Secretary of Labor,

Complainant,

v.

Mead Coated Board, Inc.,

Respondent,

PACE International and PACE Local #3-1471,

Authorized Employee Representative.

OSHRC Docket No. **01-0551**

Appearances:

Kathleen G. Henderson, Esq., Office of the Solicitor, U. S. Department of Labor, Atlanta, Georgia
For Complainant

Mark S. Dreux, Esq., Arent, Fox, Kintner, Plotkin & Kahn, Washington, D.C.
For Respondent

Mr. Jack D. Franks, President, PACE, Local #3-1471, Phenix City, Alabama
For Authorized Employee Representative

Before: Administrative Law Judge Ken S. Welsch

DECISION AND ORDER

Mead Coated Board, Inc., (MCB) produces coated natural kraft paper at a mill in Cottonton, Alabama. During a mill outage on September 15, 2000, the inadvertent transfer of acidic brine into the boilout tank containing water and black liquor caused the release of a chemical vapor. After the release, the mill was evacuated. Two employees were temporarily hospitalized and several employees received oxygen treatments. Because of the release, the Occupational Safety and Health (OSHA) inspected MCB's processes in the chemical recovery tank farm area and determined that the release was hydrogen sulfide (H_2S). MCB received serious, willful, and repeat citations on March 2, 2001, which were timely contested.

Serious citation no. 1 alleges that MCB violated 29 C.F.R. § 1910.120(q)(2)(iv) (item 1) for failing to designate assembly points for employees at safe distances during an H_2S release; 29 C.F.R. §§ 1910.134(d)(1)(i) and 1910.134(d)(1)(iii) (items 2a and 2b) for failing to evaluate, identify, select,

and provide appropriate respirators for potential H_2S exposure; 29 C.F.R. § 1910.147(c)(6)(i) (item 3) for failing to audit specific lockout procedures annually; 29 C.F.R. § 1910.147(d)(6) (item 4) for failing to verify prior to performing work that all energy sources to the boilout tank and the #1 and #2, 50% black liquor tanks, were isolated; and 29 C.F.R. § 1910.1200(h)(1) or, in the alternative, 29 C.F.R. § 1910.1200(h)(2)(ii) (item 5) for failing to provide contractors with effective information as to the potential for an H_2S release. The serious citation proposes total penalties of $7,650.

Willful citation no. 2 alleges that MCB violated 29 C.F.R. § 1910.147(c)(4)(i) for failing to develop written machine specific lockout procedures for the boilout tank and the #1 and #2, 50% black liquor tanks. The willful citation proposes a penalty of $55,000.

Repeat citation no. 3 alleges that MCB violated 29 C.F.R. § 1910.261(b)(1) or, in the alternative, 29 C.F.R. § 1910.147(d)(3) for failing to apply all energy isolating devices to control the flow of chemicals to and from the boilout tank and the #1 and #2, 50% black liquor tanks, on September 15, 2000. The repeat citation proposes a penalty of $10,000. The repeat classification is based on a citation issued to Mead Corporation at a plant in Chillicothe, Ohio, on August 13, 1999.

The 28 days of hearing during November 2001 to February 2002 were held in Columbus, Georgia, and Phenix City, Alabama. P.A.C.E., Local #3-1471, participated in the hearing as a designated party (Tr. 5-6). The parties stipulated jurisdiction and coverage (Tr. 50). They filed post-hearing briefs and reply briefs.

MCB denies the violations and asserts that it was in compliance with the cited standards. MCB claims that the release was a non-hazardous acid mist and argues that it was unforseen because acid brine was inadvertently pumped to the boilout tank due to unpreventable employee misconduct.[1] Also, MCB argues that the work activity on the boilout tank and two 50% black liquor tanks was "construction" and not "servicing and maintenance" as required by the lockout/tagout standards.

For the reasons discussed, the violation of 29 C.F.R. § 1910.261(b)(1) (citation no. 3) is affirmed as serious and a penalty of $5,000 is assessed. The other alleged violations are vacated.

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[1]At the hearing, MCB was permitted to amend its pleading to allege an unpreventable employee misconduct defense (Tr. 1138-1139).

The September 15, 2000, Release

MCB, a division of Mead Corporation since 1987, operates a kraft mill in Cottonton, Alabama, referred to as the Mahrt mill. The mill produces coated natural kraft paper, which is a light grade cardboard used to package soft drinks and other products. The mill also produces tall oil and turpentine as by-products (Tr. 78-79, 81, 83, 92, 293).

The mill, located on 1,100 acres (approximately 1.8 square miles), operates four shifts, 24 hours a day, 7 days a week. The mill employs approximately 740 employees. Also, approximately 1,700 employees of 64 contractors worked at the mill during the September 2000 outage (Exh. C-9; Tr. 91, 274, 553-555).

