

# MACHINERY & EQUIPMENT: 5 Key Elements of a Troubleshooting Policy



Working with machinery and equipment that has pinchpoints, energized parts, etc. poses many safety hazards. But workers may be most at risk when machinery stops working properly and they have to figure out what's wrong and try to fix. It's during such troubleshooting that workers may get entangled, lose limbs or get shocked'especially if they removed guards or didn't lock out the equipment. And troubleshooting is a common occurrence in many workplaces. So given its inherent hazards, it's important that you have a troubleshooting policy to ensure that workers can safely address machinery issues.

## WHY YOU NEED A TROUBLESHOOTING POLICY

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### Examples of

The OHS laws don't specifically require you to have a troubleshooting policy. (However, the OHS regulations may require you to have certain troubleshooting procedures. We'll discuss that topic in more detail below.) But there's still a legal reason why you should have a policy on troubleshooting the machinery and equipment in your workplace'you may need it to prove due diligence.

Incidents Here are just a few examples of incidents in which workers were injured while troubleshooting

*Example:* A worker removed a fence guarding machinery or the back of an induction hardener to troubleshoot a leak. He was seriously injured by an electrical shock. His employer was charged with failing to provide the worker with sufficient instruction on troubleshooting leaks. The company raised a due diligence defence, arguing that the worker didn't follow procedure.

The Ontario Court of Justice found that the employer's procedures with regard to troubleshooting weren't written out and were, in fact, primarily learned through knowledge and experience. For example, it didn't include guidelines or instructions for troubleshooting procedures in its Hazardous Energy Control Program. As a result, the instructions as to troubleshooting and partial lockout weren't clear and were contradictory and confusing. And given the amount of troubleshooting done in the workplace and how 'inherently risky' it is, the court concluded that due diligence required the employer to develop a written policy on troubleshooting and a related training program. So it convicted the employer [*Ontario (Ministry of Labour) v. Linamar Holdings Inc.*].

- A jam occurred in a robot cell on a production line. When a worker entered the cell to clear the jam, a steel rod activated, injuring his hand.
- A supervisor and two workers were clearing a jam in a machine that wasn't locked out to prevent it from re-energizing. When the supervisor left to get help, one of the workers put his hand into an

**Insider Says:** Your troubleshooting policy can be either a free-standing policy or you can integrate it with the related machine guarding and lockout policies into one cohesive machinery and equipment safety policy.

## 5 KEY ELEMENTS OF A TROUBLESHOOTING POLICY

To ensure that your company takes all reasonable steps to protect workers while troubleshooting machinery, make sure that you have a troubleshooting policy that covers the following five areas:

### 1. Who's Permitted to Troubleshoot

When machinery breaks down or stops functioning correctly, the worker operating it may instinctively try to troubleshoot the problem. And for certain malfunctions, particularly ones that happen often such as jams, allowing that worker to fix the issue may be acceptable.

But some problems may require specific expertise to resolve and do so safely. For example, you probably don't want just any worker trying to identify or fix problems relating to electricity or that require entry into restricted areas. In such cases, you should restrict troubleshooting to only 'competent' or 'qualified' workers as defined by the OHS laws. (For more information on who qualifies as a 'competent person,' see '[Compliance 101: What Makes a Worker a 'Competent Person' under OHS Laws](#)' Sept. 2008, p. 11.) So spell out in your policy when workers may troubleshoot the machinery they operate themselves and when they should contact a supervisor, who can then get a electrical worker, mechanic or other qualified worker to troubleshoot the problem.

opening in the machine and part of it was severed.

- When a pole fell into the hopper of a bailing machine, a worker climbed into the hopper to retrieve it while a supervisor manned the controls. The hopper turned on while the worker was still inside, seriously injuring his legs.
- After a printing press jammed, workers shut it down and engaged a safe button to prevent it from

## 2. Removal and Replacement of Guards

Every jurisdiction's OHS regulations have requirements for guarding machinery and equipment to protect workers from accessing nip hazards, pinchpoints and the like. One of the basic machine guarding rules is that you should [bar workers from removing guards](#). (For more on machine guarding, see '[Machine Guarding: What the OHS Laws Require You to Do](#),' April 2010, p. 1.)

However, guards that keep workers from accessing hazardous areas may also keep them from getting at the source of a problem and thus prevent them from effectively troubleshooting. And the OHS regulations generally recognize this issue and so permit the removal of machine guards under certain circumstances. For example, Sec. 311(2) of Alberta's *OHS Code 2009* says 'a person must not remove a safeguard or make it ineffective unless removing it or making it ineffective is necessary to perform maintenance, tests, repairs, adjustments or other tasks on equipment.'

