THIS CASE IS NOT A FINAL ORDER OF THE REVIEW COMMISSION AS IT IS PENDING COMMISSION REVIEW

United States of America
OCCUPATIONAL SAFETY AND HEALTH REVIEW COMMISSION
1924 Building - Room 2R90, 100 Alabama Street, SW
Atlanta, Georgia 30303-3104

Secretary of Labor, Complainant, v. Elliot Construction Corp., Respondent.	OSHRC Docket No. **07-1578**

Appearances:

Kevin Koplin, Esq., U. S. Department of Labor, Office of the Solicitor, Chicago, Illinois
For Complainant

Robert H. Brown, Esq., Laner Muchin, Chicago, Illinois
For Respondent

Before: Administrative Law Judge Nancy J. Spies

DECISION AND ORDER

Elliot Construction Corporation is a concrete construction contractor. On March 21, 2007, one of Elliot's finisher crews was installing a floor in a building at 1801 S. Canal Street in Chicago, Illinois, under the supervision of finisher foreman Michael Dynowski. By 11:00 a. m., four of Elliot's twelve crew members had reported feeling ill to Dynowski. A safety consultant for Elliot called the Chicago Fire Department and paramedics. The paramedics took the four ill employees by ambulance to local hospitals, where medical personnel drew blood samples. The blood samples tested positive for carbon monoxide exposure or poisoning.

On March 22, 2007, Occupational Safety and Health Administration (OSHA) compliance officer Brad Becker began an inspection of the Canal Street site. As a result of Becker's inspection, the Secretary issued a citation to Elliot on September 20, 2007, alleging willful violations of three subsections of the construction standards.

Item 1 alleges a willful violation of § 1926.20(b)(2), for failing to have a competent person make frequent and regular inspections of the jobsite, materials, and equipment. The Secretary proposed a penalty of $56,000.00 for item 1. Item 2a alleges a willful violation of § 1926.55(a), for exposing employees to carbon monoxide at concentrations above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the America Conference of Governmental Industrial Hygienists. Item 2b alleges a willful violation of § 1926.55(b) for failing to implement feasible administrative or engineering controls to reduce employer exposure to carbon monoxide. The Secretary proposed a total penalty of $56,000.00 for items 2a and 2b.

Elliot timely contested the citation. The undersigned held a hearing in this matter on October 28 and 29, 2008, in Chicago, Illinois. Elliot concedes jurisdiction and coverage (Tr. 249). Elliot argues the Secretary failed to prove Elliot violated the cited standards. Elliot also argues that, if violations are found, the Secretary failed to prove the violations were willful.

For the reasons discussed below, the undersigned vacates item 1 and affirms items 2a and 2b, reclassifying the violations as serious. A total penalty of $14,000.00 is assessed for items 2a and 2b.

Facts

Elliot performs concrete construction for general contractors engaged primarily in commercial and public development, including office and retail buildings, as well as churches and schools (Tr. 380). Two superintendents work for Elliot, one for "flat" work and one for walls. In flat work, the crew pours concrete to construct "anything other than foundation walls" (Tr. 258): floors, sidewalks, patios, curbs, and gutters. John Cotte is Elliot's flat work superintendent. He oversees seven flat work crews (Tr. 356-357).

In March 2007, Elliot was under contract to American Igloo Corporation for a project located at 1801 S. Canal Street in Chicago, Illinois. By that time, Elliot had completed approximately 20 jobs for American Igloo, a company specializing in developing cooling and freezer spaces for the food industry. At the Canal Street site, Elliot was constructing a concrete floor inside an addition to an existing dry storage facility (Tr. 372-374).

The steel-frame building was connected to an existing structure by an overhead door leading to a vestibule area. There were two openings to the vestibule: the overhead door towards the end of the vestibule, facing west onto a parking lot, and a man door near the newly constructed addition.

A man door at the southwest side of the building opened onto a parking lot on the adjoining street. The building is 90 feet long, 75 feet wide, and 30 feet high (Exh. R-9; Tr. 103-106).

Finisher foreman Michael Dynowski arrived at the site with a crew on March 20, 2007. That day, the crew performed a "grade and prep," leveling the gravel and preparing for the concrete pour the next day (Tr. 267). Elliot used a gas-powered Bobcat to place the gravel. No one complained of feeling ill that day (Tr. 268).

The next day, March 21, Elliot's crew began pouring the floor at approximately 8:00 a. m. Elliot was operating three types of gas-powered equipment inside the building that day: a laser screed (also referred to as a Copperhead and a vibra-strike), a power rake, and two power trowels (Tr. 114). At approximately 10:15 a.m., laborer {Redacted} reported to Dynowski that he felt ill. Dynowski told him to take a break outside the building. {Redacted} went outside for about 15 to 20 minutes, then returned to work. Shortly after {Redacted} went out, laborer {Redacted} told Dynowski he felt ill. {Redacted} took a break outside, then returned to work. Feeling ill again,{Redacted} exited the building and vomited. In short order, laborers {Redacted} and {Redacted} also informed Dynowski they felt ill, and they were sent outside (Tr. 25, 40, 52-53, 68-69, 82-83). The entire crew exited the building some time between 11:00 a.m. and 11:30 a.m., to wait on the "balance," the last of the concrete to be pumped (Tr. 83-292).

As the crew waited outside, Jeff Luif, a field safety consultant for Safety Check, arrived at approximately 11:30 a.m. for his monthly inspection (Tr. 319-320, 332). Luif entered the building to look for Dynowski. Noticing the "excessive fumes," Luif spoke with Dynowski and learned that employees had complained of feeling ill that morning (Tr. 334). Luif discussed the situation with Dynowski and spoke with the four ill employees. Luit did not have a carbon monoxide (CO) monitor with him at that time. Luif called his boss at Safety Check, Frank Marino, and called Elliot's main office. At approximately 12:20 p.m., Luif called 911 and reported the incident (Tr. 335, 345). Within 5 minutes, the Chicago Fire Department (CFD) and paramedics arrived (Tr. 335).

