

IN THE NEBRASKA COURT OF APPEALS

**MEMORANDUM OPINION AND JUDGMENT ON APPEAL  
(Memorandum Web Opinion)**

HAMILTON V. UNITED PARCEL SERV.

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ROBERT HAMILTON, APPELLANT,

v.

UNITED PARCEL SERVICE, INC., ET AL., APPELLEES.

Filed October 24, 2017. No. A-17-102.

Appeal from the Workers' Compensation Court: DANIEL R. FRIDRICH, Judge. Affirmed.

Britany S. Shotkoski and James E. Harris, of Harris & Associates, P.C., L.L.O., for appellant.

Charles L. Kuper, of Larson, Kuper, Wenninghoff & Carney, P.C., L.L.O., for appellees.

MOORE, Chief Judge, and BISHOP and ARTERBURN, Judges.

BISHOP, Judge.

INTRODUCTION

Robert Hamilton (Hamilton) filed an action in the Nebraska Workers' Compensation Court claiming his dementia was due to repeated exposure to carbon monoxide while working as a spotter truckdriver for United Parcel Service, Inc. (UPS). Hamilton appeals from the compensation court's order dismissing his petition with prejudice. We affirm.

BACKGROUND

Hamilton began working for UPS in 2003. In his later years there, he primarily worked as a "feeder driver," where he moved trailers around the UPS facility yard to help the company sort its cargo using trucks referred to as "spotters." On October 16, 2012, Hamilton went to the emergency room complaining of a headache, sore throat, and generally not feeling well. He informed hospital staff he drove a tractor truck for UPS and had been operating it with the window

shut. He went to work feeling fine but over the course of his shift, he began to have a feeling in his throat along with an occipital headache. He reported he was concerned he had been exposed to carbon monoxide, and he “only [got those] symptoms when he [was] in those tractors.” Blood tests revealed a carboxyhemoglobin level of 2.9 percent, which was “quite low but present,” and within the normal range of 0.0-5.0 percent. The emergency room physician’s notes stated Hamilton’s carboxyhemoglobin level was likely the source of his symptoms, (especially with his history of working in a truck) but there was “no significant evidence of serious injury related to her [sic] carboxyhemoglobin.”

Hamilton was told to follow up with his family doctor, Dr. Cheryl Madson, one week after his emergency room visit, but he did not do so until nearly two months later. In December 2012, Hamilton told Dr. Madson he felt like he had been exposed to carbon monoxide the day prior because “he smelled some funny fumes from the truck and got a headache[.]” Dr. Madson’s medical record for the December examination states, “It is certainly possible that exposure to carbon monoxide was causing his symptoms . . . . Unfortunately, carbon monoxide is odorless and tasteless. Exhaust fumes do contain carbon monoxide, but the smell is not necessarily an indication that he’s been exposed to carbon monoxide. He can be exposed without any smell at all.” She also noted his headache could be related to his high blood pressure.

Hamilton’s last day of employment was May 31, 2013. He filed his petition with the compensation court on September 29, 2014, and trial took place on November 16, 2016.

Hamilton testified briefly at trial and by deposition, but was unable to communicate coherently for most of his testimony. The compensation court found there was “no dispute that [Hamilton] is suffering from some sort of dementia,” and as a result, the court “could not readily rely on his testimony.”

Hamilton’s son, Brian Hamilton (Brian), also testified at trial and via deposition. Brian (with his wife and son) decided to move back in with his father in May 2014 because his father needed “day-to-day help with things.” In 2009, Brian had noticed “quirks that popped up” and his father needed “help with things that a 50-year-old man shouldn’t need help with,” such as “constant reminders,” or “financial stuff.” However, his father was still working fulltime and getting himself to work. Brian said his father’s condition deteriorated in the years following 2009, and the “biggest example” he could think of occurred in 2014 when his father no longer knew how to roof a house, something he had taught Brian how to do in the past.

