Secretary of Labor,	*	
Complainant,	*	
	*	
v.	*	OSHRC Docket No. **97-630**
	*	
Atlas Central Corporation,	*	
Respondent.	*	

APPEARANCES

Mary Anne Garvey, Esq.
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U. S. Department of Labor
Cleveland, Ohio
For Complainant

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For Respondent

Before: Administrative Law Judge Ken S. Welsch

DECISION AND ORDER

Atlas Central Corporation (ACC) is engaged in the business of industrial painting and sheeting. On October 22, 1996, ACC was removing paint by abrasive blasting from underneath the Denison Avenue bridge in Cleveland, Ohio, when the project was inspected by the Occupational Safety and Health Administration (OSHA). As a result of OSHA's inspection, ACC received three citations on April 14, 1997, alleging employees' exposure to lead, total dust, and cadmium. ACC timely contested the citations.

Citation No. 1 alleges serious violations of § 1925.55(a) (item 1a) for exposing employees to concentrations of total dust above the threshold limit value; § 1926.55(b) (item 1b) for failing to implement feasible engineering or administrative controls to reduce employees' exposure to total dust; § 1926.62(h)(5) (item 2a) for not using compressed air for removing lead from surfaces in conjunction with a ventilation system designed to capture airborne dust; § 1926.1127(k)(6) (item 2b) for also not using compressed air to remove cadmium from surfaces in conjunction with a ventilation

system designed to capture the cadmium; § 1926.62(j)(2)(i)(A) (item 3) for failing to repeat biological monitoring on employees at least every six months; § 1926.1127(d)(1)(i) (item 4a) for failing to determine whether employees would be exposed to airborne cadmium; and § 1926.1127(d)(1)(i) (item 4b) for failing to designate a competent person capable of identifying cadmium hazards. The serious citation proposes a total penalty of $2,375.

Citation No. 2 alleges repeat violations of § 1926.62(c)(1) (item 1a) for exposing employees to concentrations of airborne lead above the permissible exposure limit (PEL); § 1926.62(e)(1) (item 1b) for failing to implement feasible engineering or administrative controls to reduce employees' exposure to lead; § 1926.62(e)(2)(ii) (item 1c) for failing to have a complete written lead compliance program; § 1926.62(i)(4)(ii) (item 2) for failing to maintain eating areas free as practicable from lead contamination; and § 1926.62(l)(1)(iv) (item 3) for failing to provide annual lead training to each employee. The repeat citation proposes a total penalty of $8,000.

Citation No. 3 alleges an "other" than serious violation of § 1926.1127(m)(4)(iii)(A) for not ensuring that its training program contained the health hazards associated with cadmium exposure. The citation proposes no penalty.

The hearing was held in Cleveland, Ohio, on March 9 - 14, 1998. The parties were represented by counsel and post-hearing briefs were filed. ACC argues that its containment to perform abrasive blasting implemented all feasible engineering and administrative controls to reduce employees' exposure to lead and total dust. The alleged violations involving engineering controls are vacated for the Secretary's failure to show that the recommended controls would substantially reduce employee exposure.

The Inspection

ACC repaints bridges for the Ohio Department of Transportation. The bridge painting season is April 15 through approximately October 30th of each year (Tr. 336). On October 12, 1996, ACC began its repainting work on the Denison Avenue Bridge, which spans over eight lanes of Interstate 71 in Cleveland, Ohio (Exh. R-3; Tr. 354, 360). Ruhlin Company, general contractor, contracted ACC to remove the existing paint and repaint the bridge (Exh. R-16; Tr. 37, 169-170). The project was completed by the end of November, 1996 (Tr. 360).

The existing paint is removed by abrasive blasting, which is the use of highly pressurized air to direct abrasive materials through a blasting nozzle to the painted surface. The abrasive material is steel grit or a combination of steel grit and steel shot. During abrasive blasting, the air pressure through the nozzle is 100 to 120 pounds per square inch (psi) and the abrasive material is propelled at a velocity in excess of 400 miles per hour. The abrasive blasting removes the paint and creates a profile of one to three mills[1] on the surface, which allows new paint to adhere (Tr. 42-43, 466-467). As the paint is removed, small particles of paint and other debris become airborne in clouds of dust. The employees are expected to clean 1,000 to 1,500 square feet per day (Tr. 352-353).

Prior to the abrasive blasting, a containment is constructed around the portion of the bridge to be cleaned. The containment is to protect the environment (Tr. 332-333). At the time of OSHA's inspection, ACC's employees were removing paint from underneath the south abutment area of the bridge. The containment constructed by ACC was tent-like, consisting of tarpaulins (tarps) hung from the bridge (Exhs. C-1, C-2, C-3; Tr. 43, 177, 299-300, 473). The containment enclosed the area from the southbound lanes of Interstate 71 to the top of the sloped concrete abutment. As shown by ACC, the containment was designed to be 27 feet from interstate to abutment, 70 feet long and 10 feet high for 17,500 cubic feet (Exhs. C-24, R-12). However, OSHA measured the area after the containment was removed as 89 feet wide, 78 feet from the columns to the concrete abutment and 16 feet high for 71,600 cubic feet (Exh. R-18, C-33, pp. 2, 4; Tr. 321). The engineering plans, on the other hand, show the width of the bridge is 62 feet, the distance from the column to the abutment is 75 feet, and the height from the ground to the bottom of the 5-foot steel girders is 14 feet, 9 inches (Exh. R-3). While abrasive blasting, the employees worked from scaffolding hung from the girders. They were tied-off and wore air-supplied respirators (Exhs. C-3, R-40, p. 25; Tr. 1079).

Because of the concentrations of dust generated by the abrasive blasting inside the containment, ACC used a dust collector to exhaust and filter the dusty air (Tr. 485-486). Three ducts to the dust collector were located along one wall of the containment (Exh. C-2). While the dust collector removed the dusty air from inside the containment, fresh air was drawn into the containment from the holes and gaps in the tarps (Exh. C-35; Tr. 486). Also, along the wall opposite

[1]One mill equals one thousandth of an inch (Tr. 467).

the dust collector, two louvers (2 feet by 2 feet) were placed in the tarp at a height of 5 feet to also allow in fresh air (Tr. 1214, 1223). The containment was kept under negative pressure.

On October 22, 1996, OSHA compliance safety and health officer Sharon Danann inspected the Denison Avenue bridge project (Tr. 25, 35). Working at the project were Costas Kozani, ACC's job superintendent, three abrasive blasters, three painters and a groundsman (Tr. 300-301). As part of her inspection, Danann performed air monitoring inside the containment while three employees (John Manis, Nick Kofinas, and Nasos Tataridis) were abrasive blasting.[2] The air samples were collected by attaching pumps to the employees' belts which drew air into sample cassettes affixed to the shoulders of the employees, outside the employees' blasting helmets and air-supplied respirators. Danann also collected wipe samples from the surface of a table and the spigot of a water jug inside the employees' lunch trailer (Exh. C-8; Tr. 41-42, 44, 80).

The air samples and wipe samples were submitted to OSHA's Salt Lake City Technical Center for analysis (Tr. 52-53). The analysis found that the three employees doing the abrasive blasting were exposed above the PEL of 50 micrograms per cubic meter (ug/m3) for lead (Exhs. C-4, C-6, C-7; Tr. 68, 74, 78). Based on their exposure to iron oxide, two of the employees (Manis, Kofinas) were also exposed to total dust above the PEL of 15 milligrams per cubic meter (mg/m3) (Tr. 71, 79). Also, two of the employees (Manis, Tataridis) were exposed to cadmium above the action level of 2.5 ug/m3 (Exhs. C-4, C-6; Tr. 76).

Discussion

Alleged Violations

Lead and Total Dust Exposure

Citation No. 1, Item 1a and Citation No. 2, Item 1a - Alleged Violations of §§ 1926.55(a) and 1926.62(c)(1)

Citation No. 1 alleges that two employees performing abrasive blasting were exposed to total dust at an 8-hour, time-weighted average (TWA) of 345 and 76 milligrams per cubic meter. Section 1926.55(a) provides that:

> Exposure of employees to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above

[2]The fourth employee sampled was the groundsman who was working on the bridge deck (Tr. 41).

> those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists, shall be avoided.

