

Colorado Firecamp		1. WORK PROJECT/ACTIVITY	2. LOCATION	3. UNIT
		S-212/MTDC Chainsaw Training	Salida, Colorado	
JOB HAZARD ANALYSIS (JHA)		4. NAME OF ANALYST	5. JOB TITLE	6. DATE PREPARED
References-FSH 6709.11 and 12 (Instructions on Reverse)		Kent Maxwell Mark Thomas	Training Coordinator Lead Instructor	4/20/2009 <i>updated – 8/25/2010</i>
This JHA is specific to chainsaw training activities and does not adequately address additional hazards associated with fireline construction, hazard tree felling, working within 10 ft. of overhead electrical lines, etc.				
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE		
Training requirements	<i>personal injury</i>	<ul style="list-style-type: none"> • Successful completion of S-212 course or MTDC Chain Saw/Crosscut saw training course. • Certified in basic first-aid and CPR. • Do not exceed your level of training. If you are a trainee you must have a qualified person supervising your activities. 		
Training certification		<ul style="list-style-type: none"> • Chainsaw operators shall be properly certified prior to operation and will adhere to any restrictions or limitations placed upon them. • Chainsaw operators may only exceed the restrictions or limitations placed on them if they are under the supervision of a qualified individual who is certified at a higher level of saw operation. • For the purposes of training, additional individuals besides the saw operator may be allowed with-in a 2 ½ times tree height radius if under supervision of a qualified instructor. 		
Personal protective equipment	<i>cuts, eye injuries, hearing loss, burns</i>	<ul style="list-style-type: none"> • Appropriate gloves (cut resistant for sharpening), hardhat, hearing protection (85dB and above,) long sleeve shirt, chaps (recommended to overlap top of boots by 2”), boots - 8” high with skid resistant soles, eye protection, and reflective safety vest. • Proper PPE must be worn at all times. 		
Equipment	<i>injury, damage to equipment or adjacent resources</i>	<ul style="list-style-type: none"> • Ensure chainsaw is in proper working order with fully functional chain brake. • Ensure chain is properly sharpened and adjusted. • Ensure falling axe of appropriate size and weight. • Ensure proper size and number of wedges. 		
Transporting chain saws	<i>fire, damage to equipment, and</i>	<ul style="list-style-type: none"> • Saw should be transported either purged of all fuel, or completely full. • Bars should be covered during transportation. 		

	<i>personal injury</i>	<ul style="list-style-type: none"> • Saws should be secured in compartments away from people in a manner that will minimize shifting to prevent damage to saw and apparatus. • When transporting saws by rotor or fixed wing aircraft follow direction of pilot or qualified person in charge. • Do not carry saws or fuel containers in passenger compartment of vehicle.
Walking with chain saw	<i>cuts, falls, sprains and strains</i>	<ul style="list-style-type: none"> • Engage chain brake or shut off chain saw if walking more than 50 feet. • While carrying chain saw on shoulder, ensure that chain and dogs are covered.
Pre-work briefing / tailgate safety session		<ul style="list-style-type: none"> • Brief employees on work assignment and objectives. • Insure required PPE is being utilized. • Review applicable JHAs, hazard tree indicators and mitigation measures including LCES (lookouts, communications, escape routes, safety zones). Refer to “6 Minutes for Safety” chainsaw safety / hazard tree discussion sheets. • Brief employees on the plan that would be executed in the event of a serious employee illness/injury that would require medical evacuation.
Traffic control	<i>injury to public, damage to vehicles.</i>	<ul style="list-style-type: none"> • Ensure road guards are in place along travel routes when felling trees that are along the travel routes. • Establish radio communications between road guards and sawyer when needed.
Working in a group using a chainsaw	<i>struck by tree and limbs, head injury, crushing injury, death</i>	<ul style="list-style-type: none"> • At least two employees shall be present when operating a chainsaw. No sawing alone, except in limited circumstances such as clearing a blown down tree from a blocked road. Radio or cellphone communication must be made to officer or dispatch center with time tags and trigger points to send help. • Space employees so that activities of one will not create a hazard for another. • Have workers and felling crews on the same contour rather than some working above and below others on steep slopes. • Establish and maintain area control and communications.
Saw team operations	<i>cuts, struck by trees and limbs, head injury, crushing injury, death</i>	<ul style="list-style-type: none"> • No employee shall approach a faller closer than 2-1/2 tree lengths of trees being felled until the faller has acknowledged that it is safe to do so, unless it is demonstrated that a team of employees is necessary to manually fell a particular tree, or to observe in a training situation with an instructor. • Do not allow swamper to “reach in” to grab brush. Engage chain brake. • Ensure swamper is clear of hazards during limbing and bucking operations. • Sawyer and swamper must communicate with each other when pulling brush and working close together.