The mill's chemical recovery area is where chemicals such as black liquor are stored for recycling. The area includes weak and strong black liquor storage tanks, recovery boilers, evaporators, and white liquor tanks. When weak black liquor enters the chemical recovery area, it contains approximately 17% solids. After the weak black liquor is concentrated to 70% solids, it is burned in the recovery boiler to generate steam and power the plant (Exhs. C-9, R-11; Tr. 298, 2529-2531).

Within the chemical recovery area, there is the tank farm area where the tanks referenced in the citations, the boilout tank, #1, 50% black liquor tank, and #2, 50% black liquor tank, are located. The boilout tank and 50% black liquor tanks sit in a triangular formation, approximately 10-15 feet apart (Exh. R-2: Tr. 250). The tanks are connected to other areas of the mill by a system of pipelines.

The boilout tank is 35 feet high and 40 feet in diameter. It was rebuilt and put back into service in February 2000. A 20-inch hatchway is located in the roof. The tank has no internal moving parts and consists of a stainless steel shell. During operation, the tank collects liquor at varying strengths, as well as waste from different processes. The liquor is reconcentrated into 50% black liquor. Approximately 12 pipelines connect to the boilout tank (Exhs. C-35, R-2; Tr. 248, 298, 714-717, 1108, 2339-2340).

The #1 and #2 black liquor tanks contain 50% black liquor. The #1 tank is 44 feet high and 40 feet in diameter. The #2 tank is 32 feet high and 30 feet in diameter. The black liquor tanks also

have no internal moving parts and consist of steel shells. The tanks store 50% black liquor before it is sent to the condensers for concentration to 70% black liquor (Exh. R-2; Tr. 719-721).

On September 4, 2000, MCB initiated an annual outage in order to perform capitol projects at the mill. To assist in the projects, MCB used approximately 64 contractors. Many of the contractors maintain a presence at the mill year round. September 4-11 was the pre-outage period when the projects were laid out. The outage work started on September 11. During the outage, the mill ceased all production (Exh. C-30; Tr. 121-122, 553).

As a project designated for the September 2000 outage, MCB contracted American Boiler Construction (ABC)[2] to install an overflow pipeline from the top of the #1, 50% black liquor tank, to the #2, 50% black liquor tank, and a second overflow pipeline from the top of the #2, 50% black liquor tank, to the boilout tank, instead of going to the sewer. Also, an existing overflow pipeline at the top of the boilout tank was to be lowered approximately 2 feet to permit overflow material to enter the sewer system rather than back into the #2 tank. The purpose of this tie-in project was to increase the storage capacity of the black liquor tanks and ensure that black liquor was not wasted in the event of a tank's overflow. The project had been planned and budgeted for a year (Exhs. R-2, R-3; Tr. 247-248, 353, 683, 1076-1077, 2344).

The tie-in project required ABC to cut into the shells of the tanks, fabricate piping and other components, install the piping and components on the tanks, and lower and reinstall an overflow line. To install the pipeline from the #1 to the #2 tanks, ABC cut a hole in the wall of each tank and welded the new pipeline in place. The pipeline from the #2 tank to the boilout tank required only a new penetration in the boilout tank because the #2 tank already had an existing nozzle opening. Lowering the overflow line on the boilout tank required penetrating the tank's shell and welding the new line in place. ABC's work was performed on the outside of the tanks in the outdoors.

By September 15, 2000, most of the tie-in work was completed. The pipelines between the #1 and #2 black liquor tanks and between the #2 black liquor tank and the boilout tank were finished. Also, the existing overflow pipeline on the boilout tank had been lowered two feet. The only work

[2]ABC regularly works at the mill rebuilding and repairing recovery boilers and piping (Tr. 247).

remaining involved placing a doubler and a nozzle on the new overflow line (Tr. 384-386, 736-737, 1056-1058).

In another part of the chemical recovery area, another project, which involved replacing the sulfuric acid piping system to the #1 paper machine, was also being completed. The exiting piping had been leaking and MCB contracted Hammond Construction (HC) to install the new piping and demolish the old piping. HC began the work in August 2000 and had installed approximately 600 feet of new piping from the day tank to the #1 paper machine. The project was to be completed during the September 2000 mill outage (Exh. R-11; Tr. 3709, 3717-3718, 3720, 3722, 3725, 3748).

On September 14, 2000, approximately 194 gallons of sulfuric acid from the old acid lines were drained to the reaction tank in the tall oil area to allow HC to demolish the old lines. To drain the sulfuric acid, valves were opened and air was applied. Once the acid was drained into the reaction tank, the pumps to the paper machine were started. When the pumps started, the valves to the reaction tank, which were inadvertently left open, allowed additional acid to transfer into the reaction tank (Tr. 810-811, 857-858, 1082, 3721-3722, 3738).

When Jimmy Williams, the assistant operations manager for chemical recovery, was notified of the acid in the reaction tank, he instructed technical assistant Edgar Atkins to add soap to the tank to get "some neutralization." Operator Allen Shirley added the soap on September 14 at approximately 10:30 p.m. After adding the soap, Shirley tested the contents and found it still too acidic. Shirley testified that "after we added the soap and it quit building heat, we shut it down to let is sit like we always do" (Tr. 811-812, 819-820, 839-841, 2421-2423).