The paramedics administered oxygen to {Redacted},{Redacted}, {Redacted}, and {Redacted} at the site, and then continued to administer oxygen to them in the ambulances. The paramedics transported {Redacted} and{Redacted} to one hospital. They transported {Redacted} and {Redacted} to Rush University Medical Center (RUMC) (Tr. 26, 43, 55, 71). At RUMC,

medical technicians drew blood samples from {Redacted} and {Redacted}. {Redacted} sample resulted in a carboxyhemoglobin reading of 13.5 % (Exh. C-18). {Redacted} sample resulted in a carboxyhemoglobin reading of 16.5 % (Exh. C-19).

Hemoglobin carries oxygen throughout the body. CO has a higher affinity for hemoglobin than does oxygen. When a person is exposed to a high concentration of CO, the CO bonds preferentially with the hemoglobin and displaces oxygen from the blood. This results in oxygen deprivation. Symptoms of oxygen deprivation include headache , tightness in the forehead or chest, dizziness, nausea, and impaired judgment. The exposed person may pass out. Death or permanent damage can result if the overexposure lasts long enough. The normal range for a person's carboxyhemoglobin level is 0 to 5% (Tr. 206-207).

Firemen from the CFD entered the Canal Street building and used a CO monitor to measure the amount of CO in the workspace. The reading was 101 parts per million (ppm) (Exh. C-10). When the reading fell to 35 ppm, the CFD left (Tr. 296).

Elliot's office sent a replacement laborer to the site, and an Elliot foreman brought over a CO monitor and an extra fan. Dynowski and his crew finished the floor, operating one of the power trowels. Twice, the CO monitor rose to 35 ppm. When that happened, Dynowski turned off the power trowel and evacuated the building. After 20 to 30 minutes, the monitor's reading fell to a single digit, and the crew resumed work. Elliot completed the floor at approximately 3:30 that afternoon (Tr. 299-300).

OSHA compliance officer Brad Becker arrived at the Canal Street building the next day. Becker met with Cotte and Luif. He took photographs and interviewed employees. On September 20, 2007, the Secretary issued the instant citation.

The Citation

The Secretary has the burden of proving a violation by a preponderance of the evidence.

> In order to establish a violation of an occupational safety or health standard, the Secretary has the burden of proving: (a) the applicability of the cited standard, (b) the employer's noncompliance with the standard's terms, (c) employee access to the violative conditions, and (d) the employer's actual or constructive knowledge of the violation (*i.e.*, the employer either knew or, with the exercise of reasonable diligence could have known, of the violative conditions).

Atlantic Battery Co., 19 BNA OSHC 2131, 2138 (No. 90-1747, 1994).

Item 1: Alleged Willful Violation of § 1926.20(b)(2)

The Secretary alleges Elliot committed a willful violation of § 1926.20(b)(2), which provides:

> Such [safety] programs shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons designated by the employers.

The citation alleges Elliot's competent person on the site, Dynowski, "did not conduct air monitoring to determine employees level of exposure to carbon monoxide." Elliot argues the standard requires no such monitoring.

Section 1926.20(b)(2) applies to Elliot's work at the Canal Street site. As a contractor engaged in concrete construction, Elliot is required to comply with the terms of the standard.

Elliot contends it did comply with the terms of the standard, based on the actions of its designated competent person, Dynowski. Dynowski met with flat work superintendent John Cotte before the job began. Dynowski and Cotte discussed "the fact it was a closed-in building and [they] had access to a man door and also to a corridor that led outside" (Tr. 364). On March 21 (the day of the pour), Dynowski set up three fans. He brought a 36-inch fan owned by Elliot, and used a 48-inch fan owned by American Igloo. He placed one fan at the man door that opened to the outside parking lot and the other at the overhead door inside the building that led to a vestibule (Exhs. C-7, R-1, R-2, R-3; Tr. 287, 306). Dynowski also used a small pedestal fan (Exhs. R-3, R-19; Tr. 273-276). The fan at the man door blew air in from outside. The fan at the overhead door blew air into the adjoining vestibule (Tr. 274-275).

Dynowski tested the fans' capacity to ventilate the space by lighting a cigarette and noting the direction the smoke drifted. Dynowski observed the smoke move towards the exhaust fan (Tr. 280).

The Secretary argues these actions were insufficient to meet the requirements of § 1926.20(b)(2). She argues the presence of CO can only be detected with a monitoring device. Thus, the Secretary contends, an adequate inspection includes CO testing. Elliot disputes this interpretation, contending it cannot be required to monitor for a gas when a standard requires only a general inspection.

The OSHA standards do not define "inspection." Other standards do, however, differentiate between "inspecting" and "monitoring" or "testing." For example, in contrast to § 1926.20(b)(2), § 1915.12(a)(1) provides (emphasis added):

> The employer shall ensure that atmospheric testing is performed in the following sequence: oxygen content, flammability, toxicity.
> (a) Oxygen content.
>
> (1) The employer shall ensure that the following spaces are *visually inspected and tested* by a competent person to determine the atmosphere's oxygen content prior to initial entry into the space by an employee[.]

The Secretary has propagated numerous standards specifically requiring air monitoring or testing for airborne contaminants, including asbestos (§ 1926.1101(f)(2)), arsenic (§§ 1910.1018(e) and 1926.1118), chromium (§§ 1910.1026(b) and 1926.1126(d)(2)), cadmium (§§ 1910.1027(b) and 1926.1127(b)), and benzene (§§ 1910.1028 and 1926.1128). The undersigned has searched for Review Commission decisions requiring CO testing under § 1926.20(b)(2), and has found none. This is not to say that monitoring for specific contaminants is never required under this standard, only that, in the instant case, the Secretary has not shown CO monitoring was initially indicated.

"[W]here a term is carefully employed in one place and excluded in another, it should not be implied where excluded." *Diamond Roofing Co., Inc. v. OSHRC*, 528 F.2d 645, 648 (5th Cir. 1976). The tenets of statutory construction support Elliot's position that "inspection," as used in § 1926.20(b)(2) does not necessarily require monitoring or testing under these facts. The undersigned agrees with Elliot that the Secretary is attempting to import a requirement into § 1926.20(b)(2) that is not found in the plain language of the standard.

