

INSTRUCTOR GUIDE

RINGS OF FIRE

Tire Fire Prevention and Suppression

Lesson Plan 04 TIRE STORAGE

<u>TOPIC:</u>	Tire Storage Methods Impact on Firefighting
<u>LEVEL:</u>	I
<u>TIME:</u>	30 Minutes
<u>BEHAVIORIAL OBJECTIVE:</u>	
Condition:	Complete evaluation with 70% accuracy
Behavior:	The student will . . . <ol style="list-style-type: none">1. Identify storage methods and processes2. Determine which storage method is best from a firefighting perspective
Standard:	According to the referenced text
<u>REFERENCES:</u>	Slaughter, Rodney. "RINGS OF FIRE: Tire Fire Prevention and Suppression" California State Fire Marshal, June 2004.
<u>MATERIALS NEEDED:</u>	PC projector, projection screen, VCR, multimedia slide show on CD-ROM, speakers.
<u>PREPARATION:</u>	<p>Effective disposal options are continually being sought for the hundreds of millions of tires that are discarded each year. Currently there are no federal laws or regulations specifically governing waste tires. Although responsible means for disposal, such as recycling, reuse and energy-recovery have become more common, the tire dumps of the last forty years continue to present environmental and safety hazards that will continue into the foreseeable future.</p> <p>Waste tires are not desirable in standard landfills because, when buried, the tires tend to trap air and "float", which interferes with future landfill reclamation operations. As permitted landfill space diminishes, it is necessary to limit the types of accepted material to those better suited to future reclamation.</p>

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Tires isolated from the waste stream must also be separated from other types of combustible materials that may ignite at a lower temperature and threatened the tire pile.

The way tires are stored can significantly impact fire fighting efforts. Tire pile size, configuration, and storage method can all contribute to problems for command and control of an outdoor tire pile fire. In this section we will review the scrap tire industries storage practices.

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PRESENTATION	APPLICATION
<p>I. Objective</p> <ul style="list-style-type: none">A. Identify methodsB. Determine which storage method is best from a firefighting Perspective <p>II. Laced Stacks</p> <ul style="list-style-type: none">A. Whole tires stacked in an overlapping or herring bone patternB. This “laced” stacking takes advantage of space, exposes less surface area of the tires to a fire, and may be used as a retaining wall for randomly stacked tiresC. The biggest problem or danger with a fire in a laced stacked is that the tires are more difficult to pull apart without bringing a whole section of tires downD. Bagel Cut Laced Pile- cut side faces down to keep water collecting to control mosquito’s <p>III. Barrel stacks</p> <ul style="list-style-type: none">A. Whole tires stacked on top of one another	<p>From the Background Menu click on the Tire Storage button.</p> <p>Tire Storage Objective Slide 01</p> <p>Tire Storage Slide 02 Laced</p> <p>Tire Storage Slide 03 Bagel-cut</p> <p>Tire Storage Slide 04 Barrel stack</p>

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PRESENTATION	APPLICATION
<p>B. Typically this is used for used tires that have been graded as reusable tires</p> <p>C. These graded tires may be resold, retreaded, or exported to foreign dealers</p> <p>D. A fire in barrel stacked tires generates flames in a whirlpool effect straight up into the air</p> <p>E. Lateral extension of the fire is possible, but does not extend as fast as randomly stacked tires</p>	
<p>IV. Random Stacks</p> <p>A. This is the most common storage method where tires are simply tossed into piles</p> <p>B. This method requires little effort or handling by a site operator but also requires the most storage space</p> <p>C. Randomly stacked tires are a greater fire risk because they expose more tire surface area and create greater volumes of air between tires than other stacking methods</p>	<p>Tire Storage Slide 05 Random stack</p>
<p>V. Bundling and Baling</p> <p>A. In one method, up to 18 whole tires, approximately 11 feet, can be compressed into 30-inch bundles</p>	<p>Tire Storage Slide 06 Tire bale 1</p> <p>Tire Storage Slide 07 Tire bale 2</p>

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PRESENTATION	APPLICATION
<p>1. This process clearly reduces the space required to store tires and reduces interior spaces decreasing potential wildlife and insect habitats</p> <p>2. However, studies have shown that even after 6-months of compression, when the bundled tires are released the tires spring back to their original shape</p> <p>3. In a fire, the steel wires holding the tire bundle together are broken by high temperatures and pressure from the bundled tires</p> <p>4. As the tires quickly return to their original size and shape, oxygen and fire are drawn into the interior space of the tires fueling the fire like a bellows</p>	<p>Tire Storage Slide 08 Tire bale 3</p> <p>Tire Storage Slide 09 Tire bale 4</p>
<p>B. Another baling method involves bailing approximately 100 tires into a large square bale. The bale measures about 10' by 10' by 4'</p> <p>1. . These bales weigh a ton</p> <p>2. They are used for engineering applications such as on the banks of waterways or arroyo's and then covered with cement to hold the banks and tire bundle in place</p>	<p>Tire Storage Slide 10 Tire bale 5</p>

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<p>VI. Shredding</p> <p>A. In this process tires are ripped and shredded into smaller pieces by a shredding machine</p> <p>B. One pass through a shredding machine yields ‘single pass’ or ‘chunk’ tire material</p> <p>C. If this material is run through the shredding machine several times, 2” Tire Derived Fuel (TDF) is produced</p> <p>D. Shredding reduces tire volume- eliminating interior air space, and prevents water collection and breeding of mosquitoes and other wildlife</p> <p>E. Shredded and ‘chunk’ tire pile fires tend to be less intense and create less smoke than whole tire pile fires</p> <p>F. The flame height is no more than 1 to 3 feet and can be extinguished with a fog pattern hose stream.</p>	<p>Tire Storage Slide 11 Chunked</p> <p>Tire Storage Slide 12 Shreds</p> <p>Video - Slide 13: Show first of four sections of the “Rings of Fire” video</p> <p>Instructors Note: Give summary and then read evaluation questions</p> <p>Tire Storage Slide 14 Storage Questions</p>

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SUMMARY:

This chapter provides the emergency responder with an overall history and background of the waste tire business. This background information will be useful as you interact with scrap tire dealers and begin to enforce site specific fire prevention measures or should you become involved with managing an outdoor tire pile fire.

EVALUATION:

1. What is the typical method for outdoor storage of waste tires?

Answer: random piles

2. Does storage configuration affect fire behavior?

Answer: Yes

3. What storage method would you prefer if a tire pile was on fire?

Answer: Shredded or Barrel stacked

ASSIGNMENT:

None