Operator William Taylor, who relieved Shirley, arrived for his shift at approximately 8:00 a.m. on September 15. After speaking with Shirley, Taylor tested the contents of the reaction tank and found a "high acid content." He was instructed by his tour foreman Tyre to "pump it off" despite the fact that "its off scale high." Taylor pumped the top layer of oil to the tall oil tank and the remaining contents to the brine tank, which began recirculating with the contents of the spent liquor tank at approximately 2:25 p.m. The materials were circulated for approximately 90 minutes. Taylor then pumped the brine directly to the boilout tank. The transfer was completed at approximately 7:00 p.m. The brine tank is approximately 100 yards from the boilout tank (Exh. R-13; Tr. 866, 870-873, 875, 2426-2429, 2431, 2433).

At approximately 7:45 p.m., ABC employee John Hammett was on scaffolding close to the top of the boilout tank preparing to weld a doubler around the newly lowered overflow pipe. The doubler, consisting of two half moon pieces of steel, is welded on the tank like a collar to strengthen the joint where the overflow line connects to the tank. The scaffolding, erected for the tie-in project, was approximately 30 feet high, 5 feet below the top of boilout tank. MCB had authorized the work, and the appropriate welding permit was signed by the MCB tour foreman. Hammett was approximately 10 feet from the open hatchway on top of the boilout tank (Tr. 251-253, 312, 382, 401, 611).

As Hammett was preparing to weld, a chemical release occurred from the open hatchway after the tank "wavered, rippled and breathed" (Tr. 127). An MCB investigation described the release as "a white to grayish color" cloud (Tr. 312). Hammett was observed slumped over and having breathing difficulties (Tr. 609, 612). Hammett was assisted off the platform and taken to the hospital (Tr. 614).

After the release, the vapor cloud was observed blowing towards the #1 recovery boiler. While waiting at ground level for an elevator at the boiler, ABC employee William Mock experienced a burning sensation in his lungs, regurgitated, and later passed out. When he awoke, Mock was in the hospital (Tr. 127, 311-313, 567-570, 609, 612-614, 627).

At approximately 8:05 p.m., MCB sounded the alarm instructing all employees to evacuate the chemical recovery area. It took 5 to 10 minutes for employees in the boilout tank area to reach the designated assembly point. Shortly thereafter, MCB safety and health manager Stephen Miller ordered a complete mill evacuation. Once the evacuation announcement was made over the mill's public address system, approximately 1,400 employees were evacuated to the contractors' parking lot in less than 30 minutes. Several employees received oxygen treatments, one employee was hospitalized overnight, two refused treatment, and four were released. The record does not show whether any employees were permanently injured[3] (Tr. 96-97, 100, 143-144, 279, 415, 444).

[3]In a civil suit filed by William Mock on May 21, 2002, after the hearing, Mock alleges that he received permanent damage and injury as a result of the release (Attachment A to MCB post-hearing brief). At the hearing, Mock testified that he received oxygen and remained in the hospital for 3 hours (Tr. 579).

At approximately 10:24 p.m., MCB environmental manager Daniel Diehl reported to the National Response Center (NRC) that a potential unknown amount of H_2S was "released from a storage tank due to the accidental mixture of chemicals." He reported that the release occurred "while doing routine maintenance." MCB's notification to the NRC was made pursuant to 42 U.S.C. § 9603(a), which requires facility owners to notify the NRC of releases of hazardous substances. The NRC referred the report to OSHA (Exh. C-29; Tr. 469-471).

OSHA industrial hygienist (IH) Jennifer Leigh Jackson initiated the accident inspection of MCB's chemical recovery tank farm area on September 19, 2000 (Tr. 1859). Based on her inspection, the serious, willful, and repeat citations were issued to MCB on March 2, 2001, for lack of appropriate emergency response assembly points, escape respirators, hazard communication, and lockout/tagout procedures.

Discussion

The Secretary has the burden of proving a violation.

> 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., 16 BNA OSHC 2131, 2138 (No. 90-1747, 1994).

MCB asserts that it complied with the cited standards. Although the work on the tanks was performed by a contractor, MCB does not dispute its responsibility for the conditions. MCB argues that pumping the acid brine to the boilout tank was unforseen and that the release from the boilout tank was an acid mist and not H_2S.

The Chemical Release

The Secretary alleges that the release on September 15, 2000, from the boilout tank was H_2S. It was caused by the addition of sulfuric acid from the brine tank with the sulfides contained in the black liquor held in the boilout tank.[4]

[4]The Secretary's motion to reconsider the Court's exclusion of Hugh White from offering expert testimony is denied. White was offered as an expert with regard to the operations of a pulp mill and the safety aspects of work in a pulp mill, including lockout requirements, chemical hazards such as H_2S, and precautions (Tr. 1211). The Secretary was

MCB argues, on the other hand, that the release was a sulfuric acid mist because of the large amount of water and small amount of sulfides in the boilout tank. MCB asserts that six of the citation items must be dismissed if the release was not H_2S.