Under the specific circumstances of the instant case, the Secretary has not shown monitoring for CO is required by the standard. The Secretary has failed to prove Elliot did not comply with the terms of § 1926.20(b)(2). Item 1 is vacated.

Item 2a: Alleged Willful Violation of § 1926.55(a)

The Secretary alleges Elliot committed a willful violation of § 1926.55(a), which provides:

> Exposure of employees to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists, shall be avoided. See Appendix A of this section.

The citation alleges Elliot exposed employees to airborne concentrations of CO above the threshold limit value of 50 parts per million (ppm) in two instances:[1]

> a. On or about March 21, 2007, at the [Canal Street] jobsite, an employee conducting concrete pouring operations inside an enclosed building was exposed to Carbon Monoxide at a Time-Weighted-Average (TWA) of 104 parts per million (ppm), 2.08 times the OSHA Permissible Exposure Limit (PEL) of 50 ppm.
>
> b. On or about March 21, 2007, at the [Canal Street] jobsite, an employee conducting concrete pouring operations inside an enclosed building was exposed to Carbon Monoxide at a Time-Weighted-Average (TWA) of 80.5 parts per million (ppm), 1.61 times the OSHA Permissible Exposure Limit (PEL) of 50 ppm.

The Secretary revised the CO exposures alleged in instances (a) for {Redacted} and (b) for {Redacted} to 203.2 ppm and 111.1 ppm, respectively (Exhs. C-26, C-36).

Elliot does not dispute the cited standard applies to its worksite, but argues the Secretary failed to establish the employee exposures to CO exceeded the PEL of 50 ppm. Elliot contends the Secretary used an unreliable model for estimating the CO exposure, failed to establish the accuracy of the fire department's monitoring results for CO at the worksite, and received inconsistent results for CO exposure when she recalculated the TWA on the eve of the hearing. The Secretary counters that the carboxyhemoglobin levels found in the blood samples of {Redacted} and {Redacted} are undisputed, and are *prima facie* evidence the employees were exposed to CO above the OSHA's PEL of 50 ppm.

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[1] The Secretary withdrew a third instance (instance (c)) of item 2a (Tr. 7-8).

The Affected Employees

Analysis of this item requires a discussion in greater detail of the experiences of the four stricken employees:

{Redacted}

At the time of the hearing, {Redacted} had worked as a laborer for Elliot for approximately three years, and for a total of twenty-seven years in the construction industry (Tr. 165). {Redacted} had worked on "hundreds" of pours while working with Elliot. Compared with most of the pours {Redacted} had done with Elliot, the pour at Canal Street occurred in a building with fewer openings. The interior of the building was "pretty tight," because it was designed as a cooling or freezer space (Tr. 66). On March 21, {Redacted} began working at approximately 8:00 a. m., grading 6 to 10 feet behind the laser screed. {Redacted} was working to the right of the laser screed. {Redacted} described the work as "exhausting" (Tr. 67).

At approximately 10:00 a.m., {Redacted} began to feel ill. His physical state was, "Weak, like I couldn't do my job anymore. I couldn't motivate. I didn't have any energy" (Tr. 68). {Redacted} typically develops sinus infections two or three times a year and thought this might be a recurrence. He told Dynowski he had a headache possibly resulting from a sinus infection (Tr. 72, 291). Dynowski told {Redacted} to take a break outside, allegedly because the machines in operation created a lot of noise in the building (Tr. 89-90). {Redacted} worked another 15 to 30 minutes, then went outside to take an antibiotic pill and drink some water (Tr. 76). At the time, {Redacted} did not associate his physical condition with the presence of CO. He stated, "I mean, we know there were fumes in there. There had to be. But, we have always coped with it in the past, and I just thought I was weakened from the sinus infection" (Tr. 75).

After spending approximately 15-20 minutes outside, {Redacted} returned to work. He felt better for a little while, then was overcome with fatigue: "I couldn't do anything. I could hardly walk out of there. I was just exhausted totally" (Tr. 69). {Redacted} left the building again and sat outside on the curb.

At approximately 11:30, Jeff Luif from Safety Check arrived. Luif could tell by looking at {Redacted} that he was ill (Tr. 353). By this time, the entire crew was outside. {Redacted} saw laborer {Redacted} exit the building and vomit next to Luif (Tr. 70).

At approximately 12:25 p.m., the CFD and the paramedics arrived. The paramedics administered oxygen to {Redacted} at the site and in the ambulance as they transported him to the hospital. Once at the hospital, {Redacted} continued to receive oxygen for four or five hours (Tr. 70).

{Redacted}

{Redacted} had worked as a laborer for Elliot for eight years at the time of the hearing. On March 21,{Redacted} began his day at approximately 7:00 a.m., setting up the laser screed and power rake in the building. Starting at 8:00, he worked as a flagger, directing the cement trucks as they arrived at Canal Street (Tr. 49-51).

{Redacted} directed ten to twelve cement trucks lined up on Canal Street (Tr. 59). Canal Street is a four-lane street that was being used at the time as an alternate route for a closed street. Traffic was heavy on the morning of the pour. {Redacted} testified staging the cement trucks was fairly routine, except "it was a very tight access area to the building. The building was very close" (Tr. 58). Elliot "only had room to back in just one truck at a time. And the trucks sat very close to the operation we were doing" (Tr. 59). As the trucks sat close to the Canal Street entrance to the building, the motors were running in order to keep the cement turning, contributing to fumes in the outside atmosphere.

When {Redacted} became ill and needed to take a break,{Redacted} replaced him behind the laser screed (Tr. 52).[2] Shortly thereafter,{Redacted} began to feel ill. He informed Dynowski, who sent him outside. {Redacted} returned to work briefly, but felt ill again and exited the building. He vomited outside. {Redacted} saw Luif at this time (Tr. 53, 56, 83). Dynowski stated that when{Redacted} exited the building, he realized CO inside the building was causing the workers to be ill (Tr. 83). Sometime between 11:00 a.m. and 11:30 a.m., everyone left the building. {Redacted} testified, "The fumes were getting too heavy within the building and we knew it" (Tr. 56).

