



STRAIGHT FROM EXXONMOBIL, WORDS OF WISDOM REGARDING HOW TO KEEP YOUR EMPLOYEES SAFE WHILE HANDLING LUBRICANTS IN INDUSTRIAL APPLICATIONS.

SAFETY + TIPS

FOR HANDLING INDUSTRIAL LUBRICANTS



By Andy Donlon

Workplace accidents and safety incidents can be prevented. Post-accident investigations reveal that many of these mishaps could have been avoided if personnel were more fully aware of workplace hazards and applicable critical safety guidelines.

Understanding basic safety precautions when working with lubricants is important for any employee working in an industrial plant, and especially gear-manufacturing operations. Below are a series of guidelines that can help lubrication specialists recognize the potential hazards associated with handling, storing, and using petroleum products.

High-Pressure Injection Hazards

High-pressure injection injuries, also known as grease gun injuries, are caused by the accidental injection of a foreign material—such as grease, oil, or solvent under pressure—through the skin and into the underlying tissue. This is analogous to medical techniques used to administer immunization shots without a needle. A grease gun injury can cause serious delayed soft tissue damage and should be treated as a surgical emergency. Any person sustaining an injury of this sort should seek immediate medical attention, regardless of the appearance of the wound or its size. Accidents involving injection injuries can occur when using any type of pressurized equipment. Two common cases in which petroleum products may be involved are accidents with pressurized grease guns or with hydraulic systems.

Pressurized grease guns are commonly used in service stations, garages, and industrial plants. Typically, most service stations have grease guns operating at 621-1,034 kPa (90-150 psi) air pressure. Most modern industrial hydraulic systems operate in the range of 13,790 to 34,475 kPa (2,000 to 5,000 psi). A stream of oil ejected from a nozzle or leak under pressure of this magnitude has a velocity comparable to the muzzle velocity of a rifle bullet.

The most common sites of injury are the fingers or hand. However, any part of the body can be involved. With grease guns, especially, accidents usually occur when the injured person wipes the tip of the nozzle with his finger or the nozzle slips off the grease fitting while being held in place. Grease may also be injected into the body from a leak in the grease line. In hydraulic system accidents, a leak in a hydraulic line can emit a high-velocity stream of oil and cause injury if it strikes a person. Workers are commonly injured when they try to stop the leak by covering it with their hand or finger.

Chemical irritation is not a major problem with most petroleum products because hydraulic oils and greases are generally non-irritating and present low toxicity to the skin. However, the resulting bacterial infection can be a problem because of the damaged tissue and circulation in the

wound, even though it has been surgically opened and the foreign material removed. One of the dangers from this type of injury is that it is not recognized quickly by the injured person as being serious. Often the initial wound may be very small and essentially painless. The injured person may even continue working. However, in every case in which a person receives this type of injury, he should stop work and get immediate medical treatment. The following are some basic rules that must be observed are found in the sidebar at right.

In case of a grease gun accident, seek immediate medical treatment. Identify the grease or oil involved in the accident. Contact the supplier or the manufacturer to obtain the product's Material Safety Data Sheet (MSDS) about possible toxicity if a physician or hospital needs more information.

Mechanical Hazards

Handling Drums: A typical 55-gallon drum of oil or grease weighs nearly 450 pounds (204 kg). If a drum is dropped, it may bounce out of control or burst at a seam, creating a spill and/or fire hazard. Two people should overturn or upend a drum to prevent muscle strains and other injuries. When rolling a drum, always keep its motion in check; never allow it to free roll. When hoisting a drum, use a drum sling that hooks over the ends of the drum. Do not use air pressure to empty a drum as it may burst open.

Oil and Grease Spills: Oil or grease spilled on floors, catwalks, and ladders can present fall and fire hazards. Wipe up

DO'S AND DON'TS

DO

- Routinely check all hoses for wear and possible weak spots.
- Handle a grease gun with respect for its power.
- Take special care when starting up a new hydraulic system to be sure that every part of the system can withstand the operating pressure.

DON'T

- Play around with or use a grease gun for practical jokes.
- Touch the end of a grease gun.
- Use any part of the body to test a grease gun for grease flow.
- Use any part of the body to stop a leak in a hydraulic line.

lubricant spills immediately or use absorbent drying pads or granules. Repair or report sources of lubricant leaks. In the oil house or storage area, replace leaky dispensing devices, keep drip pails in place, and wipe up any spills.