Brian was asked about his father’s welding work, which Hamilton did on his own time outside his work for UPS. Brian acknowledged his father welded car frames through a company, Hamilton Race Cars, and made parts for Presto X. Brian described the protective gear his father would wear when welding, such as a welding hood and mask worn underneath the helmet, along with leather gloves and a “ventilation part” that “looks like a dryer vent hose that’s hooked to a small fan that draws some of the gases away from you.”

In his deposition testimony, Brian also discussed his father’s prior reports of being able to smell exhaust coming through the floor of the spotters at UPS, and how Hamilton was discouraged when UPS mechanics could not find anything wrong with the trucks. Brian recalled Hamilton complained multiple times to him (on unspecified dates) that he felt sick and had headaches and nausea, which Hamilton believed was the result of driving the UPS trucks and being exposed to their exhaust; however, Hamilton never mentioned carbon monoxide specifically. Brian testified

his father retired in May 2013 because everything was confusing to him and he did not feel he could do his job any longer. At the time Brian became aware there was a problem with his father, he had no indication it was caused by carbon monoxide. It was not until 2014 when Brian went with his father and aunt to a doctor's visit at Creighton that his father's problems and carbon monoxide "had been put together."

Lea Ann Van Horn (Hamilton's sister) also testified via deposition. She discussed Hamilton's mental decline, including examples of his inability to manage his finances correctly and changes in his ability to communicate. Van Horn also specifically testified she did not have any knowledge regarding whether or not Hamilton had any exposure to carbon monoxide.

Hamilton's friend and UPS co-worker, Roger Abbott, testified via deposition. He noticed Hamilton was having problems and making mistakes on the job beginning in either 2011 or 2012, and this continued to get worse over time. Abbott stated that during the entire time Hamilton was employed by UPS, he would have been driving one of the older spotters available based on his lack of seniority. He recalled the last three digits of the identification number of the spotter truck Hamilton regularly drove were 389. Abbott drove that truck a few times and stated the steering was bad and it had a horrible smell. He suspected the smell was either from hydraulic fluid or a transmission leak because the spotter was in the shop all the time, but he also believed the smell could possibly have been exhaust fumes.

Abbott also recalled different spotter trucks he thought had problems with leakage of exhaust fumes. In one example, he claimed exhaust was coming off the elbow on the stack and "leaking big time and coming right back up to the cab." He also knew of another feeder driver who complained of exposure to exhaust fumes as well.

Peter Leiss, an automotive engineer, examined the spotters at the UPS location where Hamilton had been employed. He provided a report identifying two possible ways operating the spotters in question could have led to exposure to exhaust fumes. The first is the failure to regenerate the diesel particulate filter when necessary, which would cause the filter to become clogged and create back pressure in the exhaust system, leading to leaks of carbon monoxide into the cab of the truck. The second is the location of the exhaust stack close to the right window and rear door. This location would allow exhaust to enter the cabin when the door opens and become trapped when the door closes. It would also be able to leak into the cab through other smaller openings and become trapped. Leiss noted all 6 spotters in use during Hamilton's employment had exhaust system repair work done multiple times, including a repair to a truck the day after Hamilton's trip to the emergency room. His report concluded "within the bounds of reasonable engineering probability . . . it is [his] professional opinion . . . [t]he spotter trucks at the UPS location [where] Hamilton was employed had maintenance issues that most likely resulted in Hamilton's [carbon monoxide] exposure."

Dr. Sunil Bansal, an occupational medicine expert retained by Hamilton, opined in a report dated October 21, 2015, that "the cumulative exposure to carbon monoxide at UPS was the most likely cause of his documented carbon monoxide poisoning," and "he developed permanent neurological sequelae from his exposure." However, Dr. Bansal retracted his opinion in a report dated April 12, 2016, after being provided with the emergency room records from October 16, 2012, showing Hamilton's carboxyhemoglobin level at 2.9 percent. Dr. Bansal stated he could no

longer opine “to a degree of medical certainty that the carbon monoxide exposure at UPS was a contributory factor to [Hamilton’s] cognitive dysfunction.” He further stated,

My prior opinion was based on an understood level of carbon monoxide poisoning based on the assessment of medical provider records. However, with the recognition of the specific level of carboxyhemoglobin being in the normal range pre-oxygen supplementation, I can no longer opine this relationship to a degree of medical certainty. This is not to say a relationship may or may not exist, rather simply based on my training, experience, and review of medical literature, the relationship of a normal carboxyhemoglobin level and a subsequent history of progressive cognitive dysfunction cannot be addressed by myself to a degree of medical certainty.