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[2] {Redacted} estimated he relieved {Redacted} between 9:30 a.m. and 10:00 a.m. {Redacted} estimated his first break as being between 10:15 a.m. and 10:30 a.m. Neither Dynowski nor any of the crew members wore a watch due to the messy nature of their work. The workers' estimates of the time of day, as well as elapsed time, were rough, and not entirely consistent with each other. Furthermore, the four stricken workers were in distress and not focused on the time. Nevertheless, the record is generally consistent in establishing the pour began at 8:00 a.m. on March 21, Luif arrived at 11:30 a.m., and the CFD and paramedics arrived at 12:27 p.m. (Tr. 23, 38, 49, 67, 332, 347).

When the paramedics arrived, they administered oxygen to{Redacted} and continued doing so while he was in the ambulance and later at the hospital (Tr. 54-55). At the hospital, a technician took a blood sample from{Redacted}. {Redacted} is a nonsmoker (the results of the blood tests of {Redacted} and{Redacted} were not at issue in this proceeding) (Tr. 55).

{Redacted} testified the Canal Street building had fewer openings than buildings in which Elliot normally poured (Tr. 59-60). The buildings Elliot typically works on for American Igloo are "barrier-tight because of the thermal they have for refrigeration" (Tr. 62). The Canal Street building is "a very tightly-built building compared to a residence or residential properties" (Tr. 63). {Redacted} had never previously encountered a problem with exposure to CO while working on an indoor pour for Elliot (Tr. 62).

{Redacted}

At the time of the hearing, {Redacted} had worked as a laborer for Elliot for seven years (Tr. 21). {Redacted} handled the hose through which the concrete was poured. He worked 7 to 15 feet from the laser screed and 10 to 20 feet from the power rake (Tr. 22-23, 29). At some point, {Redacted} began to feel dizzy and nauseated. He told Dynowski, "I don't feel good. I've got to walk outside and get some air" (Tr. 25).

{Redacted} went outside for approximately 10 minutes. He returned to work for half an hour, then, began to feel ill again. He took a second break, returned to work, experienced trouble breathing, and left a third time (Tr. 24, 35).

When the paramedics arrived, they administered oxygen to {Redacted}. He continued to receive oxygen in the ambulance and at RUMC, where a technician drew a blood sample. The hospital lab results for {Redacted} carboxyhemoglobin level was 16.5%, leading to a diagnosis of "acute carbon monoxide exposure/poisoning" (Exh. C-19). {Redacted} is 5 feet, 3 inches tall and weighs approximately 160 pounds. He does not smoke (Tr. 26).

{Redacted}

At the time of the hearing, {Redacted} had worked as a laborer for Elliot for approximately five years (Tr. 37). On March 21, {Redacted} was using a "come-along" (a hoe) to smooth the concrete, approximately 10 feet from the laser screed (Tr. 39).

Towards the end of the pour, {Redacted} began to feel dizzy and nauseated, and he developed tunnel vision. He told Dynowski he felt ill. Dynowski told him to take a break outside.

This was the fourth employee to tell Dynowski he felt sick. {Redacted} left the building for 5 to 10 minutes, then returned to work. About 5 minutes later, {Redacted} felt sick again and went outside. He did not return to work (Tr. 40-41).

The paramedics administered oxygen to {Redacted} at the site, in the ambulance, and at RUMC (Tr. 43). A technician drew a blood sample from {Redacted}. The lab results for the sample established his carboxyhemoglobin level at 13.5%, which is "acute carbon monoxide exposure/poisoning" (Exh. C-18). {Redacted} is 6 feet tall and weighs approximately 185 pounds. He is a nonsmoker (Tr. 43).

The Salt Lake City Technical Center's Analysis Using the CFK Equation

In April 2007, compliance officer Becker submitted medical and employment information for {Redacted} and {Redacted} to the Salt Lake City Technical Center (SLTC), using SLTC Application forms. The SLTC used the information to calculate the 8-hour time-weighted-average (TWA) exposure to CO for the employees. The SLTC calculated a TWA of 104 ppm for {Redacted} and 80.5 ppm for {Redacted}. These TWAs were quoted in the original citation. In October 2008, shortly before the hearing began, Becker submitted new SLTC Application forms for {Redacted} and {Redacted}, changing some of the data from the April 2007 submissions. Becker testified he did this "[d]ue to some inaccuracies and to new information brought to my attention" (Tr. 130). Based on the amended SLTC Applications, the SLTC calculated {Redacted} TWA for CO to be 203.2 ppm and {Redacted} to be 111.1 ppm (Exh. C-36).

Daniel Crane calculated the 8-hour TWAs for {Redacted} and {Redacted}. Crane has bachelor of science degrees in physics and materials science and engineering, and a master's degree in materials science, all from the University of Utah (Exh. C-34; Tr. 199-200). He is the team leader for the Methods and Investigations Branch of the SLTC (Tr. 197-198). Since 2000, Crane has overseen the SLTC's calculations of CO exposures based on the carboxyhemoglobin blood levels of employees. He has personally supervised over 600 CO exposure calculations (Tr. 198-199).

The SLTC uses a computer program it developed in 2000, based on a model used by the National Institute of Occupational Safety and Health (NIOSH). NIOSH used the model to calculate CO exposures based on the percentage of carboxyhemoglobin in a person's blood (Tr. 205, 241). The SLTC presented the program to the public for comment at the American Industrial Hygiene Association's 2000 conference. NIOSH also reviewed the program (Exh. C-26; Tr. 205).

The SLTC's program is based on the Coburn-Forster-Kane (CFK) equation, developed in 1965, which is a model for relating carboxyhemoglobin blood levels to CO exposures. The CFK equation models the uptake of CO in the body over time at particular levels and predicts carboxyhemoglobin levels in the blood based on the body's physiological properties. The SLTC's program reverses the CFK equation, using it to back-calculate the known carboxyhemoglobin levels to estimate the average exposure to CO experienced by the employee (Tr. 208).