There is no dispute that H_2S may be generated when sulfuric acid is added to the sulfides in black liquor (Tr. 305-306, 478-479, 690-691, 981-982; *also see* MCB post-hearing brief, p. 47). MCB acknowledges that, under the right circumstances, the boilout tank and #1 and #2, 50% black liquor tanks, could generate H_2S, if sulfuric acid was added (Tr. 624-625, 1097). Also, MCB's written lockout/tagout procedures for various tanks and equipment recognize the potential of an H_2S hazard in the mill (Exh. C-14).

H_2S is a colorless, flammable gas. It is recognized by the paper manufacturing industry as a potential health hazard and is the second leading cause of death[5] in the workplace relating to toxic chemicals. H_2S is heavier than air and highly toxic. The material safety data sheet (MSDS) describes it as an "off-gas in the kraft pulping and chemical recovery processes. Dangerous concentrations can occur if black, white, or green liquor or pulping waste streams become accidentally acidified" (Exh. C-12; Tr. 301, 478-479, 1317-1318, 4692). The acceptable ceiling concentration limit for H_2S is 20 parts per million (ppm) (*see* § 1910.1000, Table Z-2). Inhalation at low levels may cause loss of smell, eye and respiratory irritation, shortness of breath, headache, dizziness, vomiting, or nausea. Exposures to high concentrations may cause sudden collapse, unconsciousness, coma, or death due to respiratory failure. H_2S has a rotten egg smell at the odor threshold of 0.13 to 100 ppm (Exhs. C-12, R-24, R-27).

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permitted to proffer White's testimony, which dealt with mill operations and hazards (Tr. 1306-1311). The court did not accept White as an expert in the areas proffered because his experience at other pulp mills was not shown to be related to the MCB mill in the terms of the same or similar operation procedures; his proffered testimony regarding hazards and precautions would not aid the court in that the specific standards cited presumed the hazards and identified the abatement; and his opinions regarding lockout and the generation of H_2S were not shown to be reliable based on his qualifications and experience (Tr. 1282-1283). Although he has a degree in chemical engineering, White has not worked as an engineer and has no training as a safety professional or in industrial hygiene (Tr. 1212-1213, 1229, 1247). The Secretary concedes that he is not an expert in OSHA standards (Tr. 1235). Much of his experience predated the LOTO standards in 1989, and his work subsequently involved auditing a LOTO program prepared by others and which the court presumes complied with the OSHA standards (Tr. 1231-1232, 1238, 1240). Also, it is noted that if White had testified as proffered by the Secretary, the court's decision in this case would not have changed.

[5]The leading cause of death is carbon monoxide (Tr. 1317-1318).

Black liquor is a product of the kraft pulping process and is burned for fuel in the recovery boilers. It is a black to dark brown liquid with a rotten egg odor. The MSDS for MCB's Mahrt black liquor shows that it contains 1-4 % sodium sulfides by weight. The MSDS states that the concentration of components such as sodium sulfide are typical industry values and that actual concentrations are highly variable. The MSDS advises that it is "incompatible with acids; contact results in an exothermic reaction and the release of toxic hydrogen sulfide gas" (Exh. C-6).

MCB buys and stores sulfuric acid at the mill to break down the wood pulp (Tr. 2369). Sulfuric acid is a liquid which is colorless to dark brown. It is odorless unless hot, then it is choking. The MSDS for sulfuric acid states that it "reacts violently with water with evolution of heat." The MSDS advises that contact with sulfides "will produce toxic gases." Sulfuric acid as an air contaminant has an 8-hour time weighted average exposure level of 1 mg/m3 (*see* § 1910.1000 Table Z-1). The potential inhalation health effects include respiratory problems and may cause "coughing, wheezing, laryngitis, shortness of breath, nausea and vomiting." Under toxicological information, the MSDS notes that "(sulfuric acid) mist severely irritates the eyes, respiratory tract, and skin." "Repeated exposure of workers to the mist causes chronic conjunctivitis, tracheobronchitis, stomatitis, and dermatitis, as well as dental erosion." The affects on the eyes from exposure to vapors or mists include "stinging, tearing, redness, swelling, corneal damage and irreversible eye damage" (Exhs. R-20, R-25, R-26).

Prior to the September 15 release from the boilout tank, there is no dispute that sulfuric acid from the brine tank was unexpectedly transferred approximately 100 yards to the boilout tank and that the boilout tank contained water and weak black liquor (less than 50% black liquor).

The testimony of employees who observed and experienced the release from the boilout tank is not consistent in establishing the nature of the release. Hammett, the ABC employee closest to the release, did not testify.

