



July 2022

Insect Stings During Outdoor Work

Entering the summer months means an increase in outdoor work across Department of Energy (DOE) sites. As workers spend more time outside, they are at an increased risk for stings or bites from insects (e.g., bees, hornets, fire ants, wasps). Although some consider insect stings or bites to be minor in nature, they can result in severe reactions and can be fatal. Exposure to such hazards necessitates planning for risk identification and abatement, prompt first aid, and emergency care.

According to the National Institute for Occupational Safety and Health (NIOSH), "the health effects of stinging or biting insects or scorpions range from mild discomfort or pain to a lethal reaction for those workers allergic to the insect's venom. Anaphylactic shock is the body's severe allergic reaction to a bite or sting and requires immediate emergency care. Thousands of people are stung by insects each year, and as many as 90 to 100 people in the United States die as a result of allergic reactions."

What has operating experience shown us?

A review of the CAIRS (Computerized Accident/Incident Reporting System) database for the years 2020, 2021, and 2022 (through June) identified 36 cases involving an insect sting or bite. Not surprisingly, these incidents have occurred more frequently in the warmer months (the third quarter of the calendar year).

A review was also conducted of the Occupational Safety and Health Administration (OSHA) Fatality and Catastrophe Investigation Summaries capturing information after OSHA conducts their event response inspections. Each of the five events below resulted in a fatality, illustrating the serious hazard of an insect sting:

- On August 26, 2020, at 12:30 p.m., an employee was marking trees to cut down. The employee was stung by approximately four bees and suffered anaphylactic shock and cardiac arrest and later died.
- On August 27, 2019, at 1:35 a.m., an employee was delivering mail to a residential home when he was stung three times by a wasp. The employee had an allergic reaction to the sting and went into anaphylactic shock which caused a heart attack. The employee was admitted to the hospital but later died.
- On July 15, 2018, at 12:00 p.m., an employee was working at a residence, performing updates to their telecommunications services. During work, the employee was stung by one or several bees and had an allergic reaction. The employee was hospitalized and received treatment; however, was put on life support after going into a coma. He never regained consciousness and later died.
- October 14, 2017, Employee #1 and a coworker were unloading scrap material from a pick-up truck and placing it into their company dumpster. Around 11:30 a.m., Employee



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#1 was stung by a bee on his neck. He suffered an allergic reaction from the bee sting, and approximately 10 minutes later was taken to a nearby hospital by the coworker. Employee #1 went into anaphylactic shock at 12:45 p.m. and died.

• On August 2, 2017, at 9:35 a.m., an employee was placing a ladder against a house to begin installing a soffit vent. The ladder struck a bush which disturbed an unseen beehive. A swarm of bees stung the employee and he died from an allergic reaction.

What lessons should we apply to our outdoor work planning?

Before starting outdoor work, all work planners should:

- Discuss the potential for severe allergic reaction and the value of preparedness for any involved workers with known history of allergy to enable others to react properly.
- Ensure that activity hazard analyses are performed and they include assessing for nests and hives that may be in the work area. Nests and hives may be found in trees, under roof eaves, or on equipment such as ladders.
- Exercise hierarchy of control, hazard elimination being the most effective, and consider removal of identified nests by workers trained and experienced in pest control. Have a plan in place for actions to be taken if a nest or hive is discovered during work execution.
- Consider PPE (e.g., netted hoods, work gloves, and high-top work boots) along with trousers and long-sleeved shirts when there is potential for exposure to stinging insects.
- Provide training to workers who may be exposed to stinging insects, such as bees or wasps. Training should include insect identification, their common nesting habits, risks of exposure, tips for prevention, and actions to take if stung.
- Include plans for first aid actions to take if a worker is stung. NIOSH recommends:
 - Stay with the worker to be sure that they do not have an allergic reaction.
 - Wash the site with soap and water.
 - Remove the stinger using gauze wiped over the area or by scraping a fingernail over the area. Never squeeze the stinger or use tweezers.
 - Apply ice to reduce swelling. Do not scratch the sting as this may increase swelling, itching, and risk of infection.
 - Workers with a history of severe allergic reactions to insect bites or stings should consider carrying an epinephrine auto injector (EpiPen), if medically prescribed, and wearing medical identification jewelry stating their allergy.

References

- OSHA Fatal Facts No. 17-2021, *Insect Sting*.
- NIOSH Fast Facts, *Protecting Yourself from Stinging Insects*.
- Centers for Disease Control and Prevention, NIOSH Worker Safety and Health Topics, <u>Insects and Scorpions</u>.
- DOE OPEXShare, Lessons Learned, *PNNL Electrician Requires Assistance after Insect Sting*, Pacific Northwest National Laboratory, September 22, 2014.
- DOE OPEXShare, Lessons Learned, *Employee Collapses after Reaction to Bee Sting*, Mission Support Alliance, Hanford Site, July 13, 2012.