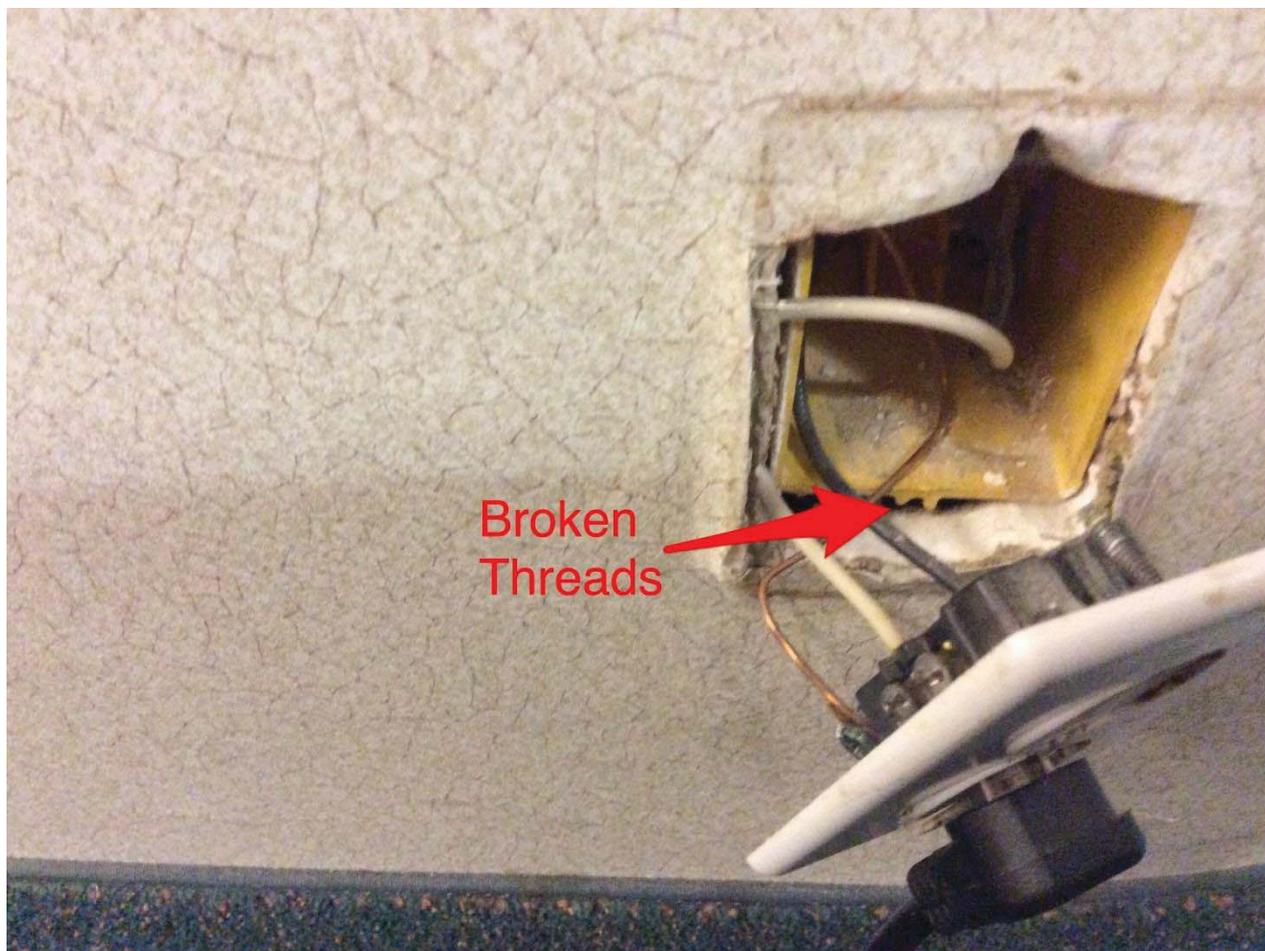


## Incident Summary (5611963) Final

SUPPORTING INFORMATION	Incident Date		February 15 2017	
	Location		Langley BC	
	Regulated industry sector		Electrical •Low voltage electrical system (30V to 750V)	
	Impact	Injury	Qty injuries	1
			Injury description	Electrical shock sustained to lower right leg(calf area). Visible swelling to described area
			Injury rating	Minor
	Damage		Damage description	Electrical shock occurred, receptacle to device box attachment failure. Exposed energized conductors and receptacle terminals
			Damage rating	Moderate
Incident rating		Moderate		
Incident overview		A device box housing a wall receptacle has malfunctioned, the receptacle is no longer attached to the device box and the energized receptacle terminals and branch circuitry wiring are exposed. Energized equipment has caused a shock to a person.		
INVESTIGATION CONCLUSIONS	Site, system and components		<ul style="list-style-type: none"> <li>•Receptacle: 15 amp, 120 volt duplex receptacle with metal mounting screws located at top and bottom of the receptacle frame</li> <li>•Device Box: Single device, yellow plastic box with threaded holes at top and bottom to accept receptacle mounting screws</li> <li>•Receptacles mount to device boxes via receptacle mounting screws, when receptacle is secured to device box exposed terminals and wiring are contained within device box. Receptacle mounting screws retain the receptacle to the device box when electrical equipment is plugged and unplugged into and out of the receptacle.</li> </ul>	
	Failure scenario(s)		Repeated plugging and unplugging of electrical equipment into this receptacle causes a pushing and pulling force on the plastic and metal threads of the device box and receptacle mounting screws respectively. With time and repeated use of the receptacle the threaded metal screws may have worked to deteriorate the plastic threads of the device box. This would provide a scenario where the receptacle is no longer attached to the device box.	