Shift supervisor Terry Keefe, who has worked in the chemical recovery area for 22 years, saw the plume or large vapor coming from the boilout tank.[6] He was on the condenser approximately 250 feet from the boilout tank. He described the plume as pale yellow, almost white. Keefe testified

[6]Keefe testified that the cloud came from gooseneck vent and overflow line on the boilout tank (Tr. 3538-3539). Other employees testified that the cloud came from the open hatchway on top of the tank (Tr. 610-611).

that Hammett was coughing, gasping for air, and heading towards the platform area. When the plume passed over Keefe, he experienced a "little bit" of a cough for approximately 1 hour. His eyes did not burn and he did not vomit. He described the smell as acid and sulfur (Tr. 3479, 3485-3487, 3538-3539).

Crew leader Dan Milligan, who has been in chemical recovery area for 20 years, testified that he saw a grayish smoke coming from the boilout tank. Although he smelled an odor that was "not normal," he could not identify it because of his sinus. When he went to assist Hammett, he saw Hammett sitting down, slumped over, and having breathing problems (Tr. 598-599, 606, 608-609, 611, 642, 651).

Project engineer William Young, with 10 years of experience with MCB, was within 20 yards of the boilout tank after the release. He also went to the recovery boiler elevator area where other employees reported difficulty. Young testified that he smelled acid or an "acid mist" on the south side of the boilout tank. He has never smelled H_2S. He did not experience burning eyes or throat (Tr. 699-700, 2323-2324, 2337-2338).

Other employees also testified that they did not smell H_2S, or rotten eggs, including ACT Services vice-president of operations Zach Cowan and MCB technical assistant Edgar Atkins. Neither Cowan or Atkins saw the vapor or experienced any symptoms (Tr. 452, 2442).

William Mock, an ABC employee who had worked at the mill for 4 days prior to the release, was standing at the elevators in the boiler recovery area at approximately 7:45 p.m. Mock testified that he:

> smelled a rotten-egg odor, like sulfur, for a few seconds, and then it was gone. I had a strong burning sensation in my lungs. I fell on my knees and went to regurgitating or throwing up.

He said that another employee was coughing and spitting. Mock testified that he later "passed out" and was taken to the hospital, where he received oxygen. Mock testified that the doctor told him it was a "lethal dose of hydrogen sulfide." He stayed in the hospital 2-3 hours and returned to the mill two days later to be interviewed by MCB (Tr. 566-572, 577, 579, 581-582).

Boiler recovery area elevator operator Pat Swegheimer testified that she did not smell anything unusual. However, she got a "little choked up" and had a "little cough." She put her shirt

over her mouth. She said that other people around her were coughing. Swegheimer did not remember seeing anyone vomiting or lose consciousness. After the mill evacuation, she received oxygen (Tr. 787-790, 793, 797, 799).

In addition to employee testimony, air monitoring by MCB and ACT Services failed to detect the presence of H_2S. ACT Services employees who carried direct read instruments detected no H_2S (Exh. C-28; Tr. 451, 456). Search and rescue teams who went into the mill at approximately 8:07 p.m. carried H_2S instruments which did not detect any H_2S in any part of mill, including the recovery area (Tr. 3992-3993). Also, approximately 4 hours after the release, technical assistant Edgar Atkins re-entered the boilout tank area with a direct read instrument. His air monitoring in a vent to the boilout tank and inside the #1, 50% black liquor tank,[7] detected no H_2S (Tr. 2443-2444, 2449-2450).

Although the observations by employees and the lack of monitoring data fail to establish the nature of the release as H_2S, it is undisputed that the employees were exposed to the release of some chemical contaminant. The conflicting testimony and lack of air monitoring results can be explained by the location, speed, and dispersion of the vapor release as it was moved by the wind, olfactory fatigue,[8] and the similarity of symptoms of H_2S and acid. The wind that evening was 9 mph and the elevator at the recovery boilers was approximately 220 feet from the boilout tank (Tr. 1720, 3025).

With regard to the contents inside the boilout tank at the time of the release, the parties agree that it contained weak black liquor, water, and acid. Also, the tank was approximately 17 feet full (Exh. C-34). However, the quantities of each of the contents (black liquor, water, or acid), their purity, and percentages of ingredients are not precisely known.

Assistant operations manager Jimmy Williams and shift supervisor Keefe testified that the boilout tank contained approximately 95-98% water because of the large amounts of water used in flushing the evaporators. The remaining percentage was weak black liquor, which consists of 70-95% water and 1-4% sodium sulfide. It is the sodium sulfide, if mixed with acid, that forms H_2S (Exh. C-6; Tr. 2570-2573, 2096, 3483, 3524-3525 2960).

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[7]Secretary's expert Kevin Cummins testified that if H_2S had been produced, it is "highly probable" that it would have been pushed into the #1 tank because of the connection (Tr. 1516).

[8]Olfactory fatigue is the loss of ability to smell an odor at a certain concentration (Tr. 1710-1712).

