## JOB SAFETY ANALYSIS

**JSA No.:** 08-13-14-004  
**Position Title:** Mechanic  
**Date:** 08/06/2014  
**Department:** Shop  
**Analysis Developed By:** Candice Davidson  
**Work Location(s):**  
- Bus  
- Parking Lot  
- Roadside  
- Shop  
**Analysis Reviewed By:** Angel Steenburg  
**Person(s) Performing This Job:**  
- Automotive Service Technician  
- Mechanic Apprentice  
- Truck and Coach Technician  
**Supervisor:** Shop Manager  
**Analysis Start Date:** 08/06/2014  
**Duration:** 1 Day

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<th>Task/Step</th>
<th>Potential Hazards</th>
<th>Recommended Safe Job Procedures</th>
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</table>
| 1. Vehicle Inspections     | 1. Tripping (uneven ground)  
  2. Moving vehicles  
  3. Slippery surfaces (water, ice, snow, fluids)  
  4. Sharp objects or equipment  
  5. Pinching  
  6. Noise (dBA) | Personal Protective Equipment:  
- Safety glasses  
- Hearing protection  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  
Safe Operating Procedures:  
- Wear clothing and footwear appropriate for the weather.  
- Ensure bus is in the park position and wheel(s) are chocked.  
- Wear safety gloves when inspecting near hot surfaces or sharp edges. |
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| 2. Welding | 1. Flammable materials and liquids  
2. Slippery surfaces (water, ice, snow, fluids)  
3. Sharp objects or equipment  
4. Welding equipment  
5. Ultraviolet (UV)  
6. Infrared (IR)  
7. Hot surfaces  
8. Noise (dBA) | Personal Protective Equipment:  
- Welding mask  
- Welding jacket or leather apron and sleeves  
- Welding gloves  
- Safety glasses (when chipping slag)  
- Hearing protection (when performing task for extended periods)  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  
Safe Operating Procedures:  
- Place work at an optimal height to avoid back strain or shoulder fatigue.  
- Follow safe housekeeping principles.  
- Use equipment as directed by manufacturer instructions or practices.  
- Remove any butane lighters, matches or other combustibles from pockets prior to commencing work.  
- Ensure clothing is free from oil, diesel, gasoline or other ignitable materials. |
| 3. Fueling | 1. Fuel vapours  
2. FUEL OIL (DIESEL)  
3. GASOLINE  
4. Flammable materials and liquids  
5. Moving vehicles | - Turn the ignition off.  
- Do not smoke.  
- Remove all ignition sources within 7.5 meters.  
- Do not use a cellphone or battery operated device while fueling.  
- Do not overfill; allow room for fuel to expand.  
- Do not rig the nozzle to enable it to dispense fuel on it’s own.  
- Do not leave the nozzle unattended when removed from the nozzle holder on the pump.  
- When you are finished fueling, remove the nozzle from the tank, replace tank cap, turn pump level to OFF position and replace the nozzle on the holder.  
First-Aid:  
- Wash contaminated skin with soap and warm water. Do not use hot water.  
- Flush eyes with water.  
- If overcome by vapours, remove to fresh air.  
- Do not induce vomiting.  
- Obtain medical attention.  
Absorbent material is provided at bulk fuel tanks at all Hammond Transportation yards, as well as a fire extinguisher. |
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| 4. Grinders | 1. Rotating equipment  
2. Sharp objects or equipment  
3. Flying objects  
4. Noise (dBA) | Personal Protective Equipment:  
- Safety glasses or face shield  
- Hearing protection  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  