<p>Starting procedure</p>	<p><i>loss of control, cuts from contact with moving chain</i></p>	<p><i>The methods to safely start and operate a saw can vary with the model and size. The following basic precautions generally apply regardless of the saw model:</i></p> <ul style="list-style-type: none"> • Maintain a secure grip on the saw at all times. • Start the saw on the ground or ensure saw is firmly supported. • Do not "drop start" a chain saw. • Chain brake must be engaged. • Operator must announce, "Starting saw!"
<p>Size-up</p>	<p><i>head injury, cuts, falling, and slipping</i></p>	<ul style="list-style-type: none"> • Size up the tree considering the tree species, height, diameter, lean, soundness, current and previous fire damage, split or broken top, overhead hazards, widow makers, and other hazard tree indicators. • Sound the trunk. Bore tree if necessary to determine soundness. • Walk anticipated lay of tree and check for hazards. • Clear work area of hazards and obstructions. • Determine and clear primary and secondary escape routes. • Ensure that area 2 1/2 times the height of the tree to be felled is clear of personnel. • Be alert for environmental conditions that could increase risk. (strong/gusty winds, steep slopes, lightning, etc.) • Ensure adequate traffic control measures are taken on roads and trails. Take and maintain area control. • If the identified tree cannot be safely removed and presents a hazard, the area will be flagged off at a safe distance and an alternate mitigation used.
<p>Felling process</p>	<p><i>head injury, eye injury, cuts, amputation, crushing injuries, and death</i></p>	<ul style="list-style-type: none"> • No employee shall approach a faller closer than 2-1/2 tree lengths of trees being felled until the faller has acknowledged that it is safe to do so, unless it is demonstrated that a team of employees is necessary to manually fell a particular tree, or to observe in a training situation with an instructor. • Follow proper felling procedure as outlined in S-212 or MTDC chainsaw course. • Initiate undercut at a level that ensures adequate footing and balance throughout cutting sequence. • Prior to starting the back cut, the saw should be stopped and area surveyed to ensure that nobody has entered the area. A warning should be sounded as to the intentions of your actions (i.e. "tree coming down, sidehill.") Operator must announce, "Tree falling!" • At the first sign of the tree committing to the undercut proceed to safety zone. • No felling operations will be conducted at night or during times the top of tree being felled is obscured.