The threshold limit values of airborne contaminants are contained in Appendix A to § 1926.55. When the Secretary incorporated the threshold limit values into the occupational health standards, she transformed the values into PEL. *Bunge Corp.*, 12 BNA OSHC 1785, 1788, n. 10 (Nos. 77-1622, 78-838 and 78-2213, 1986). The PEL for "inert or nuisance dust," which includes "all mineral, inorganic and organic dusts," is 15 mg/m3. The air monitoring of John Manis and Nick Kofinas was conducted on October 29, 1996, while the employees were abrasive blasting. Manis' sample result found 345 mg/m3 of iron oxide and Kofinas' result was 76 mg/m3 of iron oxide (Exhs. C-4, C-7; Tr. 68, 79).

Although iron oxide is not a specifically regulated particulate, it was the major constituent (largest single ingredient) of mineral dust generated during abrasive blasting (Tr. 53, 71). The amount of iron oxide in the samples was used as the basis of showing employees' exposure to total dust (Tr. 54).

Citation No. 2 alleges that three employees performing abrasive blasting were also exposed to airborne lead concentrations at TWA levels of 2,789 ug/m3 (Manis), 783 ug/m3 (Tataridis), and 1,963 ug/m3 (Kofinas). These levels are 56, 16 and 39 times the PEL of 50 ug/m3 for lead. Section 1926.62(c)(1) provides that:

> The employer shall assure that no employee is exposed to lead at concentrations greater that fifty micrograms per cubic meter of air (50 ug/m3) averaged over an 8-hour period.

ACC does not dispute the accuracy of OSHA's air monitoring results (Exh. C-11; ACC Brief, p. 2). ACC argues that since it implemented all engineering controls which could not reduce the lead and dust exposures to within the PEL, employees wore appropriate personal protective equipment, such as blasting helmets and air supplied respirators (Exh. C-3; Tr. 43-44).

Sections 1926.55(b) and 1926.62(e) require an employer to implement feasible engineering or administrative controls to reduce employees' exposure to total dust and lead. If such controls fail to achieve full compliance, only then can the employer use other protective measures to keep the employee's exposure within permissible limits.

The Secretary does not dispute that the employees were provided appropriate personal protective equipment and that such equipment was necessary to reduce the employees' exposure.

However, the Secretary does not accept that ACC implemented all feasible engineering controls to reduce the exposure to total dust and lead. Unless the Secretary establishes that there were feasible engineering or administrative controls not implemented by ACC, violations of §§ 1926.55(a) and 1926.62(c)(1) are not found.

Engineering and Administrative Controls

Citation No. 1, Item 1b and Citation No. 2, Item 1b - Alleged Violations of §§ 1926.55(b) and 1926.62(e)(1)

Citation No. 1 alleges that ACC did not implement engineering or administrative controls, including the placement of inlets to the exhaust ventilation, the use of make-up air and the creation of mini-enclosures to reduce employees' exposure to total dust. Section 1926.55(b) provides in part that:

> 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.

Citation No. 2 alleges that ACC did not implement engineering or administrative controls, including the placement of inlets to the exhaust ventilation, the use of make-up air, the creation of mini-enclosures and the rotation of employees to reduce employees' exposure to lead. Section 1926.62(e)(1) provides that:

> The employer shall implement engineering and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead to or below the permissible exposure limit to the extent that such controls are feasible. Wherever all feasible engineering and work practices controls that can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limit prescribed in paragraph (c) of this section, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them by the use of respiratory protection that complies with the requirements of paragraph (f) of this section.

Both the total dust and lead standards reference two types of controls which may be utilized to reduce employee exposure. Administrative or work practice controls typically include changes in the employee's method of work and rotating the employee's job duties. Engineering

controls involve various mechanical devices and equipment, such as exhaust systems, fans, inlets and enclosures (Tr. 485). An employer is expected to implement the administrative or engineering control where feasible even though such control does not necessarily reduce the employee's exposure below the PEL. "The test of whether administrative and/or engineering controls are technologically feasible is whether the controls are achievable and capable of producing a significant reduction in exposure to air contaminants." *G & C Foundry Company,* 17 BNA OSHC 2137 (No. 95-869, 1997), citing *Harmony Blue Granite Co.,* 11 BNA OSHC 1277 (No. 14189, 1983). A control can be feasible even if it does not achieve full compliance. *Id.*

Estoppel From Asserting Additional Engineering Controls

ACC initially argues that OSHA is estopped from requiring other enclosure configurations, given OSHA's admission in early 1997 that general dilution ventilation was the appropriate engineering control for abrasive blasting operations (ACC Brief, p. 20).

The facts are not in dispute. On May 8, 1996, ACC was inspected by OSHA while performing abrasive blasting on a bridge in Van Wert, Ohio (Tr. 433-434). As a result of the inspection, ACC received a serious citation for failing to implement feasible engineering controls when employees' exposure to lead exceeded the PEL (Exh. R-20; Tr. 444). After filing its notice of contest, an OSHA assistant area director stated in response to interrogatories that general dilution ventilation with local exhausts constituted feasible engineering controls (Exh. R-21, p. 7; Tr. 446-448).

ACC asserts that during settlement OSHA agreed to delete the engineering control violation because ACC agreed to re-position the exhaust ventilation (Tr. 449). However, based on the statement by OSHA that general dilution ventilation was an adequate engineering control, ACC argues that OSHA is now prevented from pursuing other engineering controls. ACC cites *Secretary v Miami Industries, Inc.*, 983 F.2d 1067 (6th Cir., 1992) (employer did not have fair notice that additional guards were needed for a machine because during a prior inspection the inspector indicated that the guards in place were adequate) and *Hamilton Die Cast, Inc.,*11 BNA OSHC 2169 (No. 79-1686, 1984) (Commission dismissed citation where an employer relied upon previous OSHA inspection findings that a guard was not necessary on the equipment).

ACC's estoppel argument is rejected. Equitable estoppel is an affirmative defense. The Secretary is not estopped from enforcing a standard except where she has engaged in affirmative misconduct, active misrepresentation and a resulting injustice to the employer. *Erie Coke Corp.*,

15 BNA OSHC 1561, 1568-1570 (No. 88-611, 1992). As noted in the *Erie* case, previous settlements may reflect the results of the bargaining process as to those particular citations and can not be construed as "misrepresentations." Also, the statement by the assistant area director in responding to interrogatories was not shown to restrict engineering controls to dilution ventilation or that general dilution ventilation was recommended for other than the Van Wert bridge project. The standards cited anticipate a continuing obligation by the employer through the use of engineering or administrative controls to reduce employees' exposure until it is at or below the PEL.

Application of § 1926.57

ACC argues that § 1926.57(f)(3) establishes the specific requirements for the design of a ventilation system in an enclosure used for abrasive blasting. Section 1926.57(f)(3) provides:

> Blast cleaning enclosures shall be exhaust ventilated in such a way that a continuous inward flow of air will be maintained at all openings in the enclosure during the blasting operations.

The provisions of § 1926.57(f)(3) asserts ACC takes precedence over the engineering controls proposed by the Secretary (ACC Brief, p. 12). ACC argues that by operation of § 1910.5(c)(1) the particular standard at § 1926.57(f)(3) is applicable to its bridge containment and prevails over the general engineering control standards at § 1926.55(b), which might otherwise be applicable to the same condition, practice, or method. *Lowe Construction Co.*, 13 BNA OSHC 2182, 2183-2184 (No. 85-1388, 1989). The Secretary argues that § 1926.57(f) does not apply to temporary enclosures such as ACC's containment at the Denison Avenue bridge.

Section 1926.57 establishes standards for ventilation "whenever hazardous substances such as dusts . . . are produced in the course of construction work" which exceed the limits specified in § 1926.55(a). Section 1926.57(a) further provides that "[W]hen ventilation is used as an engineering control method, the system shall be installed and operated according to the requirement of this section." Section 1926.57(f) involves abrasive blasting and its scope at § 1926.57(f)(8) applies "to all operations where an abrasive is forcibly applied to a surface by pneumatic or hydraulic pressure." By the Secretary's terms, standards at § 1926.57(f) are not restricted to permanent containments or enclosures.

However, § 1926.57(f) does not preempt all engineering controls contemplated by § 1926.55(b). The standard applies to the nature and operation of exhaust ventilation when

ventilation is used as an engineering control to reduce dust exposures identified in § 1926.55(a). It requires that the enclosure be ventilated to maintain an inward flow of air and an exhaust rate sufficient to provide prompt clearance of dust within the enclosure. Section 1926.57(f)(4) requires that the construction, installation, inspection and maintenance of exhaust systems conform to requirements set forth in American National Standards Institute (ANSI) Z9.2-1960 and Z33.1-1961. Therefore, to the extent ventilation is contemplated by the Secretary's recommended engineering controls, the principals in § 1926.57(f) do apply.

