



Loss Control Insight

Vehicle Repair Hazards

Serious injuries and death have occurred and continue to occur from inadequate hazardous energy control during vehicle servicing and maintenance activities. Generally speaking, for purposes of vehicle servicing and maintenance, hazardous energy refers to: mechanical motion; potential energy due to pressure, gravity, or springs; battery-generated electrical energy, which can cause injury to employees working in, on, or around machines or equipment. Any vehicle [e.g., internal combustion engines such as gasoline, natural gas and diesel powered vehicles; electric-powered vehicles; hybrid (gasoline/electric) vehicles] may contain the following types of hazardous energy, such as, but not limited to:

- Chemical energy due to contact with battery acid, coolant, lubricants;
- Electric battery shock, arc and burn hazards
- Explosion hazards associated with air bags
- Fire and explosion hazards associated with the fuel and fluid systems
- Gravitational energy (mechanical) hazards caused by elevated vehicles (e.g., unsafe use of automotive lift equipment) or vehicle components (e.g., unsupported elevated dump truck beds; unsupported elevated forklift carriage assembly)
- Hot or cryogenic fluid, and surface (thermal) hazards
- Hydraulic hazards associated with fluid pressure and fluid loss (e.g., causing a carrier bed to drop)
- Mechanical hazards associated with disc brake spring and tire components
- Mechanical motions due to moving power transmission components
- Mechanical hazards associated with unexpected start-up or unexpected energization of vehicles or vehicle components.

The removal of the vehicle's key, for example, may serve to adequately address the hazards associated with unexpected energization of the engine, but only if the employee performing the work maintains exclusive control of the vehicle's one and only key.

A major concern is related to the hazards associated with multiple employees performing work on a vehicle, and that it is necessary in such situations to provide a lockbox to store the key under group lockout procedures.

The potential sources of hazardous energy listed above they should be maintained with exclusive control over the vehicle's key may not be enough. Although this control practice reasonably protects employees from inadvertent startup of the vehicle's engine, it may not adequately control other sources of energy that are independent of the ignition key subsystem.

The following basic requirements must be applied to vehicle maintenance:

- Written procedures shall be developed, documented and utilized for the control of potentially hazardous energy.
- Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.
- The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements are being followed.
- The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage and removal of the energy controls are acquired by employees.