Hang-Up Trees	<i>head injury, eye injury, cuts, amputation, crushing injuries, and death</i>	<ul style="list-style-type: none"> • If a tree hangs up during felling operation, a new size-up is required, including Go/No-Go decision and establishing escape routes. • Evaluate competency of fallers present to deal safely with complexity of situation. Establish “no work zone” if hang-up cannot be safely dislodged. • Do not make a bad situation worse by initiating a sequence of step cuts that results in nearly vertical hang-up or hang-up suspended completely off ground. • Consider using rope puller to pull base of hang-up tree away from support tree. 	
Limbing	<i>cuts, injury from limbs whipping back, crushing injuries</i>	<ul style="list-style-type: none"> • Beware of other logs, branches, or rocks immediately behind the area where you are bucking, brushing, or limbing for possible kickback potential or rocking of the chain. • Watch for limbs under tension and be aware of kick back and bar pinch. • Be cautious when limbing on the downhill sides of trees. Limbs may be holding tree in place, be aware that the log may roll after a limb is cut. • Know where the tip of your bar is at all times. • Walk the tree and make plan for limb removal sequence. • Maintain clear area for footing. • Engage chain brake if operator removes a hand from saw. • Must have escape route. 	
Bucking	<i>cuts, injury from limbs whipping back, crushing injuries</i>	<ul style="list-style-type: none"> • Beware of other logs, branches, or rocks in work area. • Avoid bucking on the downhill side. • Ensure log is stable. • Check area for overhead hazards. • Must have escape route. 	
Fueling chain saws	<i>burns, possible fire</i>	<ul style="list-style-type: none"> • Allow chain saw to cool for at least 5-minutes before refueling. • Fill the tank on bare ground or other noncombustable surface. • Immediately clean up spilled fuel / use a funnel. • Refuel out doors and at least 20 feet from open flame or other ignition source. • Start the saw at least 10 feet from the fueling area. 	
10. LINE OFFICER SIGNATURE		11. TITLE	12. DATE
		training coordinator	<i>updated August 25, 2010</i>
Previous edition is obsolete	(over)		

JHA Instructions (References-FSH 6709.11 and .12)

The JHA shall identify the location of the work project or activity, the name of employee(s) involved in the process, the date(s) of acknowledgment, and the name of the appropriate line officer approving the JHA. The line officer acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.

Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory.

Block 7: Identify all tasks and procedures associated with the work project or activity that have potential to cause injury or illness to personnel and damage to property or material. Include emergency evacuation procedures (EEP).

Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:

- a. Research past accidents/incidents.
- b. Research the Health and Safety Code, FSH 6709.11 or other appropriate literature.
- c. Discuss the work project/activity with participants.
- d. Observe the work project/activity.
- e. A combination of the above.

Block 9: Identify appropriate actions to reduce or eliminate the hazards identified in block 8. Abatement measures listed below are in the order of the preferred abatement method:

- a. **Engineering Controls** (the most desirable method of abatement).
For example, ergonomically designed tools, equipment, and furniture.
- b. **Substitution.** For example, switching to high flash point, non-toxic solvents.
- c. **Administrative Controls.** For example, limiting exposure by reducing the work schedule; establishing appropriate procedures and practices.
- d. **PPE** (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills, and portable water pumps).
- e. A combination of the above.

Block 10: The JHA must be reviewed and approved by a line officer. Attach a copy of the JHA as justification for purchase orders when procuring PPE.

Blocks 11 and 12: Self-explanatory.

Emergency Evacuation Instructions (Reference FSH 6709.11)

Work supervisors and crew members are responsible for developing and discussing field emergency evacuation procedures and alternatives in the event a person(s) becomes seriously ill or injured at the worksite. Must have first aid kit and identify EMS qualified personnel on-site.

Be prepared to provide the following information:

- Nature of the accident or injury (avoid using victim's name).
- Type of assistance needed, if any (ground, air, or water evacuation).
- Location of accident or injury, best access route into the worksite (road name/number),
- Identifiable ground/air landmarks.
- Radio frequencies.
- Contact person.
- Local hazards to ground vehicles or aviation.
- Weather conditions (wind speed & direction, visibility, temperature).
- Topography.
- Number of individuals to be transported.
- Estimated weight of individuals for air/water evacuation.

The items listed above serve only as guidelines for the development of emergency evacuation procedures.

JHA and Emergency Evacuation Procedures Acknowledgment

We, the undersigned work leaders and crew members (instructors and students) acknowledge participation in the development of this JHA and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:

Print Name	Signature	Date
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
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