	Facts and evidence		<p>Receptacle:• 15 amp, 120 volt duplex receptacle.</p> <ul style="list-style-type: none"> <li>• Cover plate attached to receptacle</li> <li>• Receptacle is not attached to device box at time of assessment</li> <li>•Fridge is plugged into this receptacle at time of assessment</li> <li>•Yellow plastic shavings found on receptacle mounting screw threads</li> <li>•Visual inspection of receptacle, terminals and cover – all components described are intact and not damaged.</li> </ul> <p>Device Box:•Single gang yellow plastic device box approved for non-metallic sheathed cable</p> <ul style="list-style-type: none"> <li>•Threaded hole located at top of box for receptacle mounting is intact.</li> <li>•Threaded hole located at bottom of box for receptacle mounting is broken through its entire length and no longer provides a threading/attachment means for a receptacle mounting screw.</li> </ul> <p>Branch Circuitry, Wiring inside device box:</p>	

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		<ul style="list-style-type: none"> <li>•#12 gauge 2 conductor non-metallic sheathed cable, with integral #14 gauge bond conductor.</li> <li>• Wiring is plugged into back of receptacle in order to terminate, side wire binding screws are not in use.</li> <li>•Visual inspection of conductors in device box confirms wiring is in good order and not damaged or compromised.</li> </ul> <p>Relevant Information gathered during interviews:</p> <ul style="list-style-type: none"> <li>•Receptacle in question was confirmed to be the receptacle that is used during daily vacuuming and cleaning duties for the hotel room.</li> <li>•Repeated daily plugging and unplugging of electrical equipment by cleaning staff ,and general use by rental patrons would cause excessive wear and force on this receptacles mounting screws, potentially causing equipment failure.</li> </ul>
	<p>Causes and contributing factors</p>	<p>It is likely that repeated use of this receptacle, both general duty and daily cleaning equipment use, would have contributed to excessive wear and stress on the electrical equipment and threads. Metal screw threads on the receptacle are harder than the plastic threads of the device box, this would be a likely cause of the visible thread failure of the device box and minimal damage to the threads of the receptacle screws. Compressed branch circuitry inside the device box is likely a factor in pushing the receptacle out of the device box, thus exposing energized conductors and screw terminals providing an area for accidental contact.</p>







Receptacle at room entry,  
fridge plugged in and cover  
plate on.