Incident Summary (5620434)

SUPPORTING INFORMATION	Incident Date			August 26, 2017
	Location			Langley
	Regulated industry sector			Low voltage electrical system (30V to 750V)
	Impact	Injury	Qty injuries	None
			Injury description	None
			Injury rating	None
		Damage	Damage description	The bathroom fan in a residence was damaged beyond repair due to fire. The wooden joists and drywall were also damaged due to fire and smoke.
			Damage rating	Moderate
	Incident rating			Moderate
	Incident overview			The bathroom fan overheated and caught fire.
INVESTIGATION CONCLUSIONS	Site, system and components			The electric powered bathroom fan provides exhaust air circulation for the bathroom. Fan internal cleaning and motor maintenance are good practices.
	Failure scenario(s)			The bathroom exhaust fan motor experienced a failure due to age and lack of maintenance and cleaning and there was a high current heat condition to the exhaust motor and the fan internal cord. This resulted in the insulation of the fan cord melting and the energized wire arcing to the metal fan enclosure igniting the inside of the fan on fire which spread to the wooden joists and drywall.
	Facts and evidence			Figure #1 – Internal wiring damage Figure #2 – Burnt fan motor with signs of dust accumulation Figure #3 – Bathroom exhaust fan Figure #4 – Wooden joist fire damage Figure #5 – Drywall smoke damage The bathroom fan appears to be original and the building age was reported as 48 years (1969) by the fire captain. The bathroom fan was reported by the fire captain as not working for 4 months prior to the incident and to have been humming according to the occupants. Bathroom fan exhaust branch circuit was reported by the fire captain as tripped from the incident. The branch circuitry was reported by the electrician as being copper.
	Causes and contributing factors			It is very likely that the cause of this incident was that the bathroom fan exhaust motor was failing due to age and lack of maintenance and cleaning. The resultant high electrical current and high temperatures of the fan motor and the fan internal cord caused the insulation of the fan cord to melt and the energized wire to arc to the metal fan enclosure. The dust accumulations and plastic fan blade within the fan enclosure likely fueled the fire. While the circuit breaker reportedly tripped during the incident, the fire spread beyond the metal fan enclosure to the wooden ceiling joist.

Figure #1 – Internal wiring damage

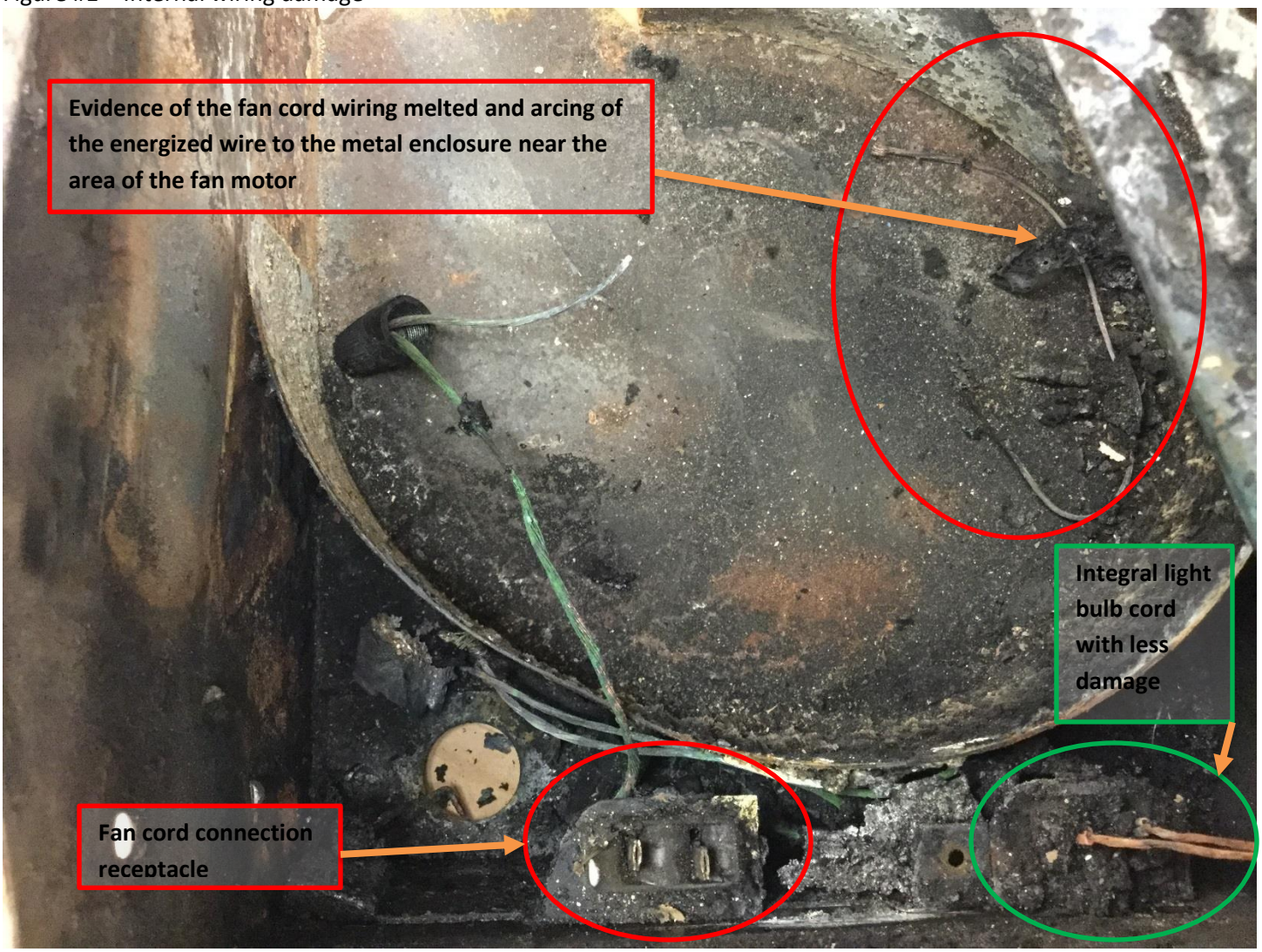

Figure #2 – Burnt fan motor with signs of dust accumulation

Figure #1 – Bathroom exhaust fan

Figure #2 – Wooden joist fire damage

Figure #3 – Drywall smoke damage