Safe Operating Procedures:  
- Keep the floor and work area clean  
- Ensure all guards are in place.  
- Before starting the machine, inspect the wheel to ensure that it isn't cracked or broken.  
- Secure or remove loose clothing, jewelry or anything else that could be entangled in the rotating wheel.  
- Tie back long hair.  
- Keep hands, fingers and other body parts from coming into contact with the grinder wheel.  
- Never grind on the side of the wheel.  
- Use vise grip pliers or a clamp to handle/secure work pieces.  
- Avoid putting excessive pressure on the wheel when grinding.  
- When installing a new wheel, ensure the machine is turned off and unplugged.  
- Tag out the equipment if a deficiency is found. |
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</table>
2. Tripping (uneven ground)  
3. Manual lifting (body strain)  
4. Slippery surfaces (water, ice, snow, fluids) | Planning the lift:  
a. Try to break down the load into smaller parts  
b. Check the pathway and clear any obstacles  
c. Check if any doors need to be opened  
d. Test the weight of the load by lifting one corner  
e. If the load is too heavy, or obstructs your view, ask somebody for assistance  
Performing the lift:  
a. Stand with feet shoulder width apart and in a staggered stance  
b. Move in close to the load  
c. Bend your knees, keep head upright and maintain the spine’s natural curves  
d. Secure your grip  
e. Use a smooth controlled motion to lift the load  
f. Avoid twisting / turning when lifting  
Setting the load down:  
a. Get as close as possible to the area you will place the load  
b. If possible, place heavy loads at elbow height to avoid straining the back  
c. Bend with your knees, keep your head upright and maintain the spine’s natural curves  
d. Keep the load close; try not to extend your arms out away from the body  
e. Once the load is where you want it, ensure the load is secured and release your grip slowly.  
If you’re not confident that you are able to lift the load without sustaining an injury, please do not lift the load. Seek out your supervisor and/or ask for assistance. Prevention is the best policy. |
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| 6. Driving | 1. Other drivers / road users  
2. Inclement weather  
3. Moving vehicles | - Comply with traffic legislation when driving.  
- Assess hazards while driving and anticipate ‘what if’ scenarios.  
- Drive according to road conditions and give yourself extra time to reach your destination if required.  
- Drive within the legal speed limits, including driving according to traffic and weather conditions.  
- Be knowledgeable about and adhere strictly to Hours of Service Regulations for Canada and the United States.  
- Immediately inform the dispatcher or your supervisor if you have erroneously been scheduled for shifts that do not allow for proper and legal core rest periods between shifts or it appears that a shift will extend beyond the legal hours of service limits.  
- Be responsible and accountable for your actions when operating a company vehicle.  
- Display the highest level of professional conduct when driving a company vehicle.  
- Perform a Vehicle Inspection before departing the yard.  
- Never drive under the influence of alcohol or drugs, including prescription and over the counter medication if they cause drowsiness.  
- Avoid distraction when driving – the driver will adjust their seat, mirrors and program GPS units before setting off, or pull over safely in order to do so.  
- Do not use a cell phone for any purpose while driving or while the vehicle is in drive – cell phones are only to be used while safely stopped when the transmission is in the park position.  
- Take adequate rest breaks, pull over when tired and contact a supervisor to arrange for a relief driver if necessary.  
- Adequately research all itineraries, locations and routes prior to trips and bring forth any questions to the dispatchers in sufficient time before departure.  
- Before reversing, whether on the road or in a parking lot, the driver shall sound the horn to warn persons or other drivers in the area. If the driver is in a tight position or is uncomfortable reversing on their own, he/she will ask for the assistance of another driver or responsible person to direct them. |
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</table>
| 7. Service Pit | 1. Mechanic pit - falling/tripping 
2. Sharp objects or equipment 
3. Slippery surfaces (water, ice, snow, fluids) 
4. Falling debris 
5. Ergonomics - looking up and holding arms over head 
6. Awkward position | Personal Protective Equipment:  
- Safety glasses  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  
Safe Operating Procedures:  
- Check pit for presence of flammable or other hazardous vapours.  
- Remove all flammable/combustible materials from pit.  
- Ensure that the ventilation system is working efficiently.  
- Place vehicle so there is room to get out of pit in an emergency.  
- Set chocks to keep vehicle from moving.  
- Use only explosion-proof lights. Ensure that light globes are not broken or missing.  
- Do not drain a fuel tank over or near a pit as vapours from gasoline and paint solvents are heavier than air.  
- Do not jump across the pit.  
- Practice good housekeeping to avoid tripping or slipping. |
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</table>
| 8. Portable Jacks | 1. Slippery surfaces (water, ice, snow, fluids)  
2. Awkward position  
3. Sharp objects or equipment  
4. Moving vehicles  
5. Falling debris  
6. Hydraulic leak  
7. Tripping (poor housekeeping) | Personal Protective Equipment:  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  