Hamilton offered expert medical opinions from Dr. Bianca Marky and Dr. James Madison to support his position that his dementia is causally related to carbon monoxide exposure.

Dr. Marky examined Hamilton for memory loss, depression, and anxiety several times in 2014, and then prepared a report in June 2015. She indicated that Hamilton reported “the cabin of the truck was always full of carbon monoxide coming from the motor” when he used to work at UPS. Dr. Marky eventually referred Hamilton to Dr. Madison for neuropsychological testing and noted “we agreed in the possible diagnosis of dementia due to chronic monoxide intoxication, and this was supported because of the fact that [Hamilton] had pulmonary problems and he never smoked and was exposed to the same carbon monoxide.” She also noted, “I had the suspicion of carbon monoxide intoxication as this was the only chronic problem [Hamilton] had.”

Dr. Madison, a clinical psychologist, initially evaluated Hamilton in March 2014 at Dr. Marky’s request. Dr. Madison administered neuropsychological tests in May 2014, which showed Hamilton had several deficits. Based on the results of those tests, he opined to a reasonable degree of medical certainty that:

Chronic hypoxia related to carbon monoxide poisoning is the most probable explanation for the deficits found on testing. With regard to determining work-related exposure, I saw [Hamilton] in the context of a clinical examination, not a forensic examination, to evaluate his cognitive functioning and to determine among several hypotheses the most likely explanation for deficits found. As such, reports presented to me that he had experienced chronic exposure to carbon monoxide and that at least one test had confirmed the presence of carbon monoxide in his blood were taken at face value.

Dr. Madison further opined, “To the extent [Hamilton] was either genetically pre-disposed or developed Alzheimer’s type dementia, those work place exposures likely combined with, aggravated or exacerbated that condition.” Dr. Madison stated he did not know how often Hamilton was exposed to carbon monoxide, nor had he seen the carboxyhemoglobin level report from Hamilton’s emergency room visit.

UPS also offered evidence from various witnesses regarding carbon monoxide exposure. Robert Arias Ph.D., a neuropsychologist, conducted a neuropsychological evaluation of Hamilton, and concluded his impairments were “consistent with Alzheimer’s Disease.” He opined that Hamilton’s continued decline even after he stopped working at UPS and the purported source of carbon monoxide exposure were inconsistent with injuries resulting from carbon monoxide

exposure. Arias also reviewed Hamilton's medical records, and specifically disagreed with the opinions of Dr. Marky and Dr. Madison because "there is insufficient evidence to support that [Hamilton] suffered an injury from any carbon monoxide exposure that may have been present."

Douglas Fletcher, president of Fletcher Safety Consulting Inc., conducted an evaluation of Hamilton's "personal workshop area(s) and related equipment, including welding apparatus." Hamilton's "shop" was described as a detached double-wide garage structure which included a number of metalworking equipment, automobiles "under construction/repair," and at least two welding machines. Fletcher's report, dated October 2, 2015, indicates "three (3) surface wipe samples" were taken to assess the presence of welding fume contamination in Hamilton's shop. The laboratory analysis of the three samples "indicated the presence of lead, manganese, and zinc as well as other welding fume constituents, on all three surfaces." Fletcher pointed out, "This is significant because, as you know, both lead and manganese are known neurological toxins." The origin of the toxic metal contamination was "most likely the welding activities conducted in this shop." Further, "the presence of this contamination also demonstrates that the air filtration device was not capable of capturing all welding fume generated in the shop." Finally, Fletcher notes, "the presence of surface contamination creates a secondary means of exposure," through skin contact or the inhalation of welding fume particles reintroduced into the air. Fletcher acknowledges there is no means of recreating Hamilton's actual exposure to airborne welding constituents, but that the potential for inhalation of lead, manganese, and other welding metals on shop surfaces did exist.