The SLTC program considers several factors, including the duration of the employee's exposure to CO, the type and length of oxygen treatment received by the employee, and the time between the last exposure to CO and when the employee's blood was drawn. Over time, the body washes out CO, lowering the carboxyhemoglobin level. Oxygen treatment hastens the excretion of CO from the body. A longer period of oxygen treatment indicates a higher back-calculated number for the initial exposure (Tr. 209-210, 226). When calculating the carboxyhemoglobin levels for {Redacted} and {Redacted}, Crane also considered Becker's observations included in the SLTC Applications. His observations did not factor into the calculations, but Crane used them as a qualitative check on the calculations (Tr. 211).

The SLTC program allows for various factors to estimate the uncertainty that exists in particular measurements. The uncertainty factors provide a sampling analytical error (SAE) rate (Tr. 211, 230).

Using the information supplied by Becker in the SLTC Application, Crane calculated the 8-hour TWA CO exposure for {Redacted} to be 203.2 ppm. Based on an SAE value of 0.689, Crane is 95% certain the actual exposure level is within 68.9% plus or minus of 203.2 ppm of CO (Exh. C-30 an C-36; Tr. 215). Crane calculated {Redacted} was exposed to an 8-hour TWA of 111.1 ppm of CO. Based on an SAE value of 0.19, Crane is 95% certain the actual exposure level is within 19% plus or minus of 111.1 ppm of CO (Exhs. C-29 and C-36; Tr. 212, 214).

Elliot disputes the accuracy of the SLTC's results. It presented expert testimony from Fred Boelter, an environmental engineer and former OSHA compliance officer (Exh. R-23; Tr. 390-391). Boelter criticized the SLTC's results because he expected the exposure levels would be more closely aligned because the employees worked in the same area (Tr. 395). Boelter also pointed out that, based on the October 2008 SLTC Application (Exh. C-30),{Redacted} experienced a 3-hour

exposure to CO of 540 ppm, which Boelter stated, "is really a lethal concentration for that period of time, and that's another example of something that doesn't make sense" (Tr. 413).

Elliot contends the SLTC used inaccurate data in its calculations. Crane conceded small changes in variables can significantly change the results of the calculations (Tr. 228-229). On the SLTC Applications, Becker listed the time {Redacted} blood was drawn as 1:50 p.m. and {Redacted} as 1:46 p.m. (Tr. 131-136). Elliot persuasively argues that the medical records list 1:50 and 1:46 as the times the blood test results were reported, not when the blood was drawn. Exhibit C-19, {Redacted} RUMC emergency record, states in pertinent part:

> ORDERS
> CARBOXYHEMOGLOBIN by LH1 for MM01 on 3/21/207 13:05 Status: Done 3/21/2007 13:50
> . . .
> RESULTS (13:51 MM01)
> LAB: CARB/HB Mar 21 2007 13:49
> CARB/HB 16.5 %, Range (0.0-5.0), Notified: DR. MALIK Date/Time: 03/21/07 13:49 Location : ES by 153. Result, was read back.

Exhibit C-18 is {Redacted} emergency record. It provides in pertinent part:

> ORDERS
> CARBOXYHEMOGLOBIN by LH1 for MM01 on 3/21/207 13:06 Status: Done 3/21/2007 13:46
> . . .
> RESULTS (13:49 MM01)
> LAB: CARB/HB Mar 21 2007 13:45
> *CARB/HB 13.5 %, Range (0.0-5.0)

Although no witness explained the details of the medical records, a reasonable interpretation is that {Redacted} blood was drawn at 1:05 p. m. and {Redacted} at 1:06 p. m. The later times, listed after the words "done" and "results," possibly are the times the results of the blood tests were available.

The undersigned expresses no opinion on the efficacy of the underlying computer model used by the SLTC, but has doubts regarding the validity of the results for the {Redacted} and {Redacted} in the instant case. Elliot has raised legitimate questions regarding the information used as input data for {Redacted} and {Redacted} calculations. Inaccurate input data will skew the

results of the model's calculations. Such results cannot provide a basis for finding a violation of the cited standard.

Boelter and Crane 's Analyses Using the CFD's Monitoring Results

The CFD monitored the airborne concentration for CO in the Canal Street building at 12:27 p.m. and at 12:55 p.m., getting readings of 101 ppm and 35 ppm, respectively (Exh. C-10). Using these readings, Crane and Boelter each estimated the airborne concentration of CO to which employees were exposed during the pour.

Boelter used a concept he called "normalization" to arrive at an 8-hour TWA of 37.9 ppm of CO for all four of the affected employees. He explained his method (Tr. 409-410):

> What I did was I utilized the Chicago Fire Department's value of 101 parts per million and the values of the back-calculated OSHA concentrations and I used{Redacted}, for example, because that was reasonably close in terms of a back-calculation to what the Fire Department actually measured. And then I developed a relationship between the 101 and the measured value for what that would translate to in terms of an eight-hour time-weighted average.

Boelter assumed that 101 ppm was the maximum concentration of CO that day (Tr. 415):

> Well, actually, I think you can assume that it was the maximum based on the carboxyhemoglobins that were found and based on the normalization that I went through in terms of what one could expect, based on physiologic differences between the individuals. That's not an unreasonable assumption or it's not an unreasonable conclusion.

Crane did not assume that 101 ppm was the maximum concentration of CO that day. From 8:00 a.m. to approximately 11:00 or 11:15 a.m., Elliot operated two to four gas-powered machines. Some time between 11:00 and 11:15, the machines were all turned off. For approximately an hour and a half, the three fans ventilated the area. Using Microsoft's Excel spreadsheet software to perform a trend line analysis, Crane calculated the concentrations of CO in the building were 306 ppm at 11:00 and 208 ppm at 11:15 (Exh. C-31, Tr. 219-220).

Boelter criticized Crane's linear analysis as flawed because it improperly assumes a uniform decay of the level of CO between the time Elliot turned off its machines and the time the CFD took the readings (Tr. 414-415). Crane countered, and the undersigned agrees, that it is only reasonable to assume the level of CO decreased after Elliot turned off the machines (Tr. 219):

> Well, the basic assumption is that you start with a concentration and with no carbon monoxide deemed generated in the area, its going to decrease over time, especially if there's any air being moved out of the room. It was demonstrated by a decrease from 101 to 35 parts per million. And a simple linear trend back is just an estimate of what it might have been.