Controls Used by ACC

For the Denison Avenue bridge project, ACC used canvas tarps hung from the top of the bridge to the ground to form a tent-like containment area between the bridge concrete abutment and the south-bound lanes of Interstate 71. The containment area was designed by Costas Kozanis, ACC's job superintendent and competent person. Although not specifically measured, based on OSHA's measurements and the engineering plans, the containment was approximately 70 feet wide along the interstate, 78 feet from the interstate to the abutment, and approximately 19 feet high from the ground to underneath the bridge (Exhs. C-18, C-24, R-3, R-12). At the end of the sloped concrete abutment, the height was approximately 6 feet.

A dust collector with a rated capacity of 40,000 cubic feet per minute (cfm) was located outside one side of the containment. Three ducts for the dust collector were placed in an opening to the containment (Exhs. C-2, R-15). Fresh air was allowed into the containment through holes and gaps in the tarps as well as two lourvers installed on the side opposite the dust collector. The movement of air was measured with an anemometer once a week in the middle of the containment in the range of 100 to 110 feet per minute (Exh. R-12; Tr. 351-352, 1171). The containment was designed to provide general dilution ventilation to remove dust accumulation from inside the containment (Exh. C-15).

ACC argues that in its larger containment with general dilution ventilation, there are lower concentrations to iron oxide and lead because of the possible vertical downward air movement generated by the blasting nozzles which pushes the air into the larger area below the girders. There is no blanket of air forced past the bottom of the girders which keeps the particles between the girders (Tr. 929-930). Under general dilution ventilation as explained by Dan Adley, the larger particles created during the blasting process fall to the ground once they lose their kinetic energy. This reduces the concentration of dust near the blasting operations (Tr. 989-992).

While in the containment, employees wore appropriate personal protective equipment during blasting operations. The equipment included a blasting helmet with a shoulder cape and a Bullard respirator with a positive air flow. Employees also wore heavy cotton coveralls and gloves (Exh. C-3;Tr. 43-44, 196). Outside the containment, employees changed their contaminated coveralls in a down draft booth (Exh. R-7, Tr. 193). Also, a trailer was provided for employees to use for meals and breaks (Tr. 144, 350).

Secretary's Criticism of ACC's Containment

Although ACC's general dilution ventilation reduces employee exposure to dust contaminants at least to some extent, the Secretary argues that ACC's containment provided no means of systematically introducing clean air into the containment and maximizing the airflow where the employees were abrasive blasting. The Secretary argues that additional controls were feasible. Compliance officer Danann describes general dilution ventilation as the mixing of contaminants with air and a general lessening of quantities relative to a containment without an exhaust (Tr. 101, 478-479). The American Conference of Governmental Industrial Hygienists (ACGIH) considers dilution ventilation inappropriate for work environments where contaminants are of a toxic nature, such as lead and cadmium (Tr. 104). Section 2.3 "Dilution Ventilation for Health", the ACGIH states:

> The use of dilution ventilation for health has four limiting factors:
> (1) The quantity of contaminant generated must not be too great or the airflow rate necessary for dilution ventilation will be impractical;
> (2) Workers must be far enough away from the contaminant source or evolution of contaminant must be in sufficiently low concentrations so that workers will not have an exposure in excess of the established TLV;
> (3) The toxicity of the contaminants must be low; and
> (4) The evolution of the contaminants must be reasonably uniform.

(Tr. 112-113).

Dan Adley, ACC's expert, considers the ACGIH publication as the "bible" within the industrial hygiene community. Adley concedes that dilution ventilation is not the preferred method of ventilation. The preferred method is to capture the containment at the source and remove it so the employee has no opportunity of exposure. Dilution ventilation is most often used to control vapors (Tr. 1111-1112).

John Cignatta,[3] Secretary's expert and licensed professional engineer, describes the containment used by ACC as a "circus tent" enclosure with general dilution ventilation (Tr. 521-522). According to Cignatta, clean air was only introduced in a haphazard manner through holes and gaps in the tarps. Therefore, dust from abrasive blasting continued to accumulate and be dispersed throughout the large containment area (Tr. 551-552). Cignatta opined that contaminated air accumulated in stagnation points and was recirculated throughout the containment (Tr. 517). He generated illustrations based on a computer model depicting the interior of the containment during abrasive blasting to show the airflow under general dilution ventilation (Exh. C-33, pp. 7, 9). The computer model shows the air flow moving in no discernable pattern. Since the employees performing abrasive blasting are at the point of generation, the three employees appear to be inside a dense cloud of dust accumulation. The computer model is consistent with the compliance officer's observations inside the containment. According to Danann, "[I]t was hard to discern the employees due to the dust clouds in their immediate vicinity" (Tr. 90).

ACC asserts that Cignatta's computer model is unreliable and does not depict the containment at the Denison Street bridge project. First, ACC notes that the sloped concrete abutment is not accurately shown. Instead of a slope, the abutment is shown as three large steps (Tr. 686, 844-845). Cignatta agrees that 50 smaller steps probably would be a closer approximation of the slope's angle. Cignatta concedes that the use of three steps does have some impact on the air flow depicted in the computer model. He was, however, unable to estimate the extent of the impact (Tr. 686-687).

Secondly, ACC argues that the orientation of the blast nozzle shown in the computer model as compared to actual useage is biased towards employee exposure (Tr. 846, 850-851). The nozzle is shown pointing in a parallel direction with the girders. In reality, the nozzle for the most part is pointed in an upward direction to clean the underside of the bridge and upper

[3]ACC argues that Cignatta is not qualified as an expert under principals outlined in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,113 S. Ct. 2786, 2794 (1993). Mr. Cignatta is accepted as an expert witness. Cignatta is a licensed engineer and has testified as a qualified expert in at least two prior cases involving abrasive blasting on bridges. *See Manganas Painting Co., Inc.*, 1995-1997 CCH OSHD ¶ 31,183 (No. 94-588, September 17, 1996; directed for review) and *E. Smalis Painting Co., Inc.*, 1995-1997 CCH OSHD ¶ 31,113 (No. 94-1979, March 26, 1996; directed for review). He is a registered professional engineer and has authored several publications (Exh. C-32). He has prepared reports involving computer modeling and ventilation sytems for abrasive blasting on bridges (Exhs. C-30, C-31).

portions of the girders (Tr. 692-693). Also, the model assumed that the nozzle is 3 cm x 3 cm (Tr. 681). The nozzle used by ACC is a half-inch smaller in diameter (Tr. 682).

Finally, ACC argues that the holes and gaps in the tarps are incorrectly depicted in the computer model. The number and location of the gaps and holes which provide the source of fresh air are based on photographs taken by compliance officer Danann (Exhs. C-1, C-2; Tr. 851-852). The computer model shows two exhaust ports (dust collectors) and five holes and gaps along one side of the containment. However, Danann's photographs only show a portion of the containment, and she did not identify or measure all holes and gaps in the tarps. Similiarly, the exhaust ducts are not shown on the sloped portion of the abutment (Tr. 858). According to ACC, changes in the position of the exhaust ducts and holes for fresh air affects the ventilation in the containment (Tr. 856-857). For example, the record indicates that two 2 x 2-foot wooden louvers, not shown in the computer model, were installed across from the dust collector. The louvers permitted some cross-ventilation of fresh air.

ACC's arguments regarding the computer model's depiction of its containment at the Denison Avenue bridge have merit. However, since the abrasive blasting was done above the cross- ventilation, there was little impact at the point of dust generation (Tr. 689). Cignatta's model showing the dust generation is supported by the air sampling results taken by compliance officer Danann and her observations. It is undisputed that the employees were exposed to excessive concentrations of airborne dust accummulations containing lead and iron oxide. Manis' exposure was 56 times the PEL for lead and 23 times the PEL for total dust, and Kofinas' exposure was 39 times the PEL for lead and 5 times the PEL for total dust. The computer model is used as representative of airflow patterns within a containment with similarities to the Denison Avenue bridge containment under general dilution ventilation. It is not considered as an accurate depiction but is used to show how modifications in containment design may affect the concentrations of airborne contaminants on employees performing abrasive blasting.