Corri Synak, a Certified Industrial Hygienist, explained that industrial hygiene is a "discipline [] practiced in occupational settings with the intent of ensuring employee health and safety." Synak's October 26, 2016, report observed that all the materials provided "rely on the assumption that [Hamilton] was routinely exposed to carbon monoxide," but there was "no quantifiable data to support a routine exposure of carbon monoxide in any concentration, nor a concentration capable of resulting in a negative health outcome." Synak noted that real time monitors with electrochemical sensors are most often used to measure carbon monoxide levels in the air, but in this case, no sampling data was provided. Therefore, "it is not possible to quantify any level of exposure, or confirm a detectable concentration of carbon monoxide is present." Further, "[a]ny assumed exposure, should be assumed to be highly variable in such a dynamic occupational setting." Synak stated it was not uncommon for non-smokers to have a baseline carboxyhemoglobin level of 3 percent, and that smokers might have a baseline as high as 15 percent. Synak noted there was only a single data point of carbon monoxide in Hamilton's case (which Synak concluded was in the normal range) and that "it is not possible to determine [Hamilton] was routinely exposed to carbon monoxide at a concentration capable of impacting his health." Synak also discussed the studies referenced by Dr. Madison, and concluded "[t]he current body of scientific research does not support a causal link between [carbon monoxide] exposures and neurological disease."

Terry Stentz is a Board Certified Professional Ergonomist, Board Certified Professional Constructor, industrial engineer, and occupational health scientist, with 25 years of experience in occupational safety and health. Stentz reviewed depositions, correspondence, Leiss' report, Fletcher's Report, and various medical records and reports supplied to him by counsel for UPS. Stentz' October 25, 2016, report explains that a carboxyhemoglobin level of 0.4 to 0.7 percent is normally present in the blood for adults. He states the Occupational Health and Safety

Administration (OSHA) permits an exposure limit for carbon monoxide in the workplace of 50 parts per million (ppm) of air as an 8-hour time-weighted average concentration. While OSHA does not have a recommended method for “full-shift sampling of employee exposure to carbon monoxide in the workplace,” Stentz notes that analytical methods are available. “Determination of a worker’s exposure to airborne carbon monoxide can be made using an Ecolyzer direct reading field instrument that is capable of detecting carbon monoxide between 0 and 600 ppm. Stentz pointed out that Leiss’ report did not provide spotter truck exhaust carbon monoxide measurements inside or outside the truck cab. Stentz concluded “that there is insufficient objective and convergent evidence . . . to conclude that [Hamilton’s] medical and neuropsychological condition is a causal or associative result of workplace carbon monoxide poisoning.”

After reviewing the evidence, the compensation court entered an order on December 30, 2016, dismissing Hamilton’s petition with prejudice. The court concluded, “After reviewing the totality of the evidence, the Court finds [Hamilton] failed to prove he was chronically exposed to carbon monoxide so as to cause his dementia.” Hamilton timely appealed.

#### ASSIGNMENTS OF ERROR

Hamilton assigns six errors to the compensation court, which we consolidate and restate as follows: the court erred by (1) concluding Hamilton did not suffer a workplace injury because he failed to prove exposure to carbon monoxide caused or aggravated his dementia, and (2) rejecting Dr. Madison’s expert testimony regarding causation.

#### STANDARD OF REVIEW

A judgment, order, or award of the compensation court may be modified, reversed, or set aside only upon the grounds that (1) the compensation court acted without or in excess of its powers, (2) the judgment, order, or award was procured by fraud, (3) there is not sufficient competent evidence in the record to warrant the making of the order, judgment, or award, or (4) the findings of fact by the compensation court do not support the order or award. Neb. Rev. Stat. § 48-185 (Cum. Supp. 2016).