Safe Operating Procedures:  
- Use only jacks that are maintained in good operating condition.  
- Place the jack securely on a dry, level, clean surface at right angles to the load.  
- Position the jack at the jack point recommended by the vehicle manufacturer.  
- Shift the vehicle with automatic transmission to park or to low gear, if it has a standard transmission, and apply the parking break.  
- Use chocks in front and back of the wheel that is on the diagonal from the wheel that will be raised (e.g., if jacking up the right, front wheel, use the chocks on the left, rear wheel).  
- Do not overload a jack beyond its capacity. All lifts must be vertical.  
- Do not position yourself where you could be pinned between the operating handle and the wall if the vehicle or jack moves accidentally.  
- If working alone, always arrange to have someone check on you at pre-arranged, regular intervals.  
- Place safety stands under the vehicle to support the vehicle if an employee must work under the vehicle.  
- Ensure that the safety stands are in good condition and positioned properly and that the correct support pins are used in adjustable axle stands.  
- Do not get under a vehicle that is supported by a jack only - always use suitable safety stands.  
- Always wear appropriate Personal Protective Equipment including Safety Glasses when working under a vehicle. |
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</table>
2. Batteries  
3. Corrosive materials  
4. Explosion  
5. SULFURIC ACID | Personal Protective Equipment:  
- Safety glasses  
- Gloves  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  

Safe Operating Procedures:  
- Keep tools and other metallic objects (including jewellery) away from the tops of batteries.  
- Inspect for defective cables, loose connections, corrosion, cracked cases or covers, loose hold-downs and deformed or loose terminal posts.  
- Tighten cable clamp nuts with the proper size wrench. Avoid subjecting battery terminals to excessive twisting forces.  
- Use a cable puller to remove a cable clamp from the battery terminal.  
- Remove corrosion on the terminal posts, hold-down tray and hold-down parts.  
- Use a tapered brush to clean dirt from the battery terminals and the cable clamps.  
- Use a battery carrier to lift a battery, or place hands at opposite corners.  
- Do not lean over a battery.  
- Keep sparks, flames, burning cigarettes, and other ignition sources away at all times.  
- Do not break "live" circuits at the terminals of batteries.  
- When connecting or disconnecting jumper cables, use extreme care in handling the clamps. Do not allow cables to touch each other, nor to touch the frame or body of either vehicle. This will prevent sparks that can cause an explosion.  
- Do not leave batteries laying around the shop floor. Store batteries off the floor on wooden palettes.  
- If splashed with battery acid, flush the area with gently flowing luke warm water for 30 minutes; do not interrupt flushing. |
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</table>
| 10. Automotive Parts Washer | 1. Flammable materials and liquids  
2. HEPTANE  
3. PROPNOL | Personal Protective Equipment:  
- Goggles  
- Chemical resistant gloves  
- Vapour Mask  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  

Safe Operating Procedures:  
- Adhere to Safe Operating Procedures posted on the parts washer.  
- Keep away from heat, spark and ignition sources.  
- Do not use on hot surfaces.  
- Do not impede the automatic closing device; parts should not be stacked to high to prevent closing.  
- Do not contaminate solvent with other chemicals.  
- Drain all parts before placing in the parts washer.  
- The parts washer must be emptied when not in use. |
| 11. Air Compressor | 1. Compressors (air, gas)  
2. Hoses whipping under pressure  
3. Noise (dBA) | Personal Protective Equipment:  
- Safety glasses  
- Hearing protection  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  

