

Testing an urban myth: do spiders really “love” the smell of gasoline?

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ABSTRACT. Presence of yellow sac spiders (genus *Cheiracanthium*) in the emissions control (EVAP) system of certain automobiles has prompted recalls because silk blockage of EVAP hoses could lead to cracked gas tanks, fuel leakage, and fire. According to a Reuters report during the 2011 Mazda6 recall, an innate attraction to the odor of gasoline explained sac spider presence in cars (**gasoline attraction hypothesis**). The media perpetuated this idea to such a degree that it attained the status of an urban myth – even the Wikipedia article for *Cheiracanthium* discusses the supposed attraction. Alternative possibilities to explain spider presence in EVAP hoses were largely ignored. Car hoses provide just one of many suitable retreat sites available to spiders, so occasional occupation of EVAP hoses may be due more to chance than design (**random occupancy hypothesis**). It is also possible that EVAP hoses themselves attract the spiders (**hose attraction hypothesis**).

In this study, we tested the gasoline attraction and hose attraction hypotheses. Using juvenile *Cheiracanthium mildei*, a species known to occupy EVAP hoses, we found no evidence to support the gasoline attraction hypothesis: in both arena tests and Y-tube choice experiments, spiders spent similar amounts of time in control (no gasoline odor) and treatment (gasoline odor present) areas. In contrast, data supported the hose attraction hypothesis. Younger juvenile *C. mildei* spent significantly more time on the treatment side of the test arena (pieces of hose present) compared to the control side of the arena (no hose pieces present), and younger juveniles were found more frequently on the treatment side of the arena 30 minutes (100%) and 12+ hours (89%) after release into the arena. Interestingly, the clear preference for EVAP hose displayed by younger juveniles was not seen in older juveniles.