Secretary's Recommended Engineering and Administrative Controls

The Secretary's recommended engineering controls include (1) placement of the dust collection unit closer to the abrasive blasting, (2) use of make-up air to reduce the high levels of

dust around the blasters, and (3) the creation of mini-enclosures.[4] The Secretary also recommends reducing the amount of time an employee spends abrasive blasting (Tr. 104-107).

The recommended controls identified by the Secretary are claimed to reduce both the lead and total dust exposures. According to Cignatta's research, as the PEL for lead is approached through the use of engineering controls, employee exposure to other contaminants, such as total dust, is also reduced (Exh. C-29, p. 5). The Secretary's recommended engineering controls involve the attempted movement of airborne contaminants away from the employee's breathing zone. If the controls are shown feasible, equivalent reductions in employee's exposure levels to total dust and lead are therefore reasonably expected.

A discussion of each of the Secretary's recommended controls follows:

1. Local Exhaust Ventilation

The placement of dust collection by local exhaust involves the capture of airborne contaminants nearer the source of dust generation; abrasive blasting. The contaminants are captured by suspending exhaust inlets with flexible hoses in close proximity to the employees performing abrasive blasting. The Secretary recommends that the local exhaust be applied to the blasting nozzle to vacuum the generated dust (Tr. 105). The local exhaust draws the contaminated air away from the employees and into the dust collector (Tr. 104-105, 549). In ACC's general dilution ventilation, the employees were abrasive blasting far from where the dust collector was exhausting the dusty air from the containment (Tr. 512).

The feasiblity of local exhaust ventilation for abrasive blasting is not established by the record. It is not shown that such local exhaust equipment exists for abrasive blasting, has been used at other abrasive blasting jobs, or can be adapted to ACC's abrasive blasting process. Abrasive blasting is not a process which permits a stationary local exhaust system. Employees need to freely move along the steel girders. They are expected to clean in excess of 1,000 square feet of steel per day (Tr. 352-353). Also, the blasting nozzle delivers the abrasive material at a velocity of 400 miles per hour which reduces the effectiveness of an exhaust attached to the blasting nozzle (Tr. 466). Even if a local exhaust system is available, the Secretary fails to identify any anticipated reduction in employees' exposure to contaminated dust.

[4]The Secretary's recommendation for the use of less dusty techniques, dust suppressant additives or media was withdrawn (Tr. 296-297).

2. Use of Make-up Air

The Secretary recommends the use of make-up air to reduce the levels of dust around employees performing abrasive blasting and to move the dust towards the dust collector (Tr. 105-106). Contaminated air is more efficiently moved out of the containment if fresh air is systematically introduced into the containment. The introduction of fresh air, when coupled with the use of an exhaust system, creates a "push/pull" pattern of air movement across the containment. Fresh air introduced at one end of the containment pushes through the containment while contaminated air is pulled out at the other end by the dust collector. John Cignatta, the Secretary's expert, opined that if proper push/pull ventilationl[5] is implemented, the dust generated by abrasive blasting is quickly "washed" through the containment, reducing the amount of time that contaminated air remains in the employees' breathing zone (Exh. C-33, p. 11; Tr. 548-549). Cignatta stated that the installation of louvers along one side of the containment allows for the systematic introduction of make-up air (Tr. 549). Cross-ventilation airflow avoids large air stagnation points.

The record shows that two louvers to permit the entry of fresh air were installed across from the dust collector in ACC's containment, thus creating to some extent the cross ventilation recommended by the Secretary (Tr. 1214, 1223). Using an anemometer once a week, ACC measured the airflow in the middle of the containment in excess of 100 feet per minute (Exh. R-12; Tr. 351-352). The Secretary fails to show that ACC did not use make-up air as part of its general dilution ventilation system.

3. Reducing Employee Time of Exposure

The Secretary also recommends altering the employees' work schedules and job duties as an administrative control to reduce employees' exposure. By reducing an employee's time abrasive blasting, the amount of time an employee spends in the containment is reduced (Tr. 256-257). For example, the Secretary suggests that employees can be rotated between abrasive blasting and painting. She argues that if administrative controls are used in combination with engineering controls, employees' exposure may be substantially reduced.

The record in not clear whether ACC, to some extent, already rotates employees. Compliance officer Danann agrees that ACC possibly already interchanged between the blasting

[5]Cignatta referred to push/pull ventilation also cross-flow ventilation.

crew and paint crew (Tr. 256). She knew that some employees who had earlier been designated as painters were also performing abrasive blasting. Based upon the concentration levels she detected, Danann was unable to identify the amount of time that an employee could perform abrasive blasting before rotation (Tr. 256-257). As a result of working from pic scaffolding, employees regularly had to stop blasting, relocate the scaffolding and clean the area (Tr. 1079). The record does not establish the feasibility of regularly rotating employees to achieve significant reductions in exposure levels. ACC employs less than 15 employees .

4. Dance Floor or Mini-Enclosure

The primary control recommended by the Secretary is the use of a dance floor, or mini-enclosure, which reduces the size of the containment (Tr. 105-106). In principal, the dance floor elevates the floor level of the containment from the ground to approximately two feet below the steel girders needed to be cleaned. With the mini-enclosure, the walls of the dance floor are also moved in to form an even smaller containment. For example, Cignatta calculates that the working space for a dance floor enclosure is reduced to approximately 13,300 cubic feet, as opposed to approximately 72,000 cubic feet in ACC's circus-tent containment (Tr. 547). For a mini-enclosure 12 feet wide, he expects that the working space is further reduced to approximately 2,000 cubic feet. Thus, there is a reduction in excess of 90% in overall volume needed to be ventilated (Exh. C-33; Tr. 563-565). Cignatta states that a dance floor or mini-enclosure can be hung from rails or suspended below the bridge. Also, the enclosure can be mounted on a semi-tractor trailer and lifted into position underneath the bridge by hydraulic jacks (Exh. C-33, pp. 23-24; Tr. 546, 578).

By also establishing cross-flow (push/pull) ventilation in conjunction with the dance floor or mini-enclosure, Cignatta opines that a more directed airflow can be created from the source of incoming fresh air to the dust collector. The ventilation system for the dance floor or mini-enclosure approaches "plug flow," which is a condition where contaminated air is washed away almost as fast as it is generated (Tr. 563-564).

Also, Cignatta recommends installing a grated floor or V-trough in the mini-enclosure to allow spent abrasives and large paint chips to collect for easier retrieval (Tr. 561, 565-567). The grating or V-trough removes the abrasives and paint chips from the work area and prevents them from being re-disturbed into the employee's breathing zone. Also, a retrieval system eliminates the need for employees to vacuum the floor to recover the spent abrasives.

With a mini-enclosure and a directed airflow system, John Cignatta testified that an overall reduction in employee exposure to total dust and lead is expected to be from 1% to 5% of the exposure levels recorded by OSHA's air sampling (Tr. 617, 619-620). Using 5% as an example, Kofinas recorded total dust level of 76 mg/m3 would be reduced to 3.8 mg/m3--not above the PEL. Although Manis' total dust exposure of 345 mg/m3 is above the PEL at 17.25 mg/m3, his exposure level is substantially reduced. Similiarly, although the three employees remain overexposed to lead, Cignatta would anticipate substantial reductions from the use of a mini-enclosure and directed airflow. Manis's exposure to lead of 2789 ug/m3 would be reduced to 139.45 ug/m3; Tataridis' exposure of 783 ug/m3 would be reduced to 39.15 ug/m3; and Kofinas' exposure of 1963 ug/m3 would be reduced to 98.15 ug/m3.

Record Fails to Establish Feasible Controls

In addition to the other controls previously discussed, the dance floor or mini-enclosure are also not shown by a proponderance of the evidence as feasible controls at the Denison Avenue bridge which would significantly reduce employee exposure to total dust and lead. The record shows that because of the smaller enclosed area and the obstruction caused by the steel girders to the airflow pattern, there may not be sufficient fresh air circulated into the area between the girders to reduce the contaminated dust generated by the abrasive blasting.

In the preamble to the interim lead standard (58 FR 26590, May 4, 1993), the Secretary anticipated that with mechanical ventilation and an enclosure or containment as engineering controls, employees performing abrasive blasting would be exposed to lead levels in the range of 18,650 ug/m3 (Exh. R-35). The monitoring results at the Denison Avenue bridge were in this range. Thus, ACC's general dilution ventilation appears to meet the Secretary's anticipated levels of lead exposure utilizing engineering controls.