The undersigned rejects Boelter's calculations. Despite Boelter's assertion, it is unreasonable to conclude the reading of 101 ppm of CO, taken an hour an a half after Elliot turned off its machines, represents the high point of the CO concentration. The assertion is illogical on its face. The undersigned accepts Crane's assertion that the airborne concentration of CO was higher than 101 ppm while the employees were working. Crane's finding aligns with the carboxyhemoglobin results for the blood samples drawn from {Redacted} and {Redacted}.

Noncompliance With the Standard's Terms

The laboratory results for the blood samples taken from {Redacted} and {Redacted} established carboxyhemoglobin levels of 16.5% and 13.5%, respectively. Accepting Elliot's interpretation of the medical records, the blood samples were drawn about 1:05 p.m. That is approximately 2 hours after {Redacted} and {Redacted} removed themselves from the CO exposure, and after half an hour of receiving oxygen. Crane testified CO washes out of the body over time, and washes out more rapidly if the person receives oxygen treatment. It is reasonable to assume the carboxyhemoglobin levels of {Redacted} and {Redacted} were even higher while they were working. It has been held that a carboxyhemoglobin level of 5% or higher indicates an exposure to CO above the threshold limit value of 50 ppm. *Cumbie Concrete Co., Inc.,* 18 BNA OSHC 1522 (No. 96-1627, 1998). The CFD monitored the work area an hour and a half after all gas-powered machines were turned off and fans ventilated the area, and obtained a reading of 101 ppm of CO. The timing and the CFD's CO reading, combined with the carboxyhemoglobin results and physical symptoms of the employees, establishes that Elliot's employees were exposed to the inhalation of CO at a concentration above the PEL of 50 ppm. The Secretary has established that Elliot failed to comply with the terms of the standard**.**

Employee Exposure

Twelve crew members were working in the Canal Street building. While only four workers were affected, all of the crew members were exposed to concentrations of CO above the PEL. Crane testified, "Individual responses to carbon monoxide is quite varied. From reading in a variety of literature, people can even build a kind of immunity to it at low levels. So, various people have different responses" (Tr. 231). The Secretary has proven employee overexposure to CO.

Employer Knowledge

The Secretary contends Elliot had actual knowledge of the violation, based on Dynowski's knowledge. "[W]here a supervisory employee has actual or constructive knowledge of the violative conditions, that knowledge is imputed to the employer, and the Secretary satisfies [her] burden of proof without having to demonstrate any inadequacy or defect in the employer's safety program." *Dover Elevator Co., Inc*., 16 BNA OSHC 1281, 1286 (No. 91-862, 1993).

The Secretary argues Dynowski and Cotte "knew that the Canal Street site had limited openings for ventilation and that they could not know whether the ventilation was working without monitoring" (Secretary's brief, p. 40). Dynowski testified he had never previously experienced a problem with CO on a worksite. He had set up a ventilation system using fans. Without a CO monitor on site, Dynowski could not know with mathematical certainty that the CO exceeded the PEL.

The Secretary did establish Dynowski had constructive knowledge of the violation, and at some later point also had actual knowledge of the violative conditions. Dynowski testified that when {Redacted} came to him complaining of a headache, he accepted {Redacted}'s assumption it was caused by a sinus infection. By the time{Redacted} came to him, Dynowski realized CO inside the building was causing workers to become sick (Tr. 83). Elliot provides quarterly training on CO to supervisory personnel and competent persons (Tr. 309). Elliot had a contract with Safety Check. Luif testified regarding Elliot's policy, "If carbon monoxide becomes an issue, contact Safety Check, so we can go out and monitor the air" (Tr. 325).

Dynowski did not halt the work and did not evacuate the building. He did not contact Safety Check. Instead, he continued the pour. {Redacted} and {Redacted} then informed Dynowski they felt ill, and he still continued with the pour. The crew only left the building during a natural stopping point in the process, while waiting for the "balance." Despite the fact {Redacted} was

visibly ill and {Redacted} had vomited, Dynowski still did not call Safety Check. Luif happened to show up for his monthly inspection but did not have a CO monitor. It was Luif who eventually called 911, albeit after a delay of 50 minutes. The efficacy of Elliot's alternative to CO monitoring is questionable.

From the time {Redacted} informed Dynowski he was ill, Dynowski had constructive and actual knowledge of the violation. He testified he knew CO was making his employees sick. With the exercise of reasonable diligence, Dynowski would have stopped work and evacuated the building. He would have called Safety Check and asked for a consultant to come out with a CO monitor**.** Dynowski's knowledge of the violation is imputed to Elliot. Item 2a is affirmed.

Item 2b: Alleged Willful Violation of § 1926.55(b)

Section 1926.55(b) provides:

> To achieve compliance with paragraph (a) of this section, administrative or engineering controls must first be implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and technical measures used for this purpose must first be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with 1926.103.

Section 1926.55(b) applies to the cited conditions. Elliot was required to use administrative or engineering controls, where feasible, to keep concentrations of airborne CO below the PEL.

The citation alleges "feasible administrative or engineering controls were not implemented for employees exposed to Carbon Monoxide while conducting concrete pouring operations inside an enclosed building." In order to establish this violation, the Secretary must show feasible engineering or administrative controls exist that could significantly reduce employee exposure to contaminants. *G & C Foundry Co.,* 17 BNA OSHC 2137 (No. 95-0869, 1997).

Feasible engineering controls did exist to significantly reduce employee exposure to airborne concentrations of CO, and Elliot used them the afternoon of March 21. Elliot brought in an additional fan to increase the ventilation and reduced the number of gas-powered machines in operation. It used a CO monitor to read the CO levels. When the monitor reached 35 (below the

threshold value of 50 ppm), Elliot turned off all machines, evacuated the building, and waited until the reading on the CO monitor was lowered to a single digit.