Findings of fact made by the Workers’ Compensation Court have the same force and effect as a jury verdict and will not be set aside unless clearly erroneous. *Hintz v. Farmers Co-op Assn.*, 297 Neb. 903, \_\_\_ N.W.2d \_\_\_ (2017).

#### ANALYSIS

Hamilton claims his case was “premised upon repetitive, chronic exposure to low levels of carbon monoxide over an extended period of time.” Brief for appellant at 21. The compensation court concluded there was no dispute Hamilton was suffering from “some sort of dementia.” And while the court acknowledged “[t]here may have been carbon monoxide exposure encountered by [Hamilton] at UPS that led to his cognitive difficulties,” there was “simply not enough evidence to prove it.” The court concluded there was no persuasive evidence that Hamilton was chronically exposed to carbon monoxide over an extended period of time. The court found Leiss’ report to be “conclusory and not based on any solid, hard data.” Further, with regard to Dr. Madison’s opinion, with which Dr. Marky agreed, the court observed Dr. Madison’s opinion was premised on Hamilton being chronically exposed to carbon monoxide, but Dr. Madison admitted he was

unaware of the levels of carbon monoxide or frequency to which Hamilton was exposed. Dr. Madison also did not know whether Hamilton's carboxyhemoglobin level of 2.9 percent during his emergency room visit in October 2012 was within a normal or safe range. "Without knowing these key facts," the court found Dr. Madison's opinions regarding causation to be lacking in foundation and therefore unpersuasive.

The compensation court pointed out that Hamilton saw Dr. Cheryl Madson on the day of his emergency room visit in October 2012. Dr. Madson told Hamilton to follow up with her one week after the hospital visit but he did not do so until nearly two months later. Dr. Madson noted that Hamilton claimed to have "smelled funny fumes" from the truck and got a headache, and that the truck was being looked at by management. Dr. Madson indicated Hamilton's headache could be related to his high blood pressure, and with regard to carbon monoxide exposure, she stated, "It is certainly possible that exposure to carbon monoxide was causing his symptoms. . . . Unfortunately, carbon monoxide is odorless and taste less [sic]. Exhaust fumes do contain carbon monoxide, but the smell is not necessarily an indication that he's been exposed to carbon monoxide. He can be exposed without any smell at all." The court observed that Dr. Madson's report "addressed the main weakness in [Hamilton's] case. There is little persuasive evidence that [Hamilton] was exposed to carbon monoxide." The court stated Dr. Bansal "succinctly summarizes the Court's view on this case. There may have been carbon monoxide exposure encountered by [Hamilton] at UPS that led to his cognitive difficulties but there is simply not enough evidence to prove it." The court found there was "simply no persuasive evidence" that Hamilton was chronically exposed to carbon monoxide over an extended period of time.

To recover under the Nebraska Workers' Compensation Act, a claimant must prove by a preponderance of the evidence that an accident or occupational disease arising out of and occurring in the course of employment caused an injury which resulted in disability compensable under the act. *Potter v. McCulla*, 288 Neb. 741, 851 N.W.2d 94 (2014). Unless its nature and effect are plainly apparent, an injury is a subjective condition requiring an expert opinion to establish the causal relationship between the employment and the injury or disability. *Id.*

The determination of causation is, ordinarily, a matter for the trier of fact, whose factual findings will not be set aside unless clearly wrong. *Kerkman v. Weidner Williams Roofing Co.*, 250 Neb. 70, 547 N.W.2d 152 (1996). We cannot say the court was clearly wrong in concluding the evidence failed to establish causation between any carbon monoxide exposure Hamilton may have had while employed with UPS and his onset of dementia, as we discuss next.

#### *Exposure to Carbon Monoxide.*

Hamilton argues the compensation court misunderstood the evidence by focusing too narrowly on his carboxyhemoglobin level report from his 2012 emergency room trip. Hamilton "readily concedes that a single low-level exposure would be unlikely to produce the symptoms [Hamilton was] experiencing." Brief for appellant at 24. Instead, Hamilton asserts his "theory of the case is premised upon repetitive, chronic exposure to low levels of carbon monoxide over an extended period of time." *Id.* He points to the testimony of Leiss and Dr. Madison to assert "the overwhelming evidence contained in the record[] supports a finding that [Hamilton's] work place exposure to carbon monoxide contained in exhaust fumes caused or substantially contributed to his severe disabling dementia." *Id.* at 25.