The airflow through a dance floor or mini-enclosure was not shown to necessarily remove the dust concentrations between the girders. There were approximately six girders to disrupt any cross airflow ventilation in the dance floor or mini-enclosure. With the dance floor or mini-enclosure, Cignatta testified that there was only an approximate two feet below the girders with an unobstructed path between the fresh air intake (louvers) to the exhaust (dust collector). The airflow was to move under the girders from the louvers to the dust collector (Tr. 863-864). However, the concentration of dust was generated between the girders at the employee's breathing zone. There was no designed air flow directed to this area. The only source of air

between the girders was from the blasting nozzle which directs the abrasives to the steel. Based on the movement of the blast nozzle, it was not shown that air from the nozzle provided a downward draft which captured the dust in the air flow at the employee's feet. The air flow pattern described by Cignatta may preclude the effective removal of the dust created during the blasting operations.

Dr. Stanley Penkala, ACC's expert in air science and a PhD, opined that in the mini-enclosure configuration, lead dust accumulates between the beams (Exh. R-28). He testified that Cignatta's model does not show the rebound effects of air flow when hitting solid objects such as the steel girders. Penkala stated that the air flow drawn past the employee's feet at an efficient rate could result in higher concentrations of dust between the girders at the employee's breathing zone (Tr. 877-878). Penkala testified that Cignatta's air flow recommendations for the mini-enclosure do not adequately remove dust concentrations from the area between the girders where the abrasive blasting operations occur (Tr. 863-864). The air flow moves in a blanket at a steady rate underneath the beams. It fails to capture the dust cloud between the girders (Exh. R-30; Tr. 865). Penkala opines that the dust generated by the blasting process is not captured by the air flow under the girders but instead is recirculated in the area between the beams. According to Penkala, the dust is not removed because there is no make-up air introduced into the area (Tr. 866-867).

Daniel Adley, ACC's expert and certified industrial hygienist and safety professional, testified that when the abrasive material from the blasting nozzle hits the girder, the pulverized grit and paint chips deflect in all directions depending on the orientation of the nozzle to the girder. Adley opined that the level of employee exposure in ACC's containment was well within the range of expected lead exposure during abrasive blasting (Tr. 984). Adley had gathered the exposure data in abrasive blasting for the Secretary's interim lead in construction standards (Tr. 976-977). Also, Adley stated that Cignatta's computer model was ineffective in predicting lead exposure levels because the concentrations of lead in the paint and its thickness were not determined (Tr. 1085-1086).

To support their expert opinion, ACC produced two air monitoring studies. In air monitoring performed in 1994 during abrasive blasting of the lead levels in a containment of 200,000 cubic feet and one of 3,000 cubic feet, the authors concluded that neither containment was of value in reducing an employee's lead exposure. In fact, the smaller containment showed

lead levels three times higher on a geometric mean than the larger containment. Although the monitoring was conducted on a small sample, the report tends to support ACC (Exh. R-26).

In another study performed by the Federal Highway Administration in 1995, the authors also concluded that higher levels of lead exposure were found in the smaller containment. The authors also stated that ventilation systems do not appear to be effective on reducing employee exposure (Exh. R-37).

On the other hand, Cignatta did not perform any air monitoring at the Denison Avenue bridge. He did not observe ACC's abrasive blasting operation or the containment at the Denison Avenue bridge. His computer model is flawed in its depiction of ACC's containment. Also, Cignatta failed to provide quantitative data to establish the nature of any reductions that were anticipated in any bridge painting project where mini-enclosure or dance floor designs were used when compared with the general dilution ventilation used by ACC. He was unable to identify any contractors who used a mini-enclosure or dance floor similar to his designs for ACC (Tr. 747).

Cignatta's report "Computer Aided Engineering For Design of Ventilation System at Industrial Painting Projects" is of limited value to this case (Exh. C-30). The primary example discussed involved the abrasive blasting of a water tank where a vertical containment was designed. The containment had the fresh air intake at the top and the dust collector at the bottom, creating a downward air flow pattern past the employees working from pickboards. The greatest reduction in exposure resulted, however, from replacing the solid pickboard with a grated pickboard. Thus, there was no obstruction to the air flow pushing the dust cloud down and away from the employee's breathing zone.

As a result of testifying as an expert in *E. Smalis Painting Co., Inc.*, 1995-1997 CCH OSHD ¶ 31,113 (No. 94-1979, 1996; directed for review), Cignatta prepared a report (Exh. C-31). The report and the judge's decision show that Cignatta anticipated reductions in lead levels from an average of 23,000 ug/m3 (three abrasive blaster sampled by OSHA) to less than 500 ug/m3 with the use of the mini-enclosure and ventilation. However, the record does not show the design of the enclosure or describe the air flow pattern for comparison in this case. Also, as noted by the judge, the respondent did not present any evidence of infeasibility in the *E. Smalis* case.

Although the court is not convinced that employee exposure cannot be improved, the record in this case fails to establish that the controls recommended by the Secretary provide significant reductions in the employee's exposure to total dust and lead. Even with engineering controls, an employee's exposure would still significantly exceed the PEL and the employee

would still need to wear a Bullard CE type respirator (Tr. 765). Also, the Secretary does not discuss the costs of the proposed dance floor or mini-enclosure. The Secretary argues that ACC can include the cost of engineering controls when estimating the cost of the project (Secretary's Brief, p. 27). Contractors who do not include regulatory costs in their bids obtain an unfair advantage over more responsible contractors. However, the Secretary must identify generally the cost of recommended controls. In discussing proof of economic feasibility, the Review Commission in *Smith Steel Casting Co.*, 15 BNA OSHC 1001, 1010 (No. 80-2322, 1991), stated that the " Secretary did not have the burden to establish an employer's cost of compliance to a definitive degree of certainty; rather, absent rebuttal evidence, the Secretary was only obligated to adduce enough evidence to support a *prima facia* case." In *Smith Steel Casting Co.*,the Secretary's expert used his experience in estimating costs for proposed controls. In this case, there should have been at least some general cost information. The alleged violations of §§ 1926.55(b) and 1926.62(e)(1) are vacated.

Remaining Violations Alleged in Citation No. 1

Item 2a and 2b - Alleged violations of §§ 1926.62(h)(5) and 1926.1127(k)(6)

The citation alleges that employees performing abrasive blasting were exposed to lead and cadmium when they used compressed air to blow paint chips, dust, and used abrasive from the top to the bottom of the abutment. Section 1926.62(h)(5) provides:

> Compressed air shall not be used to remove lead from any surface unless the compressed air is used in conjunction with a ventilation system designed to capture the airborne dust created by the compressed air.

Similarly, under the cadmium standard, § 1926.1127(k)(6) provides:

> Compressed air shall not be used to remove cadmium from any surface unless the compressed air is used in conjunction with a ventilation system designed to capture the dust cloud created by the compressed air.

The standards regulate employee exposure to lead and cadmium when using compressed air to clean surfaces after abrasive blasting activities. The use of compressed air is permitted to clean surfaces if used in conjunction with a ventilation system capable of capturing the resulting airborne dust. The purpose is to prevent employee exposure (Tr. 111).

It is undisputed that ACC used hoses with compressed air to clean the steel after completing the abrasive blasting (Exh. C-3; Tr. 108-109). ACC referred to the operation as "blowing down." After the abrasive blasting, the steel needs to be cleaned of dust particles and debris prior to painting. The same employees who did the blasting also performed the cleaning. There is no dispute that the dust and paint chips contained lead and cadmium. While preforming the blowing down operation, employees wear negative pressure respirators (Exh. R-4; Tr. 181). The cleaning was done inside the containment with the tarps in place and the dust collector on and pulling air through the structure (Tr. 110).

The Secretary argues that the dust collector used by ACC did not capture the airborne dust created during cleaning. The Secretary claims that ACC's dust collector was an inadequate ventilation system to capture the dust (Secretary's Brief, p. 30). The Secretary recommends using vacuuming to collect the dust as opposed to using an air hose (Tr. 112).

The record, however, does not support a finding that ACC's dust collection system was inadequate. The Secretary performed no air flow monitoring during the blowing down operation. The Secretary's air monitoring of employees was done during abrasive blasting, not during the cleaning process with compressed air. Employees's exposure levels to lead and cadmium were not monitored. There is no showing that the dust collector did not capture the airborne dust created during the blowing down operations. The dust collector has 45,000 cfm rated capacity. Dan Adley, ACC's expert, testified that the general dilution system used by ACC was capable of capturing particles of dust generated during ACC's cleaning through the dust collector (Tr. 989-990). The violations are vacated.

