

Window Washer's Deadly Fall Due to Heroin Abuse?

This case study summarizes a matter in which a window worker was killed while on the job, resulting in the filing of a lawsuit for negligence. It illustrates how toxicological interpretation of historical factors and application of peer-reviewed human studies can play a pivotal role in litigation.

An experienced window washer working on a 7-story building unhooked his safety belt to enter the building through an open window when he suddenly fell. Landing headfirst on the concrete surface of the courtyard below, the man died on impact. A co-worker immediately called an ambulance but there was nothing that could be done. The two men had worked as partners for several years prior to the accident. The co-worker explained to police that the fall was sudden and unexpected and the man had not yelled out or screamed. He was a highly skilled window washer and there were no apparent mitigating factors such as wind, water on the ledge or equipment failure.

The deceased man's family alleged negligence on the part of the building owners and filed a lawsuit for damages. In view of the high settlement demand, attorneys for defendants retained Dr. Sawyer to conduct an impartial toxicological assessment.

No Apparent Cause

The postmortem examination was unsurprising, clearly indicating the cause of death as multiple blunt-force injuries sustained from the fall. Toxicological analyses, however, revealed a peculiar and unexpected finding: a significant level of morphine was detected in the man's blood.

The co-worker described the deceased worker as a "good-headed" man who supported his aging parents and a child. He never missed any days of work and was skilled at his job. However, the co-worker's deposition contained some odd revelations. At times, he had observed the man exhibiting peculiar physiological conditions on the job such as sweating, being flushed and disoriented. Although they had talked about it, the man made no complaints of nausea or pain and insisted that he was perfectly healthy.

Unexpected Discovery

In the course of preparing a thorough toxicological assessment, Dr. Sawyer reviewed the sheriff's report, EMT report, medical examiner's report, autopsy analyses and available postmortem records. He also scrutinized the discovery depositions of multiple witnesses. Dr. Sawyer then obtained records of the man's medical history dating back some 15 years and uncovered information which significantly altered the character of his investigation: The man was a heroin addict.

Some 15 years prior to the accident, the man had begun using heroin. He had later presented to a health center to discuss substance abuse with a doctor and had been scheduled for out-patient detoxification, but he failed to appear for treatment. Ativan and a clonidine patch were prescribed which seemingly had a positive effect as the man insisted he had abstained from further heroin use. He was scheduled for further follow-up visits but was a "no-show" for each appointment.

Several years later, the man appeared for follow-up for a gunshot wound to the left buttock at which time there were indications of continued heroin use. When the man later presented at the hospital for a testicular neoplasm, he finally admitted continuing his heroin use. Although in-patient detoxification was scheduled, he again failed to show up for appointments. He was prescribed clonidine, dicyclomine (for abdominal cramps) and diphenhydramine (for excessive salivation). Time and again the man indicated that he wished to beat his addiction, making appointments for which he failed to appear. This on-again/off-again pattern continued for years. No report indicated with certainty that his heroin use had ceased.

Heroin and Cognitive Impairment

Heroin is an opioid drug made from morphine, a natural substance found in the Asian opium poppy. At doses in excess of the therapeutic range, morphine can impair mental and physical abilities required for the performance of potentially hazardous tasks. These include driving, operating machinery or any physical activity involving purposeful muscular control.



A window washer suddenly and unexpectedly fell to his death. (6)

The toxicological literature notes that frequently observed reactions from heroin use include constipation, nausea, vomiting, lightheadedness, dizziness, sedation, euphoria and sweating. Significantly, heroin users can also experience clouded mental functioning and a sudden, unexpected state of semi-consciousness.

The lawsuit alleged that the man was not intoxicated and that the accident was the result of negligence on the part of the building owners. Since no drug paraphernalia or drug-related items were found by the police or the medical examiner, Dr. Sawyer was confronted with a variety of circumstantial factors. These all required appropriate toxicological context to be interpreted and accepted as evidential by a court.



Heroin impairs the mental and physical abilities required to perform potentially hazardous activities. (a)

No "Alternative Facts" Here

In science, objective, generally-accepted, peer-reviewed facts are open to interpretation only in the sense that they may confound presumptions. Toxicology is based on the principle that various substances produce causative effects when contacted, inhaled or ingested. The degree and nature of effects are primarily determined by dose.