However, the compensation court analyzed and then rejected this exact evidence, stating: [Hamilton] thought he was being exposed to carbon monoxide, but he doesn't know what gases he was smelling, nor could he testify how much he was exposed to nor how often. In fact, the one time he went to the hospital after he thought he was exposed to carbon monoxide at work, the testing showed his carbon monoxide level was still within the normal range. [Hamilton's] carboxyhemoglobin level on October 16, 2012[,] was 2.9 [percent]. That result is still within the normal range. It is not uncommon for non-smokers to have a baseline carboxyhemoglobin of 3 [percent] and smokers to have baseline levels as high as 15 [percent]. (Citations to record omitted.)

The compensation court found Leiss' report and opinion "conclusory" and "simply not persuasive," and Dr. Madison's opinion "lacking in foundation and unpersuasive." Leiss opined there were two possible ways Hamilton was exposed to carbon monoxide while driving the spotter trucks, but the court stated:

After reviewing his report, however, the Court found his conclusions were merely just speculation. Sure, it is possible that [Hamilton] could have been exposed to carbon monoxide in the two ways Leiss opined, but there really is scant proof that he was. There is no evidence that [Hamilton's] truck had exhaust problems that led to carbon monoxide exposure. The Court does not even know which truck [Hamilton] was driving on the day he went to the emergency room. The Court knows he wasn't driving the 'worst truck' in the fleet as described by Abbott, because that truck was destroyed six months before his emergency room visit. Again, the only test of [Hamilton's] blood for carbon monoxide levels was normal. Leiss' report provides no 'work environment carbon monoxide levels inside or outside truck cabs over a time weighted average period.' His report was simply conclusory and not based on any solid, hard data. His report and opinions were simply not persuasive to this Court.

As for Dr. Madison's opinion, the court pointed out that his opinion "was premised upon [Hamilton] being chronically exposed to carbon monoxide." However, Dr. Madison "admitted he was unaware of the levels of carbon monoxide to which [Hamilton] was exposed," nor did he know how often Hamilton was exposed to carbon monoxide fumes.

Hamilton contends the compensation court's finding that he was exposed to carbon monoxide during his employment at UPS "is inconsistent with it's [sic] ultimate conclusion that [Hamilton] failed to prove that he suffered an accident arising out of and in the course of his employment at UPS." Brief for appellant at 26. We see no inconsistency in the compensation court's findings. Even assuming Hamilton may have been exposed to carbon monoxide, without knowing the levels of exposure or the frequency, the court simply was not persuaded that Hamilton's dementia was caused by his exposure to carbon monoxide.

Finally, Hamilton also suggests the court erred by failing "to provide a reasoned decision as to whether Hamilton's work place exposure to carbon monoxide combined with a pre-existing condition to produce his disabling dementia." Brief for appellant at 23. However, given the compensation court's conclusion regarding the lack of evidence to support the levels of carbon monoxide or the frequency to which Hamilton may have been exposed, its decision is clear that a

causal connection was not established under any theory proposed by Hamilton, whether as the cause of his dementia or as an aggravation or acceleration to any pre-existing dementia.

Based on our review of the record and the compensation court's detailed analysis in its order, we cannot say the court was clearly wrong in finding Hamilton failed to prove the causal link between his employment and his dementia.

*Expert Testimony.*

Hamilton also argues the compensation court erred by concluding Madison's testimony was unpersuasive. Hamilton claims the compensation court rejected Dr. Madison's testimony based upon his inability to quantify Hamilton's exact exposure to levels of carbon monoxide and exhaust. He contends, "This stringent level of proof is simply not required under Nebraska law," and "[i]t is impossible to establish the levels of [carbon monoxide] to which Hamilton was exposed on a daily basis." Brief for appellant at 29. Hamilton's challenge appears to be based on the compensation court's finding that Dr. Madison was "unaware of the levels of carbon monoxide to which [Hamilton] was exposed" and "did not know how often [Hamilton] was exposed to carbon monoxide fumes."