Item 3 - Alleged Violation of § 1926.62(j)(2)(i)(A)

The citation alleges that ACC failed to perform biological monitoring for employees exposed to lead concentrations greater than 50 ug/m3 PEL. Section 1926.62(j)(2)(i)(A) requires that biological monitoring be performed:

> For each employee covered under paragraph (j)(1)(ii) of this section, at least every 2 months for the first 6 months and every 6 months thereafter;

Section 1926.62(j) contains the medical surveillance provisions for exposure to lead in construction. Section 1926.62(j)(1)(ii) applies to employees "who are or may be exposed by the employer at or above the action level for more than 30 days in any consecutive 12 months." If

determined, an employer is required to perform regular biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin.

Nickolas Kofinas, John Manis and Nasos Tataridis, the employees performing abrasive blasting, were employed by ACC for more than 30 days in 1996 (Exh. C-23, responses 5, 8, and 11). ACC does not dispute that the three employees were exposed to lead at or above the action level (30 ug/m3) for more than 30 days (Exh. C-23, responses 6, 9, and 12). Kofinas , Manis, and Tataridis received blood tests in March, 1996 ,which is the start of the construction season (Exhs. C-13, R-10; Tr. 38, 116-117). Manis was retested on October 14, 1996 (Exh. R-10), and Tatridis was retested on October 16, 1996 (Exh. C-13). However, there is no showing that Kofinas was retested.

Because the employees were employed by ACC for several years[6], ACC is required to retest their blood every six months for lead and zinc protoporphyrin. The employees should have been retested in September, 1996. ACC does not dispute the violation but seeks to have it reclassified as other than serious (ACC Brief, p. 24). ACC argues that the employees wore C. E. Bullard positive-air supplied respirators during abrasive blasting and negative pressure respirators during non-blasting operations (Exh. R-4; Tr. 181, 200). ACC argues that its failure by two weeks to have employees' blood tested for lead did not directly cause any employee exposure to serious physical harm or injury.

The standard requires retesting every six months for permanant employees to determine whether an employee's lead levels are increasing. If an employee's lead level exceeds 50 micrograms, the employee is medically removed from the job. By retesting employees, an employer has an opportunity to assess its overall lead program and the employee's work practices. By failing to regularly retest, an employee's lead levels may unexpectedly increase and cause lead poisoning. When another employee (Koppos) was retested in October, 1996, his blood level exceeded 50 micrograms and he needed to be medically reassigned (Exh. C-13, Tr. 118). The violation is affirmed as serious.

Item 4a and 4b - Alleged Violation of § 1926.1127(d)(1)(i)

The citation alleges that ACC did not test employees for possible exposure to airborne cadmium (Item 4a). The citation also alleges that the designated competent person was not

[6] Kofinas and Tataridis have been employed by ACC in excess of 15 years (Tr. 338).

capable of identifying hazards associated with cadmium exposure (Item 4b). Section 1926.1127(d)(1)(i) provides in part that:

> Prior to the performance of any construction work where employees may be potentially exposed to cadmium, the employer shall establish the applicability of this standard by determining whether cadmium is present in the workplace and whether there is the possibility that employee exposures will be at or above the action level. The employer shall designate a competent person who shall make this determination.

The Secretary argues that ACC failed to determine the potential for cadmium exposure at or above the action level of 2.5 ug/m3. A "competent person" is defined at § 1926.1127(b) as a "person designated by the employer to act on the employer's behalf who is capable of identifying existing and potential cadmium hazards in the workplace." Section 1926.1127(d) requires that in determining the potential exposure to cadmium, an "investigation shall include a review of relevant plans, past reports, material safety data sheets, and other available records, and consultations with the property owner and discussions with appropriate individuals and agencies." The Secretary argues that ACC failed to undertake any initial investigation (Secretary's Brief, p. 34).

Item 4a

Prior to abrasive blasting, ACC performed a TCLP extraction and air monitoring for lead on October 13 at the bridge site (Tr. 125). The TCLP extraction determines whether the residue dust that is separated from the reuseable shot can be placed in a regular landfill or whether it must be disposed of in a hazardous waste landfill. The test does not determine whether cadmium in a surfacing coating will become airborne in the dust generated during abrasive blasting (Tr. 126). There was no air monitoring for cadmium.

ACC does not dispute that cadmium was present in the dust generated during abrasive blasting on the Denison Street bridge. The Secretary's air monitoring found three employees (Manis, Kofinas, Tataridis) exposed to cadmium. John Manis'monitoring result was 2.747 mg/m3 and Nasos Tataridis' monitoring result was 2.984 mg/m3--above the action level of 2.5 ug/m3. Nick Kofinas' monitoring result was 2.035 mg/m3 (Exhs. C-4, C-6, C-7).

Prior to starting the Denison Avenue bridge project, ACC retained Project Teach to perform initial air monitoring at the Denision bridge (Tr. 357-358, 1218). Job superintendent

Kozanis acknowledges that the samples were not analyzed for cadmium (Tr. 370-371). He concedes that it was a mistake (Tr. 341). Also, Harry Koumoundouros, ACC quality control supervisor, testified that air monitoring results at other ACC bridge projects in 1996 found the presence of lead and cadmium (Tr. 1219, 1228).

ACC states that it did test for the presence of cadmium in a bulk sample by a TCLP extraction. However, an extraction test performed in May, 1995, at another project found cadmium levels of 1.2 to 2.8 ug/m3 (Exh. C-14, Tr. 127). ACC argues that the violation for failing to test should be vacated or reduced to other than serious because employees wore appropriate personal protective equipment (ACC Brief, p. 25).

The record supports a finding that ACC did not make a determination regarding the potential exposure to cadmium. ACC performed no air monitoring or did not show that it performed other investigations into the potential for cadmium exposure. The TCLP extraction is a bulk sample and was not shown to provide information about the airborne exposure to cadmium. The standard requires a determination of the possibility that employee exposure may exceed the action level. Also, ACC was aware from monitoring results at other bridge projects of the potential for cadmium exposure during abrasive blasting. During a 1995 OSHA inspection, air monitoring results found cadmium levels above the action level (Tr. 34).

Item 4b

With regard to the competent person violation, there is no dispute that superintendent Kostas Kozanis was ACC's designated competent person for the Denison Avenue bridge project (Tr. 128). To receive his competent person certification, Kozanis attended a specialized course at the Steel Structure's Painting Council (Exh. R-40, p. 26). The Secretary alleges that Kozanis did not understand the difference between TCLP extraction results and testing for cadmium which could become airborne (Tr. 128).

Kozanis testified that he receives 40 hours of safety refresher training each year (Tr. 332). The training includes annual cadmium training (Tr. 341). He learned during training the PEL for cadmium and the minimum air flow rate needed inside the containment was 105 (Tr. 341, 355).

The cadmium standard contains specific definitions and assigns certain responsibilities to the designated competent person. Most importantly, the competent person must be capable of identifying the potential for cadmium in the work place. Kozanis' reliance on the TCLP extraction results and monitoring done by Project Teach did not relieve him from his

responsibilities as a competent person. There was no showing that Project Teach was instructed to monitor for cadmium or that the TCLP extraction detected the potential for cadmium as required by the standard. Kozanis conceded in fact that no monitoring was performed for cadmium. Kozanis did not know what TCLP was or if a test was to be performed (Tr. 363). Further, Kozanis had specific knowledge of the potential for cadmium because he was the superintendent at a previous bridge project where cadmium exposure was detected (Tr. 34). The violation is affirmed.

Remaining Violations in Repeat Citation No. 2

Item 1c - Alleged Violation of § 1926.62(e)(2)(ii)

Section 1926.62(e)(2) requires that prior to the commencement of a job, an employer is required to establish and implement a written compliance program to achieve compliance with the PEL requirements for lead exposure. The citation alleges that ACC's written compliance program for lead did not contain certain required elements, including Element B - engineering plans and studies used to determine methods selected for controlling exposure; Element C - a report of the technology considered in meeting the PEL; Element E - a detailed schedule for implementation of the program; and Element H - a description of the arrangements made among contractors to inform affected employees of their potential exposure to lead. ACC argues that it prepared specific information for Denison bridge project that identifies the lead disturbing activities, describes the nature of the activity and specifies engineering controls employed on the project. The plan, as described in the Secretary's preamble, "should be a written strategy and schedule for protecting workers from occupational hazards and must incorporate all relevant information that relates to those goals, so that one could determine whether the employer reasonably analyzed the problems and their solutions, including alternatives." 58 FR, *supra* at 26601 (1993).