Safe Operating Procedures:  
- Ensure no slip/trip hazards are present in workspaces and walkways.  
- Locate the compressor in a suitable location for safe operation.  
- Lock the wheels on the base of the compressor to prevent movement.  
- Check that all fittings and connections are in good condition prior to starting.  
- Check all fittings are securely connected prior to being pressurized.  
- Faulty equipment must not be used.  
- Immediately report suspect machinery.  
- Locate and ensure you are familiar with the operation of the ON/OFF starter switch. |
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<td>12. Tire Machine</td>
<td>1. Rotating equipment</td>
<td>Personal Protective Equipment:</td>
</tr>
<tr>
<td></td>
<td>2. Pinching</td>
<td>- Safety glasses</td>
</tr>
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<td></td>
<td>3. Noise (dBA)</td>
<td>- Hearing protection</td>
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<td>- CSA approved green label safety footwear</td>
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<td></td>
<td>Safe Operating Procedures:</td>
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<tr>
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<td>- Keep hands clear of all pinch points.</td>
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<td>- Never exceed factory recommendation for inflation of tires.</td>
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<td>- Do not attempt to mount defective tires.</td>
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<td>- Always ensure tire size matches rim size.</td>
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<td>- Remove or restrain clothing, hair or jewelry that could become entangled in the machine.</td>
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<tr>
<td>13. Hand and Power Tools</td>
<td>1. Rotating equipment</td>
<td>Personal Protective Equipment:</td>
</tr>
<tr>
<td></td>
<td>2. Hand tools</td>
<td>- Safety glasses</td>
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<td></td>
<td>3. Tripping (poor housekeeping)</td>
<td>- Other PPE as specified on the user manual</td>
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<td>4. Tripping (uneven ground)</td>
<td>- Hearing protection</td>
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<tr>
<td></td>
<td>5. Slippery surfaces (water, ice, snow, fluids)</td>
<td>- Hammond Transportation issued reflective pants and shirt</td>
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<tr>
<td></td>
<td>6. Sharp objects or equipment</td>
<td>- CSA approved green label safety footwear</td>
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<tr>
<td></td>
<td>7. Noise (dBA)</td>
<td>Safe Operating Procedures:</td>
</tr>
<tr>
<td></td>
<td>8. Power tools</td>
<td>- All tools, regardless of ownership, shall be of an approved type and maintained in good condition.</td>
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<td></td>
<td>9. Flying objects</td>
<td>A supervisor has the authority and responsibility to condemn unsafe tools.</td>
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<td>- All power tools must be double insulated or grounded, as well as have all manufacturer guards in place.</td>
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<td>- Unsafe tools will be tagged out to prevent use.</td>
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<td>- Tools shall not be left strewn about on the floor where others could trip on them.</td>
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<td>- Wooden handles that are loose, cracked or splintered shall be replaced. The handle shall not be taped, wired or otherwise temporarily repaired.</td>
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<td>- Tools should never be thrown from place to place or person to person.</td>
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<td>- Power tools should be turned off, unplugged and put away when not in use.</td>
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<tr>
<td>Task/Step</td>
<td>Potential Hazards</td>
<td>Recommended Safe Job Procedures</td>
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</tbody>
</table>
2. Pinching  
3. Flying objects  
4. Slippery surfaces (water, ice, snow, fluids)  
5. Tripping (poor housekeeping) | Personal Protective Equipment:  
- Safety glasses  
- Gloves  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  

Safe Operating Procedures:  
- Never remove the permanent identification tags that have been attached to chains by the manufacturer.  
- When repairs are required, send them back to the manufacturer; do not repair yourself.  
- Never anneal or normalize alloy steel chains or hooks as these processes reduce their hardness and greatly reduce their strength.  
- Never splice a chain by inserting a bolt between two links.  
- Never put strain on a kinked chain. Take up the slack slowly so you can see that every link in the chain seats properly.  
- Do not use a hammer to force a hook over a chain link.  
- Ensure the load is always properly set in the bowl of the hook. Loading toward the point overloads the hook and leads to spreading and possible failure.  
- Use chain attachments designed for the chain to which they are fastened.  
- Store chains not in use in a suitable rack. Do not let them lie on the ground or floor where they can be damaged by vehicles. |
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</table>
| 15. Portable Ladders | 1. Slippery surfaces (water, ice, snow, fluids)  2. Awkward position  3. Falling | Personal Protective Equipment:  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  