Hamilton points to *Sheridan v. Catering Mgmt., Inc.*, 252 Neb. 825, 566 N.W.2d 110 (1997), and *Riggs v. Gooch Milling and Elevator Co.*, 173 Neb. 70, 112 N.W.2d 531 (1961), for support on this issue. He contends these cases show that data demonstrating the level and frequency of exposure to toxic substances is not required to establish a work place injury was caused by such substances. Hamilton says exact data is impossible to establish because there is no way to retroactively quantify his exposure to carbon monoxide. Citing to *Osteen v. A. C. & S., Inc.*, 209 Neb. 282, 307 N.W.2d 514 (1981), Hamilton argues such a standard is therefore proscribed under Nebraska law because it requires "'proof of the unprovable and litigation of the unlitigable.'" Reply brief for appellant at 6.

However, contrary to Hamilton's assertion, the compensation court did not require Hamilton to prove his exact level and frequency of exposure. Rather, the court merely pointed out the lack of any evidence demonstrating Hamilton was repeatedly exposed to carbon monoxide while at work, and that Hamilton's experts relied upon assumptions of such exposure. As noted by Synak, there was no "quantifiable data to support a routine exposure of carbon monoxide in any concentration." Synak explained that real time monitors with electrochemical sensors are available to measure carbon monoxide levels in the air, but in this case, no sampling data was collected at all. The court found Dr. Madison's and Leiss' opinions unpersuasive because neither opinion was based on any evidence of exposure beyond Hamilton's conjecture that he had been exposed and one carboxyhemoglobin measurement from his October 16, 2012, emergency room examination, which was in the normal range.

Further, we do not find *Sheridan, supra*, and *Riggs, supra*, to compel a different outcome here. In *Sheridan*, between 1:30 a.m. and 4:30 a.m., an exterminator treated a bar for cockroaches by spraying, dusting, and power-fogging with substances containing a number of chemicals, including esfenvalerate, which enters the insect through its skin. When an employee arrived at noon that day, she cleaned for 2-1/2 hours to remove residue from the fogging. She did not use protective gloves while dipping towels into a water bucket, wiping surfaces, and then re-soaking the cloth in the bucket. By midnight, she began experiencing a burning sensation in her eyes and

throat, had body aches, ringing in her ears, and nausea. By the next day, she experienced soreness, paralysis, blurred vision, seizures, and could barely talk. The compensation court found the employee permanently and totally disabled, and the Nebraska Supreme Court noted that although there was a conflict in the evidence as to the nature and extent of the employee's disability and its cause, "there is evidence which, if admissible and believed by the trier of fact, supports a finding that [the employee] is permanently and totally disabled as the result of brain damage caused by" her exposure to esfenvalerate. *Sheridan*, 252 Neb. at 828, 566 N.W.2d at 112.

Hamilton argues that in *Sheridan*, *supra*, the expert's testimony was deemed reliable even though there was sparse medical data to support it; specifically, there were no clinical reports involving the effects of human exposure to esfenvalerate at that time. However, the expert in that case concluded the employee's symptoms were consistent with "moderate acute poisoning," and after performing a gross neurologic examination and ordering laboratory studies, the expert opined the employee suffered organic brain damage due to toxic encephalopathy resulting from exposure to esfenvalerate and other chemicals. *Sheridan*, 252 Neb. at 829, 566 N.W.2d at 113. In *Sheridan*, there was no dispute the esfenvalerate had been used in the bar and the employee had direct contact with the chemical when she cleaned the residue without any protection. Her reaction to the exposure was fairly immediate and significant, and based on the evidence presented, the compensation court concluded causation was sufficiently established. And, as previously stated, the determination of causation is, ordinarily, a matter for the trier of fact, whose factual findings will not be set aside unless clearly wrong. *Kerkman v. Weidner Williams Roofing Co.*, 250 Neb. 70, 547 N.W.2d 152 (1996). Therefore, in the present matter, we can only set aside the compensation court's factual findings as to causation if they are clearly wrong, which we have already concluded, they were not.