At a later date, Elliot equipped its gas-powered machinery, including the equipment used on the Canal Street job, with catalytic converters. Catalytic converters significantly reduce CO emissions (Exh. C-17).

The Secretary has established feasible engineering controls existed to reduce the airborne concentrations of CO. Elliot did not avail itself of these controls the morning of March 21, 2007. Its failure to implement the engineering controls exposed Elliot's crew to airborne concentrations of CO above the PEL.

Elliot had actual knowledge it had not implemented feasible engineering controls. Elliot's management was aware its machines were not equipped with catalytic converters. Superintendent Cotte and foreman Dynowski discussed the ventilation plan for the job, but did not take into account the small number of openings to the space or its barrier-tight construction. Elliot made a conscious decision not to use CO monitors on its jobsites (Tr. 360).

The Secretary has established a violation of § 1926.55(b). Item 2b is affirmed.

Classification of the Violation

The Secretary classified the violations of §§ 1926.55(a) and (b) as willful.

> A willful violation is one "committed with intentional, knowing or voluntary disregard for the requirements of the Act, or with plain indifference to employee safety." *Falcon Steel Co.,* 16 BNA OSHC 1179, 1181, 1993-95 CCH OSHA ¶30,059, p. 41, 330 (No. 89-2883, 1993)(consolidated); *A.P. O'Horo Co.,* 14 BNA OSHC 2004, 2012, 1991-93 C.H. OSHA ¶ 29,223, p. 39,133 (No. 85-0369, 1991). A showing of evil or malicious intent is not necessary to establish willfulness. *Anderson Excavating and Wrecking Co.,* 17 BNA OSHC 1890, 1891, n.3, 1995-97 C.H. OSHA ¶ 31,228, p. 43,788, n.3 (No. 92-3684, 1997), *aff'd* 131 F.3d 1254 (8th Cir. 1997). A willful violation is differentiated from a nonwillful violation by an employer's heightened awareness of the illegality of the conduct or conditions and by a state of mind, *i.e.,* conscious disregard or plain indifference for the safety and health of employees. *General Motors Corp., Electro-Motive Div.,* 14 BNA OSHC 2064, 2068, 1991-93 C.H. OSHA ¶ 29,240, p. 39,168 (No. 82-630, 1991)(consolidated). A willful violation is not justified if an employer has made a good faith effort to comply with a standard or eliminate a hazard, even though the employer's efforts were not entirely effective or complete. *L.R. Willson and Sons, Inc.,* 17 BNA OSHC 2059, 2063, 1997 C.H. OSHA ¶ 31,262, p. 43,890 (No. 94-1546, 1997), *rev'd on other grounds,* 134 F.3d 1235 (4th Cir. 1998); *Williams Enterp., Inc.,* 13 BNA OSHC 1249, 1256-57, 1986-87 C.H. OSHA ¶ 27,893,

> p. 36,589 (No. 85-355, 1987). The test of good faith for these purposes is an objective one; whether the employer's efforts were objectively reasonable even though they were not totally effective in eliminating the violative conditions. *Caterpillar, Inc. v. OSHRC*, 122 F.3d 437, 441-42 (7th Cir. 1997); *General Motors Corp., Electro-Motive Div.*, 14 BNA OSHC at 2068, 1991-93 C.H. OSHA at p. 39,168; *Williams Enterp., Inc.*, 13 BNA OSHC at 1256-57, 1986-87 C.H. OSHA at pp. 36, 589.

A.E. Staley Manufacturing Co., 19 BNA OSHC 1199, 1202 (Nos. 91-0637 & 91-0638, 2000).

The Secretary narrowed the grounds for a willful classification. Compliance officer Becker stated his opinion that Dynowski's failure to shut down the job and evacuate the building was "an error in his common sense judgment" and not willful (Tr. 182). Becker stated the willful classification was not based on Dynowski's actions or inactions on the job (Tr. 185). The Secretary based the willful classification on Elliot's failure to use CO monitors on the worksite and its failure to implement engineering controls (Tr. 182). Becker testified he did not believe Elliot manifested intentional disregard for the requirements of the Act, but plain indifference to employee safety (Tr. 179).

The Secretary argues Elliot was aware its employees could potentially be overexposed to CO while working on tightly enclosed interior pours. The Secretary cited Elliot in 2003 when seven Elliot employees were overexposed to CO during an interior pour at a garage in Skokie, Illinois. Elliot and the Secretary settled the case, with Elliot agreeing to correct the cited conditions (Exh. C-21; Tr. 126-127). Items 2a and 2b of citation no. 2 issued for the Skokie site charge serious violations of §§ 1926.55(a) and (b), the same standards for which violations are affirmed in this case. The citation states:

> On March 28, 2003, seven employees working for Elliot Construction at the 5105 Madison Avenue site in Skokie, were exposed to carbon monoxide in excess of the OSHA permissible exposure limit. The employees were constructing an underground parking garage for condominiums. Employees started at the back of the garage, approximately 234 feet in. The windows in the back were boarded up and there was no ventilation. Two employees were driving bobcats and another employee was operating a compactor, the remainder of the employees were framing and grading. Employees were working for approximately 4 hours when they became ill from carbon monoxide. Exposure levels were calculated from carboxyhemoglobin levels obtained from the hospitals. Exposure levels range from 53.4 ppm to 221.3 ppm (1.07 to 4.43 times the OSHA permissible exposure limit of 50 ppm).

On January 19, 2006, Elliot superintendent Mike Bradley called Jeff Luif and asked him to bring a CO meter to an Elliot worksite at Weinstein Warehouse Meats. An Elliot crew was pouring a floor inside a warehouse that had four overhead doors. Elliot was operating a riding trowel and a hand trowel machine inside the building with two of the overhead doors opened. Luif used the CO monitor and took a reading between 35 and 55 ppm of CO. Elliot turned off the machines and opened the other two overhead doors. Luif then took a CO reading of 25 ppm (Exhs. C-11, R-21; Tr. 328-330).

Following the Skokie incident, Elliot emphasized CO safety training in its toolbox meetings and its supervisor training. Elliot called a special meeting addressing CO safety attended by all of its foremen and superintendents, some of its office personnel, and representatives from Safety Check. After the special meeting, Elliot discussed CO safety at least once a year at its quarterly meeting (Tr. 361, 378).