Safe Operating Procedures:  
- Ladders must be CSA Approved Grade 1 (Heavy Load Rating).  
- Ladders shall be capable of supporting their maximum intended weight without failure.  
- Ladders must be inspected prior to each use to ensure parts are not bent, rungs are secure, nuts, bolts and spreaders are tight, rubber feet are in place and ladder is free from wet/slippery substances.  
- Only 1 person permitted on the ladder at a time.  
- Ladder rungs, cleats and steps shall be parallel, level and uniformly spaced when the ladder is in position for use.  
- Ladders shall be placed on a firm footing and secured in such a manner that it cannot be dislodged accidentally from its position.  
- Never use a wet ladder.  
- Every portable ladder that provides access from one level to another shall extend at least 3 rungs above the higher level.  
- Objects or loads should not be carried while ascending or descending the ladder; use a tool belt.  
- No employee shall work from any of the top 3 rungs of any single extension portable ladder or from either the top 2 steps of any portable step ladder.  
- 'A' frame ladders shall only be used in a completely open position with the side spreaders in a locked position.  
- Never straddle the top steps of an A frame ladder while working.  
- Always face towards the ladder while climbing and take one step at a time.  
- Always maintain 3 points of contact.  
- Ladders should never be moved, shifted or extended while occupied.  
- Never use a ladder for anything other than what it was intended for.  
- Never use a ladder in strong winds or a storm.  
- Never reach for objects while on a ladder.  
- Defective ladders must be removed from service immediately. |
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| 16. Plasma Cutter         | 1. Sharp objects or equipment  
2. Compressors (air, gas)  
3. Flammable materials and liquids  
4. Flying objects  
5. Hot surfaces | Personal Protective Equipment:  
- Welding mask or tinted face shield  
- Welding gloves  
- Leather apron  
- Hearing protection  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  
Safe Operating Procedures:  
- Work in a well ventilated area as the plasma cutter process generates fumes.  
- Never operate in an area where combustible or explosive gases or materials are located.  
- Make sure others in the area are protected from arc rays and fumes.  
- Make sure the air pressure is sufficiently around 70psi and the ground clamp is attached to the work piece.  
- Adjust the amperage on the plasma cutter to the manufacturers specifications for the thickness of metal to be cut.  
- Use pliers or tongs to handle hot metals cut by the plasma cutter.  
- Disconnect the power before doing any repairs or maintenance. |
| 17. Impact Wrench / Air Chisel | 1. Compressors (air, gas)  
2. Rotating equipment  
3. Hand tools  
4. Pinching  
5. Noise (dBA)  
6. Vibration | Personal Protective Equipment:  
- Safety glasses  
- Hearing protection  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  
Safe Operating Procedures:  
- Never wear loose clothing or accessories.  
- Use clean dry air to power the impact wrench (about 90psi).  
- An air impact wrench creates noise exposure of about 103 decibels.  
- Only use impact wrench sockets that are designed for the tool.  
- Exposure to vibrations may cause tingling, numbing or painful sensations in the hands, fingers or arms.  
- Do not over torque bolts or nuts.  
- Never carry an impact wrench by the air hose.  
- Always disconnect the air supply before installing or adjusting impact wrench sockets or before performing tool maintenance. |
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| 18. Service Calls | 1. Other drivers / road users  
2. Inclement weather  
3. Slippery surfaces (water, ice, snow, fluids)  
4. Sharp objects or equipment  
5. Moving vehicles  
6. Awkward position  
7. Hoses whipping under pressure  
8. Hot surfaces  
9. Rotating equipment  
10. Pinching  
11. Batteries | Personal Protective Equipment:  
- Safety glasses  
- Gloves  
- Reflective clothing and/or vest  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  
Safe Operating Procedures:  
- If possible, pull vehicle safely off the road.  
- Ensure reflective triangles are placed around the vehicle.  
- Use 4 way flashers.  
- Ensure vehicle is in the parked position and wheels are chocked before inspecting the vehicle.  
- Do not operate the vehicle if it is not safe to do so; call a tow truck. |
| 19. Painting    | 1. Awkward position  
2. Paint fumes  
3. Tripping (poor housekeeping) | Personal Protective Equipment:  
- Safety glasses  
- Gloves  
- Vapour mask  
- Hammond Transportation issued reflective pants and shirt  
- CSA approved green label safety footwear  
Safe Operating Procedures:  
- Ensure painting is done in a well ventilated area.  
- Take frequent stretch and fresh air breaks.  
- Ensure paint cans are kept out of walkways.  
- Keep your work station clean and clear of materials. |
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<th>Sev.</th>
<th>Consequences</th>
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<td>3</td>
<td>Awkward or static position</td>
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<td>Batteries</td>
<td>3</td>
<td>3</td>
<td>Back, neck, and shoulder strain</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>2</td>
<td>1</td>
<td>Caught in or between a stationary/moving object</td>
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<td>Chains and Pulleys</td>
<td>3</td>
<td>3</td>
<td>Chemical burns</td>
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<tr>
<td>Compressed gas</td>
<td>3</td>
<td>2</td>
<td>Collision between moving vehicles and/or equipment</td>
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<tr>
<td>Compressors (air, gas)</td>
<td>3</td>
<td>2</td>
<td>Cut or slice fingers/hand</td>
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<tr>
<td>Corrosive materials</td>
<td>3</td>
<td>3</td>
<td>Electrocution or shock</td>
</tr>
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<td>Ergonomics - looking up and holding arms over head</td>
<td>2</td>
<td>3</td>
<td>Exposure (inhaling, swallowing, or absorbing) to harmful levels of gases, vapors, aerosols, liquids, fumes, or dust</td>
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<tr>
<td>Explosion</td>
<td>3</td>
<td>2</td>
<td>Exposure to excessive light (welding)</td>
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<td>Falling</td>
<td>2</td>
<td>2</td>
<td>Eye injury</td>