During OSHA's inspection, superintendent Kozanis produced two documents from a binder in his pickup truck, which he identified as ACC's written lead program (Exhs. C-15, C-16; Tr. 132). These documents were entitled "Lead Hazards in Construction" and ACC's "Worker Lead Protection Program." The documents provided general information about lead and did not specifically refer to the Denison Avenue bridge project. However, none of the attachments to Appendix A of the "Worker Lead Protection Program" were provided, including "Lead Paint Removal Project Specific Requirements" (Exh. C-16). Also, the "Engineering Evaluation" form

which was required to be filled out prior to starting the job was not completed (Exh. C-15). Kozanis explained his attitude for creating documents, such as the "Lead Paint Removal Project Specific Requirements," when he stated that "I've got to have something to show somebody" (Tr. 357). Additionally, Danann was provided a manufacturer's brochure for the dust collector and a copy of the contractor notification form (Exh. C-17; Tr. 135).

Element B requires documentation showing the engineering plans and studies used to determine methods selected for controlling exposure. ACC's written program describes the nature of the containment used for bridge painting projects. It identifies the need for the dust collector (exhaust) and air flow to maintain negative air pressure inside the containment (Exh. C-15). The program states that ACC will employ general dilution ventilation through the use of a dust collector and air movement at 105 feet per minute (Exh. C-24, p. 2). However, there are no studies or plans in ACC documentation showing how or why ACC chose general dilution ventilation as its method to control employee lead exposure. ACC's plan bears no resemblance to the containment used at the Denison Avenue bridge or how it intends to achieve the required air movement (Exh. C-18). The Federal Highway Administration identified the importance for a plan:

> Good linear air flow is essential for low worker exposures. Linear air flow can only be achieved with well thought out input and exhaust ducts.

("Lead-Containing Paint Removal, Containment and Disposal," Exh. R-37, p. 66).

ACC's plan contains no information regarding the method used to determine which controls would be implemented at Denison Avenue. It does not contain measurements, diagrams, mathematical formulas and calculations. This is the type of informationn required by Element B. Such information was provided by ACC at a prior bridge project (Exh. C-19).

In order to satisfy its obligations under Element C and Element E, an employer must have a report of the technology used to satisfy the PEL requirements and a detailed schedule for implementing its program. Superintendent Kozanis prepared the pre-job hazard analysis identifying the controls and implementation plan used at the project (Exh. R-13; Tr. 347). His analysis identified where the lead hazard was created and the use of recycling equipment, dust collectors, containment tarps and respirators. It also required the containment to maintain negative air presssure. Also, ACC relies on the manufacturer's brochure of the dust collector and

a report of monitoring (Exhs. R-14, R-15). According to ACC, the dust collector is the "top of the line" and cost $78,000 (Exh. R-40, p. 24). Although the Secretary does not believe the engineering controls used by ACC were adequate, the controls used were documented sufficiently to satisfy the requirements of Elements C and E. The Secretary fails to show how such documents were deficient. Element H requires a description of the arrangements made with other contractors. The contractor notificaton form given to Danann was blank (Exh. C-17; Tr. 135). Superintendent Kozanis testified that ACC informed Ruhlin Co., the general contractor, of the potential for lead exposure (Exh. R-11; Tr. 367-368). The document was received by Ruhlin Co. on May 11, 1996. In addition to Ruhlin, however, there were other trades working on the Denison Avenue bridge project, including contractors doing carpentry and concrete removal work (Tr. 37). There is no showing that the notification was provided to the other contractors. Since it was ACC's work which generated the potential lead exposure, ACC retained the responsibility to assure that all affected employees were informed.

The violation is affirmed as serious in that Elements B and H were not included in ACC's written program. The failure to include completed Elements B and H is shown to directly relate to employee's health from lead exposure.

Item 2 - Alleged Violation of § 1926.62(i)(4)(ii)

The citation alleges that based on wipe samples from the surface of the lunch table and the spigot of the water jug, ACC's eating area was not free as practicable from lead contamination. Section 1926.62(i)(4)(ii) provides that:

> The employer shall assure that lunchroom facilities or eating areas are as free as practicable from lead contamination.

ACC provided employees with a trailer for eating meals, taking smoke breaks and getting a drink of water. Before entering the trailer, employees were expected to remove their uniform, vacuum off their clothes and wash (Tr. 350). According to ACC, the trailer was cleaned by the quality control person in the morning before the morning break (Tr. 144, 361-362). The quality control person also was responsible for getting a profile of the steel being blasted, the weather conditions and temperature, and delivering the material for the blasting operation (Tr. 366-367). The testimony of Harry Koumondouris, quality control person, is ambiquous and vague as to the frequency of cleaning the trailer.

Q. Who is responsible for cleaning it?
A. The Government is responsible for cleaning the lunch trailer and the shower trailers, but I made a practice in the past to go there myself and clean--no clean; check both trailers. If something is not done properly, I'll take care of it myself.
Q. At this Denison Avenue, did you have an opportunity to clean the lunch room or lunch trailer?
A. I went there a couple times, yes.

(Tr. 1217).

Compliance officer Danann took two wipe samples with dampened filter paper in the lunch trailer (Tr. 80). The wipe sample from the lunch table showed 0.78 micorgrams of lead per square centimeter. The spigot to the water jug showed 1.67 micrograms per square centimeter (Exh. C-5). Danann testified that the spigot was visibly dirty (Tr. 80, 142). The sample results exceeded the 200 micrograms per square foot (or 0.22 micrograms per square centimeter) as required by the Housing and Urban Development Guidelines[7] for decontamination (Tr. 81-85). OSHA CPL 2-2.58 recommends the use of HUD's levels (Tr. 81, 83).

Although "practicable" is not defined in the standard, the dictionary definition is "capable of being done, effect, or performed; feasible." Cleaning the meal area at least once a day seems a reasonable frequency. ACC agrees based on its stated policy (Tr. 361). The use of HUD guidelines is also a reasonable standard for cleanliness. The Secretary argues that ACC did not clean its eating areas as often as was feasible (Secretary's Brief, p. 40).

The violation is affirmed. The ambiquous testimony of the quality control person fails to show that the trailer was regularly cleaned at least once a day. Based on repeated employee use for breaks and meals, cleaning the meal area once a day is a minimum reasonable expectation. ACC's work on the bridge project was during the days, nights, and on weekends, depending on the work and need to close traffic lanes on Interstate 71 (Tr. 354). The wipe samples were taken from the table and spigot. There is no evidence how long the dust had accumulated or when ACC last cleaned the meal area prior to the wipe samples. The violation is serious in that at least five employees were exposed, and consumation of lead is one means by which employees are exposed to potential serious short-term and long-term health affects.

[7]HUD Guidelines use the unit of square feet (Tr. 81).

Item 3 - Alleged Violation § 1926.62(l)(1)(iv)

The citation alleges that employees who were exposed to lead at or above the action level of 30 ug/m3 were not provided annual re-training. Section 1926.62(l)(1)(iv) provides that:

> The employer shall also provide the training program at least annually for each employee who is subject to lead exposure at or above the action level on any day.

The standard requires annual lead training for employees. Section 1926.62(l)(2) identifies eight topics on which employees must be trained. ACC acknowledges that Nick Kofinas, an employee performing abrasive blasting, did not receive training in 1996 (Exh. C-21, Para 7). On October 26, 1996, Kofinas' lead exposure was 1963 ug/m3, 65 times above the 30 ug/m3 action level.

ACC argues that it maintains a comprehensive lead training program for employees which is conducted in the spring of each year (Exh. R-40, p. 27; ACC Brief, p. 29). The training program consists of a review of the lead standard requirements. The employees also receive their initial physical examinations, blood tests and respirator fit tests (Exhs. C-15, C-16, R-40, p. 26-27). The training is conducted at the commencement of the construction season in the spring. If unable to attend the initial training session, employees are supposed to receive the training when first reporting to work (Exh. R-40, p. 29). According to ACC, employees who miss the March training session receive it at the worksite.