So your troubleshooting policy should spell out when workers are permitted to remove a guard to troubleshoot a piece of equipment and any steps they should follow when doing so, such as:

- Ensure that alternate safety protections are in place, such as locking out the machinery or using a spotter;
- Replace the guard immediately after

restarting as they looked for the jam. A summer student found a jam in the rear of the press and started to remove it, out of sight of the other workers who'd found another jam in the front. When the workers restarted the press, the young worker's hand was drawn between two rollers and injured.

- A worker using a machine that forms plastic noticed a jam and reached in

- they're done troubleshooting; and
- Test the guard to ensure that it functions properly once it has been replaced.

### 3. Machinery Lockout & Exceptions

The OHS laws typically require machinery to be stopped, powered off and locked out when it's being serviced, tested, maintained or repaired. (For more information, see ['Machinery & Equipment: How to Comply with Lockout Requirements,'](#) July 2011, p. 1.) So your policy should require workers to lockout machinery when troubleshooting. Assuming you have a policy and procedures on lockout and you should the troubleshooting policy can then direct workers to the lockout policy for details on how to do so.

However, as with machine guarding, there are exceptions to the lockout requirement. For example, you may need the machinery to be on and running in order to figure out what the problem is or the manufacturer may require it to remain operative while being serviced or repaired. ([Click here](#) for province by province chart which outline troubleshooting exceptions to the lockout requirements under the OHS regulations in each jurisdiction.)

In that event, there are other requirements you must fulfill to adequately protect workers when troubleshooting live equipment. For example, Sec. 10.12 of BC's OHS regulations says that if it's not

to remove it. The machine cycled while his hand was still inside, seriously injuring it.

- A worker at a car manufacturing plant tried to clear a clog in a picker. Although he locked out the machine before opening an access window to reach the clog, a large spiked roller was still moving. His hand got caught by the roller and he was drawn into the machine, suffering serious

practicable to shut down machinery or equipment for maintenance, only the parts that are vital to the process may remain energized and the work must be performed by workers who:

- Are qualified to do the work;
- Have been authorized by the employer to do the work; and
- Have been provided with and follow written safe work procedures.

Thus, your troubleshooting policy should clearly spell out the exceptions to the lockout requirement and require workers to follow safe work procedures for troubleshooting the specific machinery or equipment when it's still energized.

#### **4. Written Troubleshooting Procedures**

The exact procedures workers should follow when troubleshooting will vary based on the machinery or equipment at issue. That's because each piece of equipment is unique and poses different safety hazards to workers. So you should ensure that a competent person develops troubleshooting procedures for each piece of machinery in your workplace that address how workers should handle typical problems with that equipment, such as jams.

As noted by the court in *Linamar*, troubleshooting procedures should be in writing to avoid confusion. You should also post them by the machinery to which they apply or else make them readily available to workers who may need them to troubleshoot the equipment. And as previously mentioned, your

injuries.

- A maintenance worker used a key to bypass a machine's lockout system and open a hatch while the equipment was still on. When he shined a flashlight into the hatch to check on a problem, there was an arc flash, which burned his hand, arm and chest.

troubleshooting policy should require workers to follow these procedures.

## **5. Worker Training**

Another issue raised in *Linamar* was that workers didn't get adequate training on troubleshooting. Thus, once you have a troubleshooting policy, make sure that all workers are trained on it. In addition, workers must be trained on the troubleshooting procedures for the specific pieces of machinery and equipment on which they work.

*Example:* When a roller in a sawmill got stuck, a worker climbed onto a 'dump table' to manually push a board through the machine. He fell into the machine and lost three fingers. The company was convicted of several OHS violations. In rejecting its due diligence defence, the court said that the worker had gotten training on generic workplace hazards but was only given 'brief, cursory and incomplete' training on the use of the machine in question. The worker hadn't gotten hazard-specific training, such as what to do when a roller got stuck or how to lock out the machine [*R. v. Grant Forest Products Inc.*].

**POLICY CHECKLIST:** Go to the *Insider's* online partner site, [www.OHSInsider.com](http://www.OHSInsider.com), to [download a checklist](#) you can use to ensure that your company's troubleshooting policy is complete.

## **BOTTOM LINE**

Troubleshooting machinery and equipment is dangerous business. Just look at the sidebar at the top right for a handful of safety incidents that occurred when workers were trying to diagnose or fix a problem with equipment. So just as you take steps to ensure that workers safely operate your machinery and equipment, you must also take steps to ensure that they can safely troubleshoot it.

**SHOW YOUR LAWYER**

[Ontario \(Ministry of Labour\) v. Linamar Holdings Inc.](#), [2012]  
ONCJ 295 (CanLII), May 7, 2012

*R. v. Grant Forest Products Inc.*, [2002] O.J. No. 3375, July  
26, 2002