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<tr>
<td>Falling debris</td>
<td>2</td>
<td>3</td>
<td>Ingestion of chemical</td>
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<tr>
<td>Flammable materials and liquids</td>
<td>3</td>
<td>2</td>
<td>Penetration by sharp object</td>
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<tr>
<td>Flying objects</td>
<td>3</td>
<td>2</td>
<td>Slip, trip or fall</td>
</tr>
<tr>
<td>Fuel vapours</td>
<td>3</td>
<td>2</td>
<td>Splash by fuel</td>
</tr>
<tr>
<td>Grinder</td>
<td>2</td>
<td>2</td>
<td>Splashed by chemical</td>
</tr>
<tr>
<td>Hand tools</td>
<td>3</td>
<td>2</td>
<td>Struck by falling or flying object</td>
</tr>
<tr>
<td>Hoses whipping under pressure</td>
<td>3</td>
<td>3</td>
<td>Struck by uncontrolled pressure release</td>
</tr>
<tr>
<td>Hot surfaces</td>
<td>2</td>
<td>2</td>
<td>Thermal burns</td>
</tr>
<tr>
<td>Hydraulic leak</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Inclement weather</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Manual lifting (body strain)</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mechanic pit - falling/tripping</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Moving vehicles</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Noise (dBA)</td>
<td>2</td>
<td>2</td>
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</tr>
<tr>
<td>Other drivers / road users</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Paint fumes</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pinching</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Poor housekeeping</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Power tools</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Rotating equipment</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Sharp objects or equipment</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Slippery surfaces (water, ice, snow, fluids)</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Tire changer machine (pinching, cutting, pressure release)</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Tripping (poor housekeeping)</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Tripping (uneven ground)</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Welding equipment</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Wet floor - bus/office/shop</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Chemical Hazards</td>
<td>Description/Health Hazards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SULFURIC ACID (7664-93-9)</td>
<td>Sulfuric acid is a colorless oily liquid. It is soluble in water with release of heat. It is corrosive to metals and tissue. It will char wood and most other organic matter on contact, but is unlikely to cause a fire. Density 15 lb / gal. Long term exposure to low concentrations or short term exposure to high concentrations can result in adverse health effects from inhalation. It is used to make fertilizers and other chemicals, in petroleum refining, in iron and steel production, and for many other uses. Rate of onset: Immediate Persistence: Hours, days Odor threshold: Source/use/other hazard: Battery/dyes/paper/glue/metals industries; volcanic gas; toxic fumes when heated. (NOAA, 2003) Corrosive to all body tissues. Inhalation of vapor may cause serious lung damage. Contact with eyes may result in total loss of vision. Skin contact may produce severe necrosis. Fatal amount for adult: between 1 teaspoonful and one-half ounce of the concentrated chemical. Even a few drops may be fatal if the acid gains access to the trachea. Chronic exposure may cause tracheobronchitis, stomatitis, conjunctivitis, and gastritis. Gastric perforation and peritonitis may occur and may be followed by circulatory collapse. Circulatory shock is often the immediate cause of death. Those with chronic respiratory, gastrointestinal, or nervous diseases and any eye and skin diseases are at greater risk. (EPA, 1998)</td>
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</tr>
<tr>
<td>FUEL OIL (DIESEL) (68334-30-5)</td>
<td>A straw yellow to dark colored liquid with a petroleum-like odor. Flash point below 141°F. Less dense than water and insoluble in water. Hence floats on water. Vapors heavier than air. Saturated aliphatic hydrocarbons, which are contained in FUEL OIL, [DIESEL], may be incompatible with strong oxidizing agents like nitric acid. Charring of the hydrocarbon may occur followed by ignition of unreacted hydrocarbon and other nearby combustibles. In other settings, aliphatic saturated hydrocarbons are mostly unreactive. They are not affected by aqueous solutions of acids, alkalis, most oxidizing agents, and most reducing agents. When heated sufficiently or when ignited in the presence of air, oxygen or strong oxidizing agents, they burn exothermically to produce carbon dioxide and water. May be ignited by strong oxidizers.</td>
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</tr>
<tr>
<td>GASOLINE (8006-61-9)</td>
<td>A clear colorless to amber colored, volatile liquid with a petroleum-like odor. Flash point below 0°F. Less dense than water and insoluble in water. Hence floats on water. Vapors heavier than air. Leaked vapors may travel to a source of ignition and then flash back to the source. GASOLINE may be incompatible with strong oxidizing agents such as nitric acid, peroxides, and perchlorates. Charring may occur followed by ignition of unreacted hydrocarbon and other nearby combustibles. In other settings, mostly unreactive. Not affected by aqueous solutions of acids, alkalis, most oxidizing agents, and most reducing agents. When heated sufficiently or when ignited in the presence of air, oxygen or strong oxidizing agents, burns exothermically to produce carbon dioxide and water.</td>
<td></td>
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</tr>
<tr>
<td>HEPTANE (142-82-5)</td>
<td>Clear colorless liquid with a petroleum-like odor. Flash point 25°F. Less dense than water and insoluble in water. Vapors heavier than air. Highly flammable. Irritating to skin and eyes. If swallowed, will cause nausea or vomiting.</td>
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<tr>
<td>PROPANOL (67-63-0)</td>
<td>Highly Flammable, volatile, colorless liquid with a sharp musty odor like rubbing alcohol. Flash point of 53°F. Vapors are heavier than air and mildly irritating to the eyes, nose, and throat. Density approximately 6.5lb / gal.</td>
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</tr>
</tbody>
</table>
### POTENTIAL RADIOLOGICAL HAZARDS OF THIS JOB

