

## HAND TOOLS TRAIN THE TRAINER (SAFETY, PARTS & OPERATION)

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	CONTENT	VISUALS	OPERATIONAL NOTES	TRAINER SCRIPT
1	<b>SAFETY FIRST</b>			
2	<p><b>WHO IS OSHA</b>            With the <u>Occupational Safety and Health Act of 1970</u>, Congress created the <u>Occupational Safety and Health Administration (OSHA)</u> to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance.</p> <p><b>ORGANIZATION</b>            OSHA is part of the <u>United States Department of Labor</u>. The administrator for OSHA is the Assistant Secretary of Labor for Occupational Safety and Health. OSHA's administrator answers to the <u>Secretary of Labor</u>, who is a member of the cabinet of the President of the United States.</p>		<p>OSHA has 2 branches, the Enforcement Branch and the Collaboration Branch.</p> <p>The Enforcement Branch investigates complaints and serious accidents.</p> <p>The Collaboration Branch works on education, such as the Susan Harwood Grant.</p>	<p>OSHA was started to protect workers in the work place. Before OSHA there was no organization that tracked work place injuries. There were also no safety standards for employers.</p> <p>OSHA has 2 branches, the Enforcement Branch and the Collaboration Branch.</p> <p>The Enforcement Branch investigates complaints and serious accidents. The Collaboration Branch works on education, such as the Susan Harwood Grant.</p>

<p>3</p>	<p><b>KNOW YOUR RIGHTS</b>  Under federal law, you are entitled to a safe workplace. Your employer must provide a workplace free of known health and safety hazards. If you have concerns, you have the right to speak up about them <b>without fear of retaliation</b>. You also have the right to:</p> <ul style="list-style-type: none"> <li>● Be trained in a language you understand</li> <li>● Work on machines that are safe</li> <li>● Be provided required safety gear, such as gloves or a harness and lifeline for falls</li> <li>● Be protected from toxic chemicals</li> <li>● Request an OSHA inspection, and speak to the inspector</li> <li>● Report an injury or illness, and get copies of your medical records</li> <li>● See copies of the workplace injury and illness log</li> <li>● Review records of work-related injuries and illnesses</li> <li>● Get copies of test results done to find hazards in the workplace</li> </ul>	 <p>The poster titled "Job Safety and Health IT'S THE LAW!" from OSHA lists the rights of workers and the responsibilities of employers. It includes sections for "All workers have the right to:", "Employers must:", and "OSHA can help you." It also features a graphic of two workers in safety gear.</p>	<p>Read the rights to the trainees and point them to the posters available around the workplace where they can refer to for more information. Extra resources can be found at <a href="https://www.osha.gov/workers/index.html">https://www.osha.gov/workers/index.html</a></p>	<p>Every worker has the right to a safe workplace and OSHA was created to do that.</p>
<p>4</p>	<p><b>INTRODUCTION TO HAND TOOLS</b></p>			
<p>5</p>	<p><b>WHAT IS MACHINE GUARDING</b>  A means of shielding employees from moving or flying parts and preventing them from accidentally coming into</p>	 <p>A rectangular warning sign with a red border and the word "DANGER" in a red oval at the top. Below it, the text reads "DO NOT OPERATE WITHOUT GUARDS IN PLACE" next to a graphic of a gear and a hand.</p>	<p>Simply put, machine guarding protects the worker from the hazard.</p>	<p>Machine guards are in place to protect the user from the Point of Operation. It is very</p>

	<p>contact with moving pieces of equipment</p>		<p>Machine guarding should not impede the lubrication or operation of the machine.</p>	<p>important not to remove any machine guards. If a guard is in the way be sure to ask a shop trainer or shop professional for help.</p>
<p>6</p>	<p><b>MACHINE-RELATED INJURIES</b> Possible machinery-related injuries include:</p> <ul style="list-style-type: none"> <li>● Crushed fingers or hands</li> <li>● Amputations</li> <li>● Burns</li> <li>● Blindness</li> </ul> <p>A good rule to remember is: <b>Any machine part, function, or process which may cause injury must be safeguarded</b></p>		<p>Many accidents result from persons working on, or around, moving machinery. These accidents could have been prevented by the installation and proper maintenance of guarding. The goal of this training is to make the guarding of all equipment as easily understood as possible and re-inforce the safe working procedures that must always be in place around dangerous equipment.</p> <p>This list of accidents is as long as it is horrifying.</p> <p>Safeguards are essential for protecting workers from needless and</p>	<p>The machines may look imposing and may be loud, but you shouldn't be afraid of them. When used correctly they are safe and can be used to create a lot of interesting things.</p> <p>Do not take the machines for granted. Accidents can happen very quickly. Machine users need to keep their fingers and hands away from the Point of Operation. Wear safety glasses to protect their eyes and closed toe sturdy shoes to protect their feet. Machine users need to put long hair up in a ponytail or bun and not wear loose clothing or dangling jewelry to</p>

