

Case 520. 44-year-old camp maintenance worker died from a propane gas explosion in a camp cabin

A 44-year-old male camp maintenance worker died from a propane gas explosion in a camp cabin. Four portable propane heaters were used to raise the temperature inside a cabin to 140°F-160°F to exterminate bed bugs. Each 20-gallon propane tank was equipped a DynoGlo 15000 BTU single lamp heater. There was a shutoff valve on the lamp but it “kicked on” only when the propane tank was knocked over. The decedent turned on each propane tank and filled the heaters with propane. The heaters were then lit by an open flame or a lighter. A box fan with a 3-speed adjustment was placed in one corner of the cabin for circulation. The extermination process was scheduled to take eight hours. After four hours, the decedent went into the cabin and smelled a propane leak; at least one of the flames had been extinguished. Based on the damage to the tanks after the explosion, it appeared he removed the four propane tanks from the cabin prior to the explosion occurring. The ignition source causing the explosion is unknown. After the incident, it was discovered the automatic gas safety switch was bypassed which allowed a constant flow of the propane gas to the main burner when the flame extinguished. The decedent died from the injuries sustained several weeks later.

MIOSHA General Industry Safety and Health Division issued the following Serious citations to the employer at the conclusion of their investigation.

Serious: 1910.110(c)(5)(i)(h): GI PART 56, STORAGE AND HANDLING OF LIQUIFIED PETROLEUM GAS [REF 408.15601]

Portable heaters, including salamanders, shall be equipped with an approved automatic device to shut off the flow of gas to the main burner, and pilot if used, in the event of flame extinguishment. Such heaters having inputs above 50,000 B.T.U. manufactured on or after May 17, 1967, and such heaters having inputs above 100,000 B.T.U. manufactured before May 17, 1967, shall be equipped with either.

- (1) A pilot which must be lighted and proved before the main burner can be turned on; or
- (2) An electric ignition system.

The provisions of this paragraph (h) do not apply to tar kettle burners, torches, melting pots, nor do they apply to portable heaters under 7,500 B.T.U. input when used with containers having a maximum water capacity of 2 ½ pounds. Container valves, connectors, regulators, manifolds, piping, and tubing shall not be used as structural supports for heaters.

On *Date*, 2018, an employee utilized portable heaters, including a DynaGlo 15,000 BTU portable heater to raise the temperature inside Cabin ABC in an effort to eradicate bed bugs. Zip-Ties were used to by-pass the automatic gas shut-off devices allowing the continuation of gas to the main burner upon flame extinguishment. On *Date*, 2018, an explosion occurred severely injuring an employee. (*MIFACE removed the date of the incident and the Cabin number*)