Based on the estimated percentages of water and black liquor, MCB's expert, Dr. Fred Halvorsen, Ph.D. in chemical engineering, calculated that the liquid in the boilout tank weighed 1.16 million pounds. Using a 2% estimate of black liquor, he testified that the weight of the black liquor was 20,000 pounds, of which 233 pounds was sodium sulfide, if a 1% concentration is assumed. He also estimated that 84,000 pounds of sulfuric acid was in the reaction tank prior to the tall oil cook and the addition of soap, which occurred before being transferred to the boilout tank. Dr. Halvorsen, without considering any neutralizing effect of the soap, assumed that the 84,000 pounds of sulfuric acid was at a 98% strength when transferred. He calculated that 233 pounds of sulfide could produce a maximum of 101 pounds of H_2S. However, based on its solubility, Dr. Halvorsen estimated that the 1.16 million pounds of water also in the tank would absorb approximately 2,700 pounds of H_2S. Since there was only 101 pounds of potential H_2S in the boilout tank, Dr. Halvorsen opined that the H_2S remained in the liquid and that the only release emitted from the tank was an acid caused by the boiling water and the release as steam (Exhs. C-12, C-52, R-15; Tr. 2958-2961, 2963, 2966-2967, 2991-2993, 3004). According to Dr. Halvorsen, the heat of dilution[9] resulting from the exothermic reaction between the acid and water created a sulfuric acid cloud or mist that was emitted from the tank because of the pressure. As the cloud moved downwind, it dispersed and eventually became invisible and dissipated (Tr. 2947, 2967, 2980-2981, 3367).

Although not accepting MCB's estimated quantities of black liquor and water in the boilout tank, the Secretary's expert, Kevin Cummins, OSHA senior industrial hygienist with a master's degree in chemistry, testified that the mixing of the assumed quantities of sulfuric acid, water, and black liquor released the H_2S and other chemicals. Cummins testified that all of the H_2S was released from the liquid into the tank's head space and out of the opening in the tank, accelerated by the pressure and heat. He characterized the tank as open system, which affects the solubility of H_2S because of the vents and open hatchway. Also, Cummins noted that Dr. Halvorsen assumed that the boilout tank was only 2% black liquor and used the lowest percentage of sulfides (1%) to calculate the 101 pounds of potential H_2S. The amount of black liquor could have been 5% of the contents and the amount of sulfides in the black liquor could have been 4%. Cummins estimated that using

[9]Heat of dilution is the energy released as a chemical is dissolved in water and is lowered in concentration (Tr. 2948-2949).

the same information as Dr. Halvorsen but at the higher percentages, there could have been approximately 2,400 pounds of potential H_2S. Cummins also observed that other sulfides, not considered by Dr. Halvorsen, could have been in the tank, including the insoluble solids in the bottom of the boilout tank and from flushing the evaporators. He opined that the concentration of H_2S emitted on September 15 would have exceeded 100 ppm (Exhs. C-6, C-68; Tr. 1415-1417, 1431-1433, 5233-5236, 5239-5243, 5476).

To demonstrate the release of H_2S from the boilout tank, Cummins, in his laboratory, added acid to a water and potassium hydrogen sulfide solution in a 200 milliliter beaker. When added, his monitoring device detected H_2S above the beaker. According to Cummins, he attempted to use concentrations equivalent to 1.2 million pounds of water and 101 pounds of H_2S. He then added drops of sulfuric acid until his monitor detected H_2S in the air above the beaker. He estimated that his demonstration was scaled down approximately 5.4 million times. Cummins testified that his demonstration was not intended to replicate the boilout tank but was to show the error in Dr. Halvorsen's assumption that the H_2S gas would remain in the water. He claims that Dr. Halvorsen's conclusions of H_2S absorption are based on a closed system. According to Cummins, his demonstration shows that H_2S, even in a small amount, would be released from the water in an open system (Exhs. C-58, C-70, C-77; Tr. 5432-5434, 5436, 5627, 5707-5708, 5726-5727).

MCB argues that the quantities and types of materials used by Cummins in his demonstration were not the same as actually found in the boilout tank on September 15, 2000. Instead of exact measurements, Cummins used a hundred milliliters with a 5% error rate to measure the water and acid. He also did not use sodium sulfide, but used potassium hydrogen sulfide. MCB notes that the transfer of acid to the boilout tank took several hours, but Cummins poured the acid into the beaker and used an agitator to stir the contents, which increased the violent reaction. Despite these changes, MCB argues that Cummins' demonstration only generated a concentration of 10 ppm of H_2S, which is half of the PEL (Tr. 5419, 5423-5424, 5435-5436, 5500, 5502-5504, 5615, 5521, 5523-5526).

The flaws in the demonstration noted by MCB do not affect the reliability of Cummins' results. As noted, the actual quantities and percentages of the materials in the boilout tank on September 15 are not known. The purpose of the demonstration was to show that H_2S would be released, even though the beaker contained a relatively small amount of sulfides and a

proportionately larger amount of water when acid was added. Cummins' admittedly was not attempting to replicate the boilout tank.

