

Incident Summary #II-1280613-2021 (#24889) (FINAL)

SUPPORTING INFORMATION	Incident Date	November 3, 2021	
	Location	Abbotsford, British Columbia	
	Regulated industry sector	Electrical - Low voltage electrical system (30V to 750V)	
	Impact	Qty injuries	0
		Injury description	N/A
		Injury rating	None
	Damage	Damage description	A receptacle and cord were melted in a fire that occurred in the bedroom on the lower level of a single-family dwelling. Fire and smoke damage to a small section of wall in the bedroom as well as a table and chair.
		Damage rating	Moderate
	Incident rating	Moderate	
Incident overview	A fire in a dwelling occurred where an extension cord was plugged into a bedroom receptacle. The cord was connected to a series of power bars that were connected to power various household electrical equipment.		
INVESTIGATION CONCLUSIONS	Site, system and components	<p>The incident occurred in a bedroom on the lower level of a single family dwelling. The bedroom had three 15-amp, 120 volt duplex receptacles located around the perimeter of the room. Only two receptacles were accessible for use due to the furniture layout in the room.</p> <p>The receptacles were supplied by a 15-amp, 120 volt circuit protected by a 15-amp circuit breaker.</p> <p>At least six power bars appear to have been connected to one receptacle and were joined using extension cords. Some of the power bars had additional multi-outlet adapters plugged into their outlets. The power bars were used to supply cell phone chargers, lamps, a TV, a digital video recorder, and other household electrical equipment.</p> <p>Extension cords and power bars are not meant to be used to replace permanent wiring.</p>	
	Failure scenario(s)	<p>Power bars, extension cords and multi-outlet adapters were linked together and used as a substitute for permanent wiring and receptacles. These were used to provide power to a large quantity of devices, and all connected back to the permanent wiring at a single outlet.</p> <p>Having many pieces of electrical equipment all connected to one permanent outlet caused excessive heating where the first power bar of multiple power bars linked together was connected to the bedroom receptacle. Over time, this heating caused the connection at the receptacle contact points to become loose and resulted in a higher than normal resistance between the plug's contact blades and the internal contacts of the receptacle. This increased resistance led to further heating at the connection point.</p> <p>The outlet eventually overheated enough that the plastic casing of the receptacle melted through to its surface and ignited the wall it was mounted on.</p>	

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Facts and evidence	<ul style="list-style-type: none">• Statement from Abbotsford Fire Rescue Service (AFRS) said that a power bar was plugged into the outlet where the fire started.• Examination of the bedroom showed at least six power bars had been connected together using extension cords to power devices throughout the room. (Photo #2, 3 and 4).• The power bars were being used to provide power to cell phone chargers, lamps, a TV, a digital video recorder, and other household electrical equipment.• The branch circuit wiring connected to the receptacle where the fire started showed no signs of overheating or damage, which indicates that the fire was not caused by wiring issues. (Photo #5).• The permanent outlet that the power bars were plugged into had significant heat and fire damage, and the nature of the damage indicates that the damage started internal to the receptacle and propagated outwards. (Photo #6 and 7)
Causes and contributing factors	<p>The cause of the fire was very likely an overheated connection point between a receptacle and a power bar, where the power bar was used to feed several downstream power bars and overloaded the connection point for a prolonged time. The overloading of the connection likely generated excessive heat, which led to melting of the non-metallic components of the receptacle and ultimately a fire.</p>



Photo 1 – Area of fire damage including point of origin of fire (red outline).



Photo 2 – Power bars and multi-outlet adapters that were connected to the overheated receptacle.



Photo 3 – Additional power bars connected downstream from power bars in [Photo 2](#).



Photo 4 – Further power bars connected downstream from power bars in [Photo 3](#).



Photo 5 – Wiring connected to receptacle where fire originated shows no signs of overheating.



Photo 6 – Melted receptacle was the point of origin of the fire.



Photo 7 – Closeup of overheated receptacle showing that point of origin was the internal connection point for a cord end (red arrow).