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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
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| **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
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| **Materials/Specialized Equipment Needed** | * Hazardous Materials computer-based presentation
* Computers with Internet access
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| **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 MaterialsA. Radioactive Materials – contain atoms with unstable nuclei that spontaneously emit ionizing radiation to increase their stabilityB. 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 wasteC. 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 tissueD. 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 activitiesII. Common Hazardous MaterialsA. Fuels (gasoline, butane, propane) and items containing fuelB. Perfumes, aftershaves, cologneC. 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 thinnerH. Pesticides, herbicides, rodenticidesI. MatchesJ. Batteries (lithium, wet cell)III. Handling Hazardous MaterialsA. Protective Measures1. When possible, use engineering controls such as local exhaust and general ventilation to limit airborne contaminates2. Wear personal protective gear such as safety glasses, hearing protection, gloves, and respiratorsB. Spill Procedures1. Plan of Actiona. Know the potential locations of spillsb. Establish the quantities of material that might be releasedc. Determine the chemical and physical properties of the materialsd. Know the hazardous properties of materialse. Identify the locations and contents of spill kits. Spill kits includei. Neutralizing agents such as sodium carbonate, sodium bicarbonate or sodium bisulfiteii. 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 contactiii. Plastic scoops and shovels, disposable mops, disposable protective clothing, and containers to receive the spilled material and all items used in cleanupC. General Procedures1. If the spill is flammable, turn off ignition and heat sources2. Attend to any person who may have been contaminated3. Notify individuals in area of the spill4. Evacuate nonessential personnel5. Avoid breathing the vapors of spilled materials6. Establish exhaust or ventilationD. First Aid procedures1. 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 any2. Minor skin contact – flush with water and remove contaminated clothing3. 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 water4. Ingestion – call Poison Control and seek immediate medical attentionE. Spill Kits1. Spilla. Any time that blood or other possibly infectious materials (OPIM) have contaminated items or areasb. Contamination with dried, caked-on blood or any fluids visibly contaminated with blood2. Contentsa. Neutralizing agentsb. Absorbentsc. Plastic scoops and shovelsd. Disposable mopse. Disposable protective clothingf. Containers to receive the spilled materialg. Bottle of disinfectanth. 2 pairs of glovesi. Ragsj. Paper towelsk. Clear plastic bagl. Red biohazard bagm. Alcohol wipes3. Procedures for usea. Remove contents from the spill kit packageb. Open the plastic bags so items can be easily deposited without touching the outside of the bag; set the to the sidec. Remove all jewelry and put on glovesd. Place contaminated sharps in a sharps container from the medical departmente. Remove sharps from a spill if applicablei. Do not touch the sharps with your handsii. Place the sharps in the sharps containeriii. Avoid contaminating the outside of the sharps containerf. Place paper towels on spillsi. If soiled paper towels are saturated, place them in a red biohazard bagii. If not saturated, place them in a clear plastic bagg. Apply disinfectant liberally to the infected areai. Place the used bottle of disinfectant in a clear plastic bagii. Allow the disinfectant to sit on the surfaceh. Use the rags to soak up the disinfectanti. Place saturated rags in a red biohazard bagii. Place non-saturated rags in a clear plastic bagi. Seal the red biohazard bag while keeping it upright toprevent fluids from leaking outj. Remove glovesi. Pinch the glove approximately ½-inch from the cuff and turn the glove inside-outii. Do not touch exposed skin with the outside of the glove’s surfaceiii. Slide your free hand underneath the cuff of the remaining glove and turn it inside-outk. Seal the clear plastic bagl. Wash your hands thoroughlyi. Use warm waterii. Use antibacterial soapiii. Scrub welliv. Rinse thoroughly4. Contaminated linensa. Put on glovesb. Seal soiled linen in a water soluble bagc. Place the water soluble bag inside a yellow biohazard bagd. Take the yellow “contaminated linen” bag to laundry fortreatment |
| **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 StandardsV. Effective CommunicationA. Clear and coherent oral and written communication1. 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)