Elliot purchased CO monitors designed to be worn on the workers' lapels. According to Elliot, the employees did not like the lapel monitors (Tr. 358, 377-378). Cotte testified, "[The lapel monitors] seemed to not -- they were difficult to use because they didn't give us an actual reading. An alarm would go off and it didn't seem to be working that well. . . . I left mine on all the time, and I had it go off in a bank drive-up lane that was wide open and there was probably a car in front of me, so I don't think there was that much carbon monoxide, but it went off then" (Tr. 359-360). Cotte estimated Elliot used the lapel monitors for about a year, then abandoned them. Elliot switched its policy to relying on Safety Check. If a supervisor believed there was an issue with CO, he was to call Safety Check, who would send out a consultant with a CO monitor to test the work area (Tr. 360). When asked why Elliot did not purchase CO monitors for use at the worksite, Cotte responded, "I believe at the time we thought they would be too complicated and there would always be the issue of if they were calibrated correctly. And, you give them out to the guys in the field and they're going to leave them lying around and they're going to get covered in concrete. We just didn't think it was practical" (Tr. 360-361).[3]

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[3] Since the Canal Street incident, Elliot has purchased CO monitors and now requires its foreman to use them to continually monitor for CO during all interior jobs (Tr. 367-368).

Cotte estimated Elliot averaged 100 interior pours a year (Tr. 362). Of those, Cotte estimated approximately 50 were done in a "more enclosed" space, such as the Canal Street building (Tr. 363). Other than the Skokie incident and the Weinstein Warehouse incident, Cotte could not recall any other incidents where CO at the site created a health hazard (Tr. 364). This may be attributed to the employees' determination to "cope" with the fumes (Tr. 75).

"The hallmark of a willful violation is the employer's state of mind at the time of the violation -- an 'intentional, knowing, or voluntary disregard for the requirements of the Act or . . . plain indifference to employee safety." *Kaspar Wire Works, Inc.*, 18 BNA OSHC 2178, 2181 (No. 90-2775, 2000), *aff'd* 268 F.3d 1123 (D.C. Cir. 2001). The undersigned considers the issue of whether the violations of §§ 1926.55(a) and (b) are properly classified as willful to be a close one. Upon consideration of the issue, she determines Elliot's state of mind at the time of the violation falls just short of plain indifference to employee safety.

A stronger case for willfulness could perhaps be made based on Dynowski's conduct the day of the Canal Street incident. Dynowski recognized CO was making his employees ill, yet completed the pour despite serially sending {Redacted},{Redacted}, {Redacted}, and {Redacted} outside. He then failed to immediately call for emergency help. Had Luif not unexpectedly arrived, no emergency call may have been made. Dynowski's conduct as foreman is highly questionable.

The Secretary chose, however, to hold Elliot responsible for its general policy rather than for one foreman's specific actions on a specific day. The Secretary charges Elliot's willfulness derives from its systemic error in failing to require its foremen to monitor for CO at all interior pours. The Secretary's position appears to be that, absent the events at the Canal Street building on March 21, 2007, Elliot was still in willful violation of §§ 1926.55(a) and (b) every time it performed an interior pour without monitoring for CO. The undersigned finds this theory too sweeping. All the witnesses agree the Canal Street building was designed to be barrier-tight and had fewer openings to the outside than is normally encountered. It is located on a busy street. The job was a large pour requiring approximately a dozen cement trucks to remain idling while parked near one of the few openings to the building. Each site has its own specific set of features that must be considered. Some interior pours may have multiple doors and windows. The number of machines operating affects the amount of CO produced.

Elliot exercised concern for employee safety to the extent it contracted with Safety Check. Elliot supervisor Bradley called Safety Check to its Weinstein Warehouse site when it anticipated a problem with CO during a pour. Elliot incorporated CO safety training into its safety program. Elliot had purchased lapel monitors for its employees and required their use at one time. Elliot failed to use diligence in searching for an alternative monitoring system once the lapel monitors proved problematic, but its failure was not willful.

It is determined Elliot's violations of §§ 1926.55(a) and (b) are not willful in nature. Under §17(k) of the Act, a violation is serious if it creates a substantial probability of death or serious physical harm. In this instance, four employees were hospitalized due to CO poisoning. The violations are classified as serious.

Penalty Determination

The Commission is the final arbiter of penalties in all contested cases. In determining an appropriate penalty, the Commission is required to consider the size of the employer's business, history of previous violations, the employer's good faith, and the gravity of the violation. Gravity is the principal factor to be considered.

Elliot employed 91 employees at the time of the inspection (Tr. 379). OSHA had previously cited Elliot for similar violations in 2003 (Exh. C-20). Elliot demonstrated good faith during the inspection. The remaining factor to be considered is the gravity of the violations.

Items 2a and 2b of the citation–§ 1926.55(a) and (b): The gravity of the violations is high. A crew of twelve men was overexposed to CO. Four of the men suffered headaches, extreme fatigue, nausea, tunnel vision, and difficulty breathing. Over exposure to CO may cause permanent physical damage. Elliot's foreman prolonged the overexposure of his crew to CO despite his awareness of the problem. He failed to call for emergency help when it was apparent such aid was needed. It is determined a total penalty of $14,000.00 is appropriate for items 2a and 2b.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

The foregoing decision constitutes the findings of fact and conclusions of law in accordance with Rule 52(a) of the Federal Rules of Civil Procedure.

ORDER

Based upon the foregoing decision, it is ORDERED that:

1. Item 1 of the citation, alleging a willful violation of § 1926.20(b)(2), is vacated and no penalty is assessed;
2. Item 2a of the citation, alleging a willful violation of § 1926.55(a), is affirmed as serious; and
3. Item 2b of the citation, alleging a willful violation of § 1926.55(b), is affirmed as serious, and a total penalty of $14,000.00 is assessed for items 2a and 2b.

/s/ Nancy J. Spies
NANCY J. SPIES
Judge

Date: June 12, 2009
Atlanta, Georgia