The violation is affirmed. There is no dispute that at least one employee did not receive the annual training in 1996. The failure to provide Kofinas lead training in 1996 indicates a weakness in ACC's training program. It shows a deficiency in ACC's monitoring of its training programs. ACC is a small employer with less than 15 employees (Tr. 301).

The violation, however, is other than serious because only Kofinas was not trained in 1996. There is no evidence that Kofinas, who had been employed by ACC for 25 years, was not trained in the prior years (Tr. 338). The missed 1996 training may have merely reinforced Kofinas's previous training. Kofinas was not a witness.

Repeat Consideration for Citation 2

The violations alleged in Citation No. 2 were classified as repeat violations. The Secretary's basis for alleging repeat violations is previous citations issued on January 28, 1994, to Atlas-Scordos Painting, Inc., a bridge painting company with Nick Pontikos as president (Exh. C-20). The citations became a final order of the Review Commission on July 25, 1994.

A violation is a repeated violation if, at the time of the violation, there was a Commisssion final order against the same employer for a substantially similar violation. *Potlatch Corp*., 7 BNA OSHC 1061, 1063 (No. 16183, 1979). Unless the violation involves a general standard, the Secretary establishes substantial similarity by showing that both violations are of the same standard. *Monitor Constr. Co*., 16 BNA OSHC 1589, 1594 (No. 91-1807, 1994).

There is no dispute that the same standards were previously violated and became a final order of the Review Commission. The issue is whether the citations were issued to the same employer. The Secretary argues that repeat violations are established because of the commonalities between Atlas Central Corporation and Atlas-Scordos Painting, Inc.

"Only an employer may be cited for a violation of the Act." *Vergona Crane Co*., 15 BNA OSHC 1782, 1783 (No. 88-1745, 1992). Section 3(5) of the Act defines an employer as "a person engaged in a business affecting commerce who has employees." Section 3(4) defines a person as "one or more individuals, partnerships, assiciations, corporations, business trusts, legal representatives, or any organized group of persons."

ACC is a corporation with Nick Pontikos as president and owner (Tr. 30, 133-134, 328). Atlas-Scordos Painting, Inc., is also as a corporation and apparantly was a joint venture between Nick Pontikos and Mike Scordos as presidents (Tr. 328). Bill Pontikos is the secretary-treasurer for both companies (Tr. 30, 328). Both ACC and Atlas-Scordos Painting, Inc., are in the bridge painting business (Tr. 30). Compliance officer Danann had inspected Atlas-Scordos three times (two sites in 1993 and one site in 1995). When she inspected Atlas-Scordos in 1995, superintendent Kozanis was working as the foreman on the project. Cathy Royle, the health and safety director of ACC, was directing lead compliance activities. Also, during the inspection, Atlas-Scordos and ACC shared office space and were located at the same address (Tr. 30-31).

The Secretary argues that the two business should be treated as a single employer for the repeat classification because the two entities have common ownership and officers and were engaged in the same type of business. *NLRB v. Patterson Menhaden Corp.*, 389 F.2d 701 (5th Cir. 1968). The Secretary's argument is misplaced. Unlike the willful classification, which requires a showing of an employer's knowledge and intent, the repeat classification by definition

is limited to the same employer. ACC and Atlas-Scordos are different legal entities and can not be considered as the same employer for the purposes of a repeat classification.

Other Than Serious Citation No. 3

Item 1 - Alleged Violation of § 1926.1127(m)(4)(iii)(A)

The citation alleges that ACC's cadmium training did not identify lung cancer as a potential long-term health effect. Section 1926.1127(m)(4)(iii)(A) provides:

> (iii) The employer shall make the training program understandable to the employee and shall assure that each employee is informed of the following:
>
> > (A) The health hazards associated with cadmium exposure, with special attention to the information incorporated in appendix A to this section;

An employer's cadmium training program is required to inform employees of the health hazards associated with cadmium exposure. Appendix A to the standard provides the information contained on the safety data sheet, including the potential health hazards from short-term (acute) and long-term (chronic) exposures. The long-term exposure warns that "repeated or long-term exposure to cadmium, even at relatively low concentrations, may result in kidney damage and an increased risk of cancer of the lungs and the prostate."

The record shows that three employees (Manis, Kofinas, Tataridis) performing abrasive blasting were exposed to cadmium; two employees were exposed above the action level of 2.5 ug/m3 (Exhs. C-4, C-6, C-7). Thus, the employees should have been informed of the cancer risk associated with cadmium exposure. A review of ACC's written safety program "Cadmium Safety In Construction" shows no specific reference to the potential risk of lung cancer (Exh. C-22; Tr. 150). However, the program does review in some detail the nature of cadmium, how exposure occurs, cadmium's action level and the PEL, and certain health hazard information of short-term and long-term effects. Under long-term effects, the program describes that the exposure to cadmium has caused an increase in cancer hazards, including cancer of the prostate (Exh. C-22, p. 2-3). ACC argues that OSHA's citation is "nit picking" (ACC Brief, p. 30).

The court disagrees. The standard requires that employees be informed of the potential health hazards associated with exposure to cadmium. It directs that special attention be given to the health hazards identified in Appendix A. ACC's program fails to identify lung cancer as a potential health hazard. Based on the nature of employee exposure, it is more important that

ACC inform employees of the potential for lung cancer. ACC's employees regularly work in areas of high dust concentrations which potentially contain airborne cadmium. Inhalation and swallowing are the means of exposure. Therefore, the potential for lung cancer reinforces the employees' need to wear appropriate respiratory equipment. There is no showing that ACC informed employees of the potential of lung cancer. The violation is affirmed.

Penalty Considerations for Citation Nos. 1 and 2

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.

ACC is entitled to credit for size and good faith. ACC is a small employer with less than 15 employees (Tr. 301). Also, ACC maintained appropriate health and safety programs which were, for the most part, adequate (Tr. 302). ACC is not entitled to credit for history because ACC has been previously cited for serious violations (Tr. 152).

Serious Citation No. 1

A penalty of $625 is reasonable for failing to perform biological monitoring as required by § 1926.62(j)(2)(i)(A) (Item 3). The three employees performing abrasive blasting were exposed to extremely high levels of airborne concentrations of lead. One employee did not receive a blood test in 1996 and the other employees did not receive blood tests within the six-month frequency set by the Secretary. However, the employees wore appropriate personal protective equipment, including an air flow respirator.

A penalty of $625 for violation of § 1926.1127(d)(1)(i) (Items 4a and 4b) is reasonable for failing to determine the presence of cadmium in the workplace. At least two employees were exposed above the action level for cadmium.

Repeat Citation No. 2

A penalty of $625 for serious violation of § 1926.62(e)(2)(ii) (item 1c) is reasonable. A written control plan is necessary to show compliance with the PEL requirements for lead exposure.

A penalty of $625 for serious violation of § 1926.62(i)(4)(ii) (item 2) is reasonable. ACC's cleaning in the meal trailer was not shown to be regular or adequate. The wipe samples showed excessive amounts of lead contamination on the table where employees ate and from the spigot used by employees to obtain water. At least five employees working at the Denison Avenue bridge project were exposed to accumulations of lead in the trailer.

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:

Serious Citation No. 1:

1. Item 1a, violation of § 1926.55(a), and item 1b,violation of § 1926.55(b), are vacated.

2. Item 2a, violation of § 1926.62(h)(5), and item 2b, violation of § 1926.1127(k)(6), are vacated.

3. Item 3, violation of §1926.62(j)(2)(i)(A), is affirmed and a penalty of $625 is assessed.

4. Item 4a, violation of § 1926.1127(d)(1)(i), and item 4b, violation of § 1926.1127(d)(1)(i), are affirmed and a grouped penalty of $625 is assessed.

Repeat Citation No. 2:

1. Item 1a, violation of § 1926.62(c)(1), and item 1b, violation of § 1926.62(e)(1), are vacated.

2. Item 1c, violation of § 1926.62(e)(2)(ii), is affirmed as serious and a penalty of $625 is assessed.

3. Item 2, violation of § 1926.62(i)(4)(ii), is affirmed as serious and a penalty of $625 is assessed.

3. Item 3, violation of § 1926.62(l)(1)(iv), is affirmed as other than serious and no penalty is assessed.

Other Than Serious Citation No. 3

1. Item 1, violation of § 1926.1127(m)(4)(iii)(A), is affirmed and no penalty is assessed.

KEN S. WELSCH
Judge

Date: February 15, 1999