<table>
<thead>
<tr>
<th>Radiological Hazards</th>
<th>Prob.</th>
<th>Sev.</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrared (IR)</td>
<td></td>
<td>S-1</td>
<td>Effects on the Eyes - Cataracts</td>
</tr>
<tr>
<td>Ultraviolet (UV)</td>
<td></td>
<td>S-2</td>
<td>Effects on the Skin - Burns</td>
</tr>
</tbody>
</table>

### HAZARD CONTROL MEASURES USED FOR THIS JOB

#### Administrative Controls:
- Health and Safety Committee
- Housekeeping Practices
- Monthly Workplace Inspections
- Rest / Stretch Breaks

#### Required Training:
- Company Policy and Procedures Manual
- Safe Fueling Procedures
- Safe Lifting Policy
- Vehicle Inspections
- WHMIS Training

#### Engineering Controls:
- Fire Extinguishers
- Machine Guarding

#### Required PPE:
- Clear Face Shield
- Ear Muffs
- Ear plugs
- Face Masks
- Gloves - Chemical
- Gloves - Mechanics
- Green label CSA approved safety footwear
- Hard Hat
- N95 Dust Mask
- R95 Filtered Face Mask
- Reflective Clothing
- Reflective Vests
- Safety Glasses
- Shoes - Gripped Sole and Heel Strap
- Welding - Mask, Gloves, Apron

#### Required Permit(s):
- 310S Licence - Automotive Service Technician
- 310T Licence - Truck and Coach Technician
- Valid Drivers Licence

#### Other Information:
JSABuilder chemical Description/Health Hazards is from the CAMEO database maintained by the U.S. EPA, NOAA, and the U.S. Coast Guard (www.cameochemicals.noaa.gov). The creator of this JSA is responsible for any edits to this information.

<table>
<thead>
<tr>
<th>Severity</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-1 = High</td>
<td>P-1 = High</td>
</tr>
<tr>
<td>S-2 = Medium</td>
<td>P-2 = Medium</td>
</tr>
<tr>
<td>S-3 = Low</td>
<td>P-3 = Low</td>
</tr>
</tbody>
</table>

Revised: 10/14/2014