As for Hamilton's reliance on *Riggs*, *supra*, we first note the standard of review at the time was de novo on the record, which is not the same as the clear error standard of review applicable to a compensation court's factual findings today. Further, *Riggs* involved the employee's exposure to wheat dust in unusual amounts throughout his employment, which the Nebraska Supreme Court noted was clear from the record. *Riggs* did not involve a question of whether or not there was exposure to wheat dust; rather, the employer argued the employee's disability resulted from his own susceptibility and sensitivity to wheat dust and was therefore not compensable. Our Supreme Court concluded resolution was controlled by the evidence from medical experts, and it concluded in its de novo review that the medical evidence supported awarding benefits to the employee.

Neither case compels this court to conclude the compensation court's factual findings in the present matter must be clearly wrong simply because it found the expert testimony unpersuasive due to a lack of sufficient underlying information. Notably, *Sheridan*, *supra*, reminds us that an expert "may not testify without adequate basis for his or her opinions concerning the facts of the case on which the expert is testifying." *Id.* at 832, 566 N.W.2d at 114. In this case, Dr. Madison assumed Hamilton had been repeatedly exposed to carbon monoxide when rendering his causation opinion. Assumptions amount to conjecture, and an expert's opinion must have a sufficient factual basis so that the opinion is not mere conjecture or guess. See *id.*

As noted by UPS, Hamilton's "assumption of chronic exposure to carbon monoxide at work was not supported by the facts submitted at trial and the opinions relying on the assumptions were highly speculative." Brief for appellee at 15-16. As explained by Synak, there was "no

quantifiable data to support a routine exposure of carbon monoxide in any concentration, nor a concentration capable of resulting in a negative health outcome.” Leiss’ report concluded the UPS spotter trucks had maintenance issues that “most likely resulted in Hamilton’s [carbon monoxide] exposure.” However, Leiss failed to conduct any testing to measure carbon monoxide levels in the air, inside or outside the trucks. According to Stentz, “Determination of a worker’s exposure to airborne carbon monoxide can be made using an Ecolyzer direct reading field instrument that is capable of detecting carbon monoxide between 0 and 600 ppm.” There was no evidence of any such testing in this case.

Even Dr. Madison could not testify as to what levels of carbon monoxide Hamilton was exposed to while working at UPS, as confirmed by his answers to questions in the following colloquy:

[Counsel for UPS]: What is - what is an elevated level of carbon monoxide?

[Dr. Madison]: A level sufficient to replace some of the oxygen that - that the brain needs to survive and metabolize.

[Counsel for UPS]: Is there a specific level that would constitute elevated carbon monoxide?

[Dr. Madison]: Not for that no.

[Counsel for UPS]: And do you know what level is considered elevated?

[Dr. Madison]: I don’t know that there are good standards for that. Some of the research in this area is relatively recent.

[Counsel for UPS]: And do you know what levels of carbon monoxide Mr. Hamilton was exposed to?

[Dr. Madison]: I do not.

The value of an opinion of an expert is no stronger than the facts upon which it is based. *Liberty v. Colonial Acres Nursing Home*, 240 Neb. 189, 481 N.W.2d 189 (1992). The Workers’ Compensation Court, as the trier of fact, is the sole judge of the credibility of witnesses and weight to be given testimony. *Id.* Triers of fact are not required to take an expert’s opinion as binding upon them. *Id.* We cannot say the compensation court was clearly wrong in rejecting the opinions of Leiss and Dr. Madison, and in concluding Hamilton failed to prove a causal connection between workplace exposure to carbon monoxide and his dementia.

#### CONCLUSION

For the reasons set forth above, we affirm the compensation court’s order.

AFFIRMED.