

Incident Summary #II-1043516-2020 (#18851) (FINAL)

SUPPORTING INFORMATION	Incident Date	July 21, 2020	
	Location	North Vancouver	
	Regulated industry sector	Gas - Natural gas system	
	Injury	Qty injuries	1
		Injury description	Burn to their legs
		Injury rating	Insignificant
	Impact Damage	Damage description	The lower apartment's front room ceiling had been partially brought down which consisted of two layers of drywall. The enclosure wall surrounding the gas riser (a portion of gas piping which supplies several floors with gas) and the fireplace were distorted by the force of the explosion. The upper apartment's lower portion of the enclosure wall surrounding the gas riser and the fireplace was also distorted by the force of the explosion.
		Damage rating	Minor
Incident rating	Minor		
Incident overview	A seamless copper gas riser serving four floors failed causing an explosion within the ceiling space of one apartment and the gas riser and fireplace enclosure of the apartment above.		
INVESTIGATION CONCLUSIONS	Site, system and components	<p>A gas riser is a piping system constructed of seamless steel, seamless copper or corrugated stainless steel (CSST) which is designed to convey gas to different floors of a building. The gas riser when installed would have been tested to assure there were no gas leaks at the time of installation with no code requirements to test the gas riser thereafter. When a gas riser is constructed of seamless copper each joint must be brazed or by flare joints (A mechanical compression process).</p> <p>This riser serves 4 fireplaces in total one on each floor of that portion of the building. On each floor the riser is in an enclosure with a fireplace inside an apartment.</p>	
	Failure scenario(s)	There was a gas leak emanating from a flare joint on the gas riser situated inside the fireplace enclosure on the Second floor apartment, leaking gas over a period of time accumulated in the ceiling space in sufficient quantity to become explosive (between 4 and 15% gas in air) and seeped into the gas riser and fireplace enclosure on the apartment above, likely seeping into the living space where the gas came in contact with a source of ignition causing an explosion.	
	Facts and evidence	<p>Statement acquired from:</p> <p>Occupant effected by the incident of upper floor – Stated that they were in their apartment and lit a cigarette next to the fireplace when there was an explosion which blew open the glass doors and the lower louvers of the fireplace, a fire ball set fire to a plant next to the fireplace, damaged the wall and set fire to their leg.</p>	

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	<p>North Vancouver Fire Department (representative) – had spoken to the occupant of the upper floor who told them that they were in their apartment and lit a cigarette next to the fireplace when there was an explosion which blew open the glass doors and the lower louvers of the fireplace, a fire ball set fire to a plant next to the fireplace, damaged the wall and set fire to their leg. The representative also stated that in the lower department the drywall was dislodged around the fireplace and the ceiling blew out.</p> <p>Work carried out:</p> <p>Gas Contractor – Isolated all four fireplaces from the gas riser then conducted a pressure test on the gas riser which failed, concluding that there was a gas leak, after having some drywall removed in the effected apartments the gas contractor were able to find the gas leak on a flare fitting in the lower apartment’s portion of the gas riser.</p>
Causes and contributing factors	<p>The root cause of the incident was the mechanical failure of a flare fitting on the gas riser which resulted in a gas leak. with no regulatory or code requirements to periodically test a gas system the gas leak went undetected.</p>