Therefore, the record does support a finding that the boilout tank, with its open hatchway and vents, was an open system and that the release on the evening of September 15, 2000, involved H_2S and possibly other chemicals, including acid. Cummins' testimony is given more weight because, as a chemist, as opposed to a chemical engineer, he is more qualified to testify regarding chemical reactions from the mixing of chemicals. Both parties agree that the acid added to water and black liquor caused violent reaction which generated heat and pressure. Dr. Halvorsen agreed that some H_2S may have been released into the tank despite his conservative estimates on the amount of black liquor and sulfides (Tr. 3196, 3198, 3411). Also, the symptoms experienced by Hammett, Mock, and even Swegheimer are consistent with exposure to H_2S. The MSDS for black liquor recognizes the hazard of adding acid. MCB's notification of the release to the NRC described it as potentially H_2S (Exh. C-29).

Even if H_2S was not released, the citations are not dismissed because the record shows that there was a potential for an H_2S release. The boilout tank contained black liquor and unneutralized brine was added. Because of the unusually large of amount of water in the tank, MCB disputes the release of H_2S. However, MCB recognizes the potential presence of H_2S. Such potential releases are considered in MCB lockout/tagout written programs and its operating procedures. In notifying the NRC, MCB's environmental manager Diehl immediately considered the potential of H_2S based on "knowing the chemistry that's involved in a pulp and paper mill" (Exhs. C-12, C-29; Tr. 469-471, 478-479). Contractors who work at the mill are told that "H_2S is present in the mill" (Tr. 518). MCB's expert Dr. Halvorsen opined that on September 15, H_2S was generated in the boilout tank, although only "a trace amount" (Tr. 3196, 3198). Dr. Halvorsen stated that "[t]here, certainly, could have–based on the concentrations of black liquor, water, the fact that acid was added, there possibly could have been some hydrogen sulfide generated. It's a well-known reaction. It's on the MSDS" (Tr. 3199).

Also, the alleged violations regarding emergency response, lockout/tagout and hazard communication involve any hazardous chemical release, not just H_2S. Dr. Halvorsen testified that acid mist is a hazardous chemical if it exceeds 1 mg/m3. Dr. Halvorsen could not calculate whether

the acid mist exceeded the PEL. The effects on employees which caused MCB to evacuate the mill show that the chemical release, whether H_2S or acid mist, was potentially hazardous. The potential hazard for such a chemical release is sufficient for the application of the cited OSHA standards.

In drafting a citation, the description does not need to be elaborate or drafted in a particular form. It must "fairly characterize the violative condition" so that the citation adequately informs the employer of what must be changed. *Marshall v. B. W. Harrison Lumber Co.*, 569 F.2d 1303, 1308 (5th Cir. 1978). The citation "must be drafted with sufficient particularity to inform the employer of what he did wrong, *i.e.*, to apprise reasonably the employer of the issues in controversy." *Brock v. Dow Chemical*, 801 F.2d 926, 930 (7th Cir. 1986). The citations received by MCB reasonably notified MCB of the violative conditions and the issues in controversy.

Serious Citation No. 1

Item 1 - Alleged Violation of § 1910.120(q)(2)(iv)

The citation alleges that MCB's emergency evacuation plan did not designate employees' assembly points that are a safe distance for an H_2S release. Section 1910.120(q)(2)(iv) requires that an employer's emergency response plan address as a minimum element:

> Safe distances and places of refuge.

Section 1910.120 applies to employers whose employees are engaged in hazardous waste operations and emergency response. It requires them to develop and implement an emergency response plan "to handle anticipated emergencies prior to the commencement of emergency response operations." *See* § 1910.120(q). The terms "emergency response or responding to emergencies" involves "an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance." *See* § 1910.120(a)(3). The hazards dealt with in the emergency response plan include health hazards, which are defined at § 1910.120(a)(3) as a chemical, mixture of chemicals, or a pathogen.

MCB does not dispute the application of the standards at § 1910.120. The paper mill operated by MCB includes storage tanks for hazardous chemicals and waste ponds (Exh. R-10). MCB has an emergency response team and employees trained to respond to emergencies such as

chemical releases (Tr. 146). MCB has developed and implemented an "emergency preparedness and response plan" which includes a written evacuation plan, roles of authority, hazardous substance release, personal protective equipment, and training (Exhs. C-10, C-11, R-1). As part of MCB's emergency plan, assembly points for employees are designated in case of emergencies.
MCB's written emergency response plan includes an evacuation plan and a plant map with four assembly points designated as "C, P, R, and A" in different parts of the mill. The map is posted in more than 50 locations throughout the mill. The assembly points account for wind direction (Tr. 275).

