [↑](#footnote-ref-1)