Application to Machines: Do not apply lubricants to machines in operation unless the machine is equipped with central lubrication systems or the fittings and oil caps are piped out to a safe place. Do not reach over, under, through, or past moving parts of machinery. For machinery requiring lubrication during operation, refer to OEM recommendations

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for safety procedures. For machinery that specifically requires shut-down for lubrication, ensure that the machinery is properly locked and tagged out of service.

Machine Guards: Guards on belt or chain drives, open gears, couplings, etc., should be removed only after the machine is shut down and properly locked and tagged out of service. Replace guards promptly after lubrication work is done and report damaged guards or places where guards are needed.

Ladders and Work Lifts: A ladder should be of suitable material; for example, a metal ladder or lift should not be used where there is possible contact with electrical wiring or equipment. Use ladders of the proper length; do not overextend extension ladders. The ladder or lift should be inspected to be sure that the safety feet, rungs, and slide rails are in good condition and free of oil and grease. Use both hands when climbing; carry equipment in a sling, bag, or pockets, or hoist it up to the point of use.

Safe Clothing: Follow plant rules for the proper kind of safety shoes, hats, goggles, glasses, gloves, or special clothing. Do not wear loose or torn clothing that can be caught in moving parts of a machine. Wear long sleeves in the vicinity of hot surfaces.

Hand Tools: Take special care when using hand tools. Use the right tool for the job; do not improvise or change its configuration for a purpose for which it was not intended. High-pressure grease guns can develop several thousand pounds of pressure and a grease jet from a grease gun can pierce the skin.

Hazards to the Skin: The skin may be sensitive to prolonged exposure to petroleum products such as cutting fluids, solvents, and rust

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preventatives. Irritation, itching, or skin rashes (dermatitis) may develop. To prevent trouble or escalation, wear rubber gloves whenever possible. Wash hands and affected skin areas frequently with mild soap and warm water. Launder oil-soaked clothes and get first aid for cuts and scratches exposed to petroleum products. Good standards of care, and personal and plant hygiene, are advised when handling lubricating products.

Fire Hazards

Most petroleum products will burn. Lube oils and greases have relatively high flash points, but solvents, kerosene, diesel fuel, and gasoline have much lower flash points and will burn readily. Do not use gasoline for cleaning and do not smoke around any petroleum product.

In Case of Fire: In the event of a fire, sound the alarm and dial 911 (or your plant's emergency line). Do not let the fire cut off your escape route. Stay upwind and do not breathe any more smoke than is necessary, since smoke from certain petroleum fires can be dangerous. Firefighting should only be performed by designated and trained individuals. For extinguishing agent, dry chemical, foam, and carbon dioxide (CO₂) are recommended. Water can also be used, but be cautious of using a solid stream of water as it can disperse across the affected area and will conduct electricity if sprayed directly on a live electrical panel. Use of water sprays should be left to trained firefighting personnel.

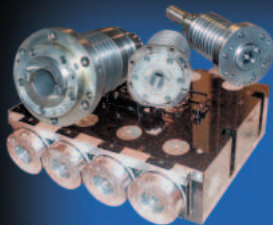
Oily Rags: Keep oily rags in a labeled, closed, oily waste can. Rags soaked with paint or linseed oil should not be kept in a closed container, but instead should be hung up to dry and then disposed of according to plant practices and governmental regulations.

Handling Solvents: Many solvents emit enough vapor to form flammable mixtures with air. Any spark, even from static electricity, can cause a fire. Before opening or dispensing solvents or fuels, make sure the containers are grounded, either with ground wires, metal to metal contact between containers, or direct contact with the ground. Handle solvents in well-ventilated areas and keep containers closed when not in use.

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Hazards to Lungs

Dangerous vapors, mists, or dusts can form in plant working areas, and prolonged exposure can be hazardous. If overexposed, get out of the area and get first aid.

Do not enter any large confined spaces such as empty tanks, vats, kettles, etc., alone and without checking for oxygen deficiency with approved measuring devices. Regardless of toxicity levels, approved respiratory devices are recommended for use in these areas. Always use the "two-man rule" when working in these spaces and talk to each other frequently. If entering into a confined space wear approved ropes/harnesses, especially in dark areas. Consult your local and state officials for published Lower Explosive Limits (LEL) and Permissible Exposure Limits (PEL). ☠

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