Thus, Dr. Sawyer elected to focus upon the causative effects of morphine based on the blood concentration measured at autopsy. His written toxicological assessment took the following into account:

- Although some heroin users develop a tolerance for the drug over time, Dr. Sawyer cited peer-reviewed studies demonstrating that significant cognitive and neuropsychological impairment remains present regardless of tolerance.
- A study by Bachs,¹ et al., 2006, evaluated the relationship between heroin metabolites and impairment of psychomotor functions. Some individuals selected from a database of heroin users had morphine present in their blood and some did not. In the "morphine present" cases, 80% were impaired, but in the "not present" cases, 86% were unimpaired. This result clearly demonstrated the effects of psychomotor impairment with morphine present in the blood.
- The prefrontal cortex of the brain is a region responsible for planning complex cognitive behavior and decision making. A study by Bruin,² et al., 2001, found that chronic heroin exposure impairs planning functions of the prefrontal cortex. This is a consequence of cumulative neuronal damages of prefrontal cortex and dopamine neurons subsequently demonstrated in experimental and morphological studies of opiate addicts who died after overdose.
- Plaintiffs contended that the presence of morphine was a result of ingestion of codeine or poppy seeds. Although the precise source of the morphine in the man's blood could not be identified with certainty, the forensic evidence and scientific method ruled out poppy seeds or codeine as sources. Based on the high morphine blood level, the man would have had to consume unrealistic (impossible) quantities of poppy seeds to achieve the morphine blood level measured at autopsy. Additionally, the specific codeine blood level measured 22.6 times lower than the morphine level, which is inconsistent with morphine converted from codeine administration.
- Although no drug paraphernalia or drug-related supplies were found, the morphine blood level measured at autopsy was highly suggestive of recent drug abuse. The generally accepted half-life of morphine is 1.9 + 0.5 hours with an effective concentration for surgical anesthesia of 65 ng/ml. The morphine level measured in this man at autopsy was *nearly twice this concentration*.

Weight of Evidence

Dr. Sawyer's written assessment presented to the court identified the sweating, dizziness and flushing as consistent with documented reactions from heroin use (as reported in the toxicological literature). It also noted evidence indicating heroin self-administration consistent with the documented history of an addict who had relapsed.

Of particular interest were the findings regarding heroin's long-term cognitive impairment characteristics. The man's free morphine blood level was within range for significant impairment regardless of the degree of tolerance that he may have acquired. Dr. Sawyer cited human studies of heroin addicts which revealed significant neuropsychological and cognitive impairment critical to a worker's awareness of structures and distances while requiring precise coordination and accurate footing.



Toxicological testimony in the form of a written assessment can carry significant weight in litigation. (a)

Outcome

It seems the man had managed to keep his heroin addiction a secret for 15 years. Based upon the available toxicological evidence, Dr. Sawyer offered the opinion that the man had self-administered heroin that morning and that his chronic heroin abuse had substantially contributed to his fatal accident. Soon thereafter, the case settled very favorably for defendant.

Epilogue

The CDC recently reported that heroin overdose deaths have more than **quadrupled** in the U.S. and the trend extends backward in time. In 2000, only 6% of drug overdoses were related to heroin, but 25% of drug overdoses were heroin-related in 2015. The CDC also warned that adults in the age group of 45-54 years have the highest drug overdose-related death rate in the nation.

For additional information see: <https://www.cdc.gov/drugoverdose/opioids/heroin.html>

Notes and References

1. Bachs, L. Hoiseth G., Skurtveit S., Morland J., "Heroin-using drivers: importance of morphine and morphine-6-glucuronide on late clinical impairment," 2006, European Journal of Clinical Pharmacology, 62(11):905-912.
2. Bruin, EA, Gekht, AB, Polunina, AG, Davydov, DM, Gusev, EL, " Neuropsychological deficit in chronic heroin abusers," 2001, [Russian] Zhurnal Nevrologii i Psikiatrii Imeni SS Koraskova, 101(3) 10:9.

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A Message from Dr. William R. Sawyer Chief Toxicologist, TCAS, LLC



"Assessing the direct and indirect impacts of heroin abuse requires close attention to detail. Adhering to generally-accepted, peer-reviewed methods and the results of human studies are the best ways to ensure credible results that will stand up to scientific scrutiny."

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