

Slips, Trips and Falls in the Hospitality Industry: The Role of Forensic Experts During Incident Investigations

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Eating out in restaurants has, and always will be, a highly popular practice within social activities. In the United States, food service and drinking sales have steadily increased in the last decade, reaching over 800 billion (U.S. dollars) in 2021. While restaurant outings are usually enjoyable and fun, they sometimes result in an incident where a patron slips, trips, and/or falls on the premises. In fact, over one million guests get injured every year due to falls allegedly induced by slips, trips, or other related occurrences. These incidents often result in hospitality businesses facing extensive litigation costs, which has been estimated at over two billion dollars yearly in the U.S., with this amount rising by 10% every year.

One of the focuses of the hospitality industry is to pay close attention to the design, planning and construction of safe spaces, and implementing good safety practices and protocols. Specific codes and regulations have been developed throughout the years by institutions such as OSHA (Occupational Safety and Health Administration), ISSA (International Sanitary Supply Association), and the ICC (International Code Council) intended for safety and public health protection and to ultimately prevent and avoid incidents that lead to unnecessary costs. Some examples of specific areas of interest that these codes and regulations pertain to include, but are not limited to: selection of appropriate, slip-resistant flooring materials and mats, management of spills, floor cleaning and maintenance, hazard identification, and employee training.

Despite the diligent efforts of hospitality businesses applying the above safety practices to minimize slip, trip, and fall incidents, the reality is that they still occur. Common places where these types of incidents can happen include dining rooms, buffet areas, entryways, hallways, stairways, restrooms, and parking lots. When they occur and result in litigation, identifying the causative factors is crucial for the course of the litigation process and requires a comprehensive forensic investigation performed by a qualified expert.

The goal of forensic engineering and scientific analysis investigations is to understand an incident and why it occurred. Throughout the investigation, a qualified expert applies scientific principles and methodologies from a variety of areas including human factors, human movement biomechanics, injury biomechanics, and building codes and standards in conjunction with good engineering safety practices. In particular, the human factors field evaluates the interaction between humans and their environment, including the products and equipment that are required for the task that is being performed. It takes into consideration human capabilities and/or attributes such as field of view, visual perception, strength, cognitive processes, and anthropometrics. Additionally, the analysis of human movement biomechanics is critical to consider in slip, trip, and fall scenarios to analyze dynamic environments and understand the body's response in terms of

movements (i.e. kinematics) and forces (i.e. kinetics). Furthermore, the ancillary discipline of injury biomechanics ascertains the presence and/or absence of an injury mechanism in an incident to determine if a causal relationship exists between a claimed injury and the event being investigated.

Generally speaking, the multidisciplinary approach implemented by qualified forensic experts to investigate a slip, trip, and fall incident entails conducting an initial file review, site inspection (if necessary and available), analysis, and then rendering an opinion. More specifically, the file materials for initial review include documents such as witness statements, incident reports, deposition testimony, medical records, photographs, weather reports, cleaning logs, and building/property records. The site inspection often includes photographically documenting the site, taking measurements, conducting an illumination survey, performing slip resistance testing, among others. The findings from the site inspection are then analyzed in conjunction with the aforementioned fundamental scientific principles and methodologies to address questions within the scope of the analysis. More specifically, these questions can include, but are not limited to:

- Code compliance, e.g. was the floor slip resistant?
- If building code violations were present, were they a causative factor in the incident?
- Were the plaintiff's described fall kinematics consistent with the fundamental laws of physics and principles of biomechanics?
- Was an injury mechanism present in the subject incident to account for the claimed injury?
- Were the actions and/or inactions of the plaintiff and/or defendant a causative factor in the subject incident?

Two case examples concerning falls at restaurant locations include a fall from a high-top chair and an alleged slip-induced fall. The first case involved a patron who initiated a lawsuit against a popular restaurant chain. The plaintiff fell from a high-top chair when seated at a high-top table and was "leaning forward" to grab a glass while attempting to make a toast. The plaintiff alleged the chair kicked out from under her, causing her to fall and sustain injuries that were examined at the hospital. The second case involved a guest who also initiated civil action due to sustained injuries, against a locally owned restaurant after reportedly slipping and falling. The plaintiff claimed she slipped on a polished concrete floor that was inherently slippery.

Investigations for the first case involved a review of all file materials provided and a site inspection. Additionally, a human factors test was conducted to assess the stability of the high-top chair under the conditions that the plaintiff testified. She stated to be "leaning forward to grab the glass" for toasting while sitting all the way to the back on the chair. The test involved having a surrogate of similar anthropometrics to the plaintiff's perform the actions and motions described. Results from this test demonstrated that the high-top chair did not move under these conditions. Further analyses included a review of the restaurant's video-footage to observe other patrons' interactions and behaviors with high-top chairs, which showed chair misuse (sitting on the edge of the chair or scooting) resulting in fall incidents. This was crucial for determination of causative factors in this incident since the plaintiff's alleged described behavior and body positioning was inconsistent with the causative factors observed in other people's interactions with the chair also resulting in a fall.

For the second case, after reviewing the materials received, a detailed analysis included: an evaluation of the slip resistance of the subject floor to determine if it can be considered to be slip resistant and in compliance with best safety practices and walkway safety standards that require a slip resistant walkway surface; an evaluation of exemplar objects or evidence relevant to the case and in direct relation to the plaintiff (i.e. shoes worn at time of incident); a kinematic analysis to determine consistency of described fall kinematics with the principles of biomechanics; and also a human factors evaluation to help determine probable causative factors of the incident by assessing the plaintiff's specific described behaviors and objects with which she interacted. By considering multiple factors, it was determined that there was no reason to expect that the plaintiff's subject incident was due to a slip event from a slippery floor condition and it was more likely that the plaintiff lost her balance or mis-stepped.

It comes as no surprise that the general public thinks a slip, trip, and fall related incident is primarily induced by a physical hazard or condition at the location that is not in compliance with the appropriate building codes and standards. However, the reality is that human behavior can be a major contributor to these events, including aspects related to human factors such as attentiveness and speed of ambulation. For both cases previously mentioned, the experts concluded that the plaintiff's described sequence of events were not consistent with the principles of biomechanics, eliminating the alleged potential physical cause or mechanism of the fall, and therefore determining the probable cause was related to human factors. As stated earlier, human's behavior and cognitive skills, as well as their interaction with the environment and objects commonly used in their daily lives may play a critical role in slip, trip, and fall incidents. Frequently ignored are aspects related to attention, distraction, and pertinent visual and auditory cues that represent critical elements to consider when evaluating these types of incidents, especially when litigation is part of the equation.

Ultimately, the hospitality industry can, and often does, mitigate risk and reduce claims through regular implementation of policies and procedures that protect staff and guests. However, when slip, trip, and fall incidents occur, during the course of a legal process it is important to evaluate the incident through the previously mentioned multidisciplinary approach, which considers the significant influence of human factors, to determine accurate causative factors. These are often comprised of overlooked human characteristics, and ignoring these can have detrimental consequences.