			<p>preventable injuries. Where the operation of a machine can injure the operator or other workers, the hazard must be controlled or eliminated.</p> <p><a href="#">National Emphasis Program on Amputations*</a>. CPL 03-00-019, (August 13, 2015). Describes policies and procedures for implementing a National Emphasis Program (NEP) to identify and to reduce workplace machinery and equipment hazards which are causing or likely to cause amputations.</p> <p>Resource:</p> <p><a href="https://www.osha.gov/dte/outreach/construction_generalindustry/gio_outreach_tp.html">https://www.osha.gov/dte/outreach/construction_generalindustry/gio_outreach_tp.html</a></p> <p><a href="https://safetyresourcesblog.com/2014/08/16/osha-quickcards-">https://safetyresourcesblog.com/2014/08/16/osha-quickcards-</a></p>	<p>protect themselves from getting caught up in rotational hazards.</p>
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7	<p><b>MACHINERY ACCIDENTS</b></p> <p>Examples of how machine accidents can occur:</p> <p><b>Hazardous conditions</b> Missing or loose machine guards</p> <p><b>Human actions</b> Reaching-in to “clear” equipment Unauthorized persons doing maintenance or using the machines</p> <p>Even though hand tools do not present the same type of hazards as machine tools users must still be aware of the Point of Operation, Nip Points, Rotational Hazards, and sharp cutting edges.</p>		<p>Missing, loose machine guards, or miss aligned machine guards can cause injuries from nip points and in running nip points.</p> <p>An operator should not reach into the point of operation unless the tool is secured or unplugged.</p>	<p>Machine guarding is constantly evolving. The Prototyping Lab continues to review and incorporate the appropriate machine guarding for each machine.</p> <p>Users must be aware that hand tools may not have the same injury potential as machine tools, but they still need to take the same safety precautions to prevent injury.</p>
8	<p><b>BASIC MACHINERY PARTS AND HAZARDS</b></p> <p>Three fundamental machine areas:</p> <ul style="list-style-type: none"> <li>● Point of operation</li> <li>● Power transmission device</li> <li>● Other moving parts – Operating controls such as mechanical or electric power control</li> </ul>		<p>“All machines consist of three fundamental areas: the <u>point of operation</u>, the <u>power transmission device</u>, and the <u>operating controls</u>.</p> <p>Despite all machines having the same basic components, their safeguarding needs</p>	<p>An easy way to keep these in mind is that the Point of Operation is where the work actually happens.</p> <p>The Power Transmission device is usually the motor that drives the</p>

			<p>widely differ due to varying physical characteristics and operator involvement” (OSHA 2007).</p> <p>OSHA Machine Guarding eTool - <a href="https://www.osha.gov/S LTC/etools/machineguarding/intro.html">https://www.osha.gov/S LTC/etools/machineguarding/intro.html</a></p>	<p>machine.</p> <p>Other moving parts are anything else on the hand tool that moves. The operating controls are the buttons and switches that allow you to turn the tool on and off and have it do other functions.</p>
9	<p><b>HAZARD TYPES</b></p> <p>Point of Operation</p>		<p>Explain that the Point of Operation is where the work is being done on the machine.</p>	<p>You always want to make sure that your fingers are away from the Point of Operation since this is where the work is being done with the tool. Don't take the simplicity of a hand tool for granted. It can still cause injury.</p>

10	Nip Points and Rotating Parts		<p>Nip Points and Rotating Parts are areas where fingers, hair, loose clothing, or jewelry can get caught up in. Keep long hair up in a ponytail or bun and do not wear loose clothing or jewelry.</p>	<p>Keep in mind that Nip Points and Rotating Parts can pull your fingers into the machine and you need to be aware to keep your fingers, hair, loose clothing, or jewelry away from them.</p>
11	Flying Chips and Sparks	 <p><b>Nip Point and rotating parts</b></p>	<p>Flying chips and Sparks can fly into the operator's eye. Flying sparks can also fly into the eye and can cause burns where they land. Always wear the proper PPE. Chips are a slip hazard and need to be cleaned up as soon as possible.</p>	<p>You may not be able to see the flying chips, but need to be aware that they are being created because they will fall on the floor and can make it slippery. Flying sparks may look neat, but are hot and could cause burns. Do not try to catch them.</p>

12	<p><b>POTENTIAL HAZARDS</b></p>	 	<p>Potential hazards from hand tools are in the way they are used and potentially miss used. Do not take the tool for granted since it is small.</p>	<p>Knowing the potential hazards of the tool will hopefully help you understand why if the tool has guards that they must be kept in place and why we need to wear Personal Protective Equipment (PPE) when using them.</p>
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**Nip Point on this side of the guard**

