

Boiler Safety

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March 15, 2017



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Posted at 14:04h in [Safety Manual](#), [Safety Topics](#), [Tailgate Safety](#), [Tailgate Safety Meetings](#), [Toolbox Talks](#)

Workers that use, maintain, and service boilers know that they can be potentially dangerous. Boilers are gas-fired or electric closed vessels that heat water or other liquid to generate steam. The steam is superheated under pressure and used for power, heating or other industrial purposes. Though boilers are usually equipped with a pressure relief valve, if the boiler fails to contain the expansion pressure, the steam energy is released instantly. This combination of exploding metal and superheated steam can be extremely dangerous.

Only trained and authorized workers should operate a boiler. Workers should be familiar with the boiler manufacturers operating manual and instructions. Boiler operators should frequently inspect boilers for leakage, proper combustion, operation of safety devices and

gauges, and other functions. Many older boilers and hot water and steam piping may have asbestos insulation coatings, wraps, or “lagging.” Workers should periodically inspect these areas to make sure that the materials are not damaged, flaking, or deteriorating. Damaged materials should be reported and repaired or removed immediately by a certified asbestos contractor. Signs of cracked surfaces, bulges, corrosion or other deformities should be repaired by an authorized technician immediately. Detailed logs of boiler operation and maintenance can help ensure boiler safety.

Boilers should always be brought on line slowly and cold water should never be injected into a hot system. Sudden changes in temperature can warp or rupture the boiler. Because many boilers are fire-operated by natural gas, diesel or fuel oil, special precautions need to be taken. Boiler operators should ensure that the fuel system, including valves, lines, and tanks, is operating properly with no leaks. To prevent furnace explosions, it is imperative that boiler operators purge the boiler before ignition of the burner. Workers should check the fuel to air ratio, the condition of the draft, and the flame to make sure that it is not too high and not smoky. Ventilation systems should also be inspected and maintained to make sure that combustion gases do not build up in the boiler room.

The area around the boiler should be kept clean of dust and debris, and no flammable materials should be stored near any boiler. Floors are often sealed concrete and can be very slippery when wet. Spills should be mopped or cleaned up immediately. Make sure that adequate lighting is provided and that malfunctioning light fixtures are repaired immediately. Because boilers have hot surface areas, there should be plenty of clearance for workers to move around the room. Boiler rooms can be noisy, so the area should be posted and workers should wear hearing protection when working inside the boiler room.

Boiler repairs are allowed only by authorized boiler repair technicians. Repair workers should wear personal protective equipment such as hard hats, heavy-duty work gloves, eye protection and coveralls. When entering a boiler for service or repair, authorized boiler repair workers should treat the vessel as a permit-required confined space. When the boiler is shut down for repair, all sources of energy should be isolated using approved Lockout/Tagout procedures and residual pressure in steam, water, and fuel lines should be relieved by following proper bleed and block or capping procedures.

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