

Incident Summary #II-1157236-2021 (#21008) (FINAL)

SUPPORTING INFORMATION	Incident Date		March 6, 2021	
	Location		Cowichan Valley Regional District	
	Regulated industry sector		Gas - Propane system	
	Impact	Injury	Qty injuries	1
			Injury description	Burns to face, hands, ears, and legs.
			Injury rating	Major
	Damage	Damage	Damage description	Total loss of trailer and structures attached due to fire and explosion.
			Damage rating	Major
	Incident rating		Major	
Incident overview		A propane explosion and subsequent fire occurred in a recreational vehicle (RV) park on a 5 th wheel type trailer.		
INVESTIGATION CONCLUSIONS	Site, system and components		<p>A propane oven (make unknown) with four top burners and an oven has propane piping connected to an 80-gallon propane cylinder located outside the RV trailer (image 1). The stove and oven are controlled by five temperature controllers for each burner and one for the oven on the front side of the appliance (Image 3). When burner controllers are turned on, propane flows through the control valve to burner and is ignited by pilot burner.</p> <p>The stove does not have a pilot safety or thermocouple which, when pilot is lit, senses the pilot flame, and allows gas to flow to the burner. without a pilot safety or thermocouple, gas will flow continuously regardless of the pilot being lit or not.</p> <p>Two aluminum tubes provide gas to the oven. A smaller tube supplies gas to the pilot burner and a larger tube supplies gas to the main oven burner (Image 2).</p>	
	Failure scenario(s)		The pilot and main oven burner tubes at the back of stove had corroded allowing propane to leak into the back of the stove area. When the homeowner attempted light a stove top burner, propane which had pooled behind the stove ignited causing an explosion and fire.	
	Facts and evidence		<p>Witnesses stated the homeowner was lighting his stove top and in the process an explosion occurred causing severe injuries to himself and resulting in a fire that destroyed the 5th wheel trailer and surrounding structures.</p> <p>The propane stove is approx. 20 plus years old. The current owner has lived there 15 years and the trailer was not new when purchased.</p> <p>Site observations and photos show the gas tubing for the oven was severely corroded and separated at the back of the appliance (Image 2). Corrosion is believed to be caused by contact of two dissimilar metals, the aluminum piping, and the steel oven back.</p>	

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	<p>No electrical connections were found in the area of the source of initial fire.</p> <p>During examination of the scene, the charring and burn patterns indicated that the fire originated behind the oven on left side of trailer. Examination of the stove after removal from the trailer showed signs of corrosion to the outer shell and rust holes on the inside and outside of the body. The gas tubing going to the oven burner was separated and corroded which would have allowed propane to leak into the surrounding insulation of the stove and pool into the void space behind the oven.</p> <p>There was no evidence of a propane leak detector or CO detector due to fire damage.</p>
Causes and contributing factors	<p>It is likely that the corrosion of the propane oven tubing, due to contact of dissimilar metals, caused the propane leak which was ignited when the owner attempted to light the top burners causing the explosion and fire.</p>



Image 1 - Structure fire Cowichan Valley 5th Wheel



Image 2 - Corroded oven gas tubing behind stove



Image 3 – Gas stove after removal from trailer



Image 4 - Corroded and plugged lines. Insulation removed for clarity



Image 5 – Gas stove prior to removal from trailer