**Guard**

**Chips and sparks will fly in this direction**

<p>13</p>	<p><b>PREVENTING INJURIES AND AMPUTATIONS</b></p> <ul style="list-style-type: none"> <li>● Do not remove the any guards, or other devices</li> <li>● Do not operate or use the tool unless you are trained and authorized to use it.</li> <li>● Operators must put the tool in the sturdiest position. Taking caution not to place hands near the Point of Operation.</li> </ul> <p>If performing service and maintenance activities follow lock out tag out procedures or unplug the unit.</p>	 	<p>Tool users always need to check to make sure that all of the guards are in place if the tool has guards.</p> <p>Hand Tools seems to be easy enough to operate, but users still need to be trained on their use.</p> <p>The work piece needs to be placed on the Table for safety and stability. Operators always need to be aware where their fingers are in relation to the Point of Operation and the work piece.</p> <p>Any tool malfunction needs to be reported to the shop staff. Do not attempt to repair the tool on your own.</p>	<p>No one can use any of the tools unless they are trained by one of the shop trainers or shop staff.</p> <p>Power hand tools do not have emergency stop buttons so operators always need to know how to turn the tool off and disconnect the power.</p> <p>Power hand tools have some form of guarding which is on the tool to help keep you safe, do not remove any of the guards. If you experience problems with them let a trainer or shop staff know.</p> <p>With everything going on do not forget where your fingers are in relation to the Point of Operation.</p> <p>If something goes wrong with the tool do not try to fix it. Turn it off and</p>
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14	<p><b>SAFETY PRECAUTIONS I</b></p> <p>Verify that all tool guards are in place if the tool has them.</p>		Always make sure that the guards are in place and secure before starting the tool.	The guards in the pictures to the left protect the user from rotating parts inside them and from flying chips or sparks. Do not put your fingers near the rotating cutting attachment otherwise it will increase the chances of your fingers getting pulled into the Nip Points that exist between the guard and the rotating cutting attachment.
15	<p><b>SAFETY PRECAUTIONS II</b></p> <p>Keep machine clear of Excessive dust.</p>		Dust is flammable and potentially explosive. Operators need to be aware of the dust that their project is creating and may need to intermittently clean up the area with a vacuum cleaner.	Always make sure that you check the tool for excessive dust before you use it. You may need to clean it before use especially if you are going to be creating sparks.
16	<p><b>SAFETY PRECAUTIONS III</b></p> <p>Grinding sparks are hot, do not try</p>		It may be tempting to try to catch the sparks, but	Keep in mind that the reason that the sparks

	<p>to catch them. The area that was being ground may be hot. Be careful not to touch this area. Some chips may be sharp so do not try to pick them up by hand.</p>		<p>don't because they are very hot and can cause burns. Also, the area that was being ground will probably be hot.</p>	<p>are red is because they are very hot. You also want to make sure that you don't touch the area that was being sanded since it may be hot.</p>
17	<p><b>PROTECT YOURSELF WITH PPE</b></p> <ul style="list-style-type: none"> <li>● Always wear safety glasses.</li> <li>● Always wear fully enclosed sturdy shoes protect the top of your foot.</li> <li>● Do not wear any rings or dangling jewelry.</li> </ul> <p>Long hair needs to be tied up or put into a bun.</p>		<p>Personal Protective Equipment (PPE) may be a bit uncomfortable or bulky, but needs to be worn to protect the user from injury.</p>	<p>PPE (Personal Protective Equipment) is your last line of defense for injuries. Always be sure that you are wearing the proper PPE.</p>
18	<ul style="list-style-type: none"> <li>● <b>INTRODUCTION TO HAND TOOLS</b></li> </ul>			

19	<p><b>SAFE MACHINE OPERATIONS 1</b></p> <p><b>Make sure that all of the guards are in place and that the tools are in proper operating condition.</b></p>	 <p>The top image shows a red Milwaukee angle grinder with a black guard. A red arrow points from a box labeled 'Guard' to the guard. The middle image shows a person using a red Milwaukee circular saw with a silver guard. Red arrows point from the 'Guard' box to the guard. The bottom image shows a chisel on a wooden workbench with a large red 'X' over it, indicating it is unsafe to use without a guard.</p>	<p>Make sure that the Guards are intact and work. No tool should be used with the guards removed.  Hand tools should not be used if they are in dis-repair.</p>	<p>Guards protect you from rotating parts inside them. Do not operate the machine if they are missing. If the guards get in the way of the intended operation see a shop trainer or shop staff member for suggestions on how to safely complete your task.</p>
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<p>20</p>	<p><b>SAFE MACHINE OPERATIONS 2</b></p> <p><b>Make sure that the work area is clear of obstructions.</b></p>		<p>The work area needs to be clear of obstructions and of others working near it. Always make sure that the floor around the work area is clear of obstructions as well so that there are no trip hazards.</p>	<p>It is very important to have a clear work area so that you don't have to worry about tripping or slipping on debris on the floor. Also take into consideration the people working around you so that they are not in danger of getting hit by flying chips or sparks. You also don't want to get distracted by others.</p>
<p>21</p>	<p><b>SAFE MACHINE OPERATIONS 3</b></p> <p><b>Clean the tools and work area.</b></p>		<p>Use a vacuum to suck up the dust and debris that was created in and around the work area</p> <p>Sweep up or vacuum up any debris that is on the floor.</p> <p>It is important to chips, debris, and dust off the floor since it is a slip hazard and can cause injury.</p>	<p>Always be sure to clean the tools, work area, and the floor after using hand tools to eliminate the risk of slipping hazards.</p>