"Safe distance" and "safe places of refuge" are not defined by the standard. A reasonable interpretation, however, of "safe distance" is the distance from a potential hazard that an employee is unlikely to sustain serious injury. Section 1910.120 does not instruct an employer as to how to calculate the safe distance. Safe distance is distinguished from "safe place of refuge," which is a location that protects an employee from injury until a hazard is controlled or passes. A place of refuge may be within the hazardous area which is used to shelter employees, such as a pressurized control room (Tr. 2206, 2215-2216, 2898, 2902, 3427-3428, 4095-4096).

Despite MCB's emergency plan, with designated assembly points for employees during emergencies, the Secretary argues that the plan fails to address safe distances for the release of H_2S. According to IH Jackson, MCB was unable to provide its emergency plan for the release of H_2S.[10]

MCB argues that the potential release of H_2S is included in its emergency plan because the designated assembly points are based on a worst case analysis, which considered the potential release of other, more prevalent chemicals. According to MCB, H_2S is not the most dangerous chemical at its mill. MCB asserts that it developed the assembly points after reviewing the chemical substances kept at the mill and identifying those kept in large quantities and posing the greatest hazard. It identified 15 substances that would result in the worst case. MCB performed calculations, which included the variable wind directions, to determine the safe distances for small releases, large releases, and fires. As a guide, MCB used "DOT emergency response guide" to identify the safe

[10]Secretary's contention that employees had to go through potential exposure areas to reach assembly points is rejected. Such allegation is beyond the citation and the record does not support an amendment after the hearing (Tr. 1940).

distances for each chemical. Assembly point "C" is the designated location for employees in the chemical recovery area and is approximately 600 feet from the boilout tank. In the chemical recovery area, the chemicals considered under worst case included black liquor, green liquor, and sulfuric acid. H_2S was not considered, in that MCB does not maintain it, nor has MCB had prior emergency releases (Exhs. C-9, C-10, C-11, R-1, R-10; Tr. 84-85, 274-275, 2914-2915, 3839, 3843, 3845).

MCB is a large mill, 1.8 square miles, and employs approximately 740 employees and 1,700 contractor employees (Tr. 274, 553-554). The mill has a public address system which directs employees to the assembly points or to take additional actions. When an evacuation occurs, MCB's plan requires personnel at each assembly point to perform a head count. On the evening of September 15, 2000, the mill initially directed employees to the assembly points. Later, employees were directed by a public announcement to assemble at the parking lots. The mill evacuated approximately 1,400 employees in 28 minutes without injury (Tr. 278-279). The record reflects that September 15 was the only mill-wide evacuation.

ACT safety coordinator Zach Cowan, who prepared a report on the evacuation, characterized it as "less than orderly" with a "crowd dynamic . . . of uncertainty as to what to do." He recommended that the announcements be more specific as to "exact areas for evacuation, removal and assembly" (Exh. C-28; Tr. 431-432, 4118). However, Cowan said that when the announcement was made to evacuate, employees went to the contractor parking lot as directed (Tr. 444-446).

There is no dispute that a chemical release occurred at the mill on Sept 15. The release was unexpected. Safety manager Miller testified that chemical releases have occurred before at the mill (Tr. 338). In a paper mill, such as MCB, the unexpected release of H_2S is a potential hazard. Also, although not requiring evacuation, MCB has had H_2S releases in the past and recognizes that H_2S may be released as part of its process.

The parties do not dispute that MCB's emergency response plan does not specifically refer to H_2S (Tr. 3124). The MSDS for H_2S states that the evacuation radius is 150 feet and for a tank, railcar, or truck tank, it is 800 meters (½ mile) (Exh. C-48).

The standard requires that safe distances be addressed in an employer's emergency plan. It does not state how an employer is to calculate the safe distances or what criteria is required. MCB's

method of considering the 15 worst case chemical releases based on potential quantities in establishing safe distances is reasonable. Dr. Halvorsen testified that the safe distance and safe refuge should be determined on the worst case. IH Jackson agreed (Tr. 2009). OSHA Compliance Directive 2-2.59A states that the "adequacy of safe refuge areas needs to be determined for the worst case scenario."

However, MCB's environmental manager Diehl testified that "knowing the chemistry that's involved in a pulp and paper mill" an H_2S release is a worst case (Tr. 478-479). MCB expert Dr. Sheldon Rabinovitz, on respirator protection, also testified that compared with other chemicals, including acid mist, H_2S would be "high" on his list (Tr. 4692-4693).

MCB's failure to include H_2S in designating assembly points was not shown to be unreasonable. Despite testimony that an H_2S release is a worst case, the Secretary fails to show that H_2S was worst than the 15 chemicals considered by MCB's emergency plan based on the prevalence at the mill or that the designated assembly points were inadequate for a potential release of H_2S. IH Jackson offered no scientific basis for asserting that the assembly points were inadequate (Tr. 2028, 2030).

According to DOT Emergency Response Guidebook, an initial isolation distance for H_2S is 30 meters or 100 feet for a small spill and 215 meters or 700 feet for large spills.[11] The isolation distance is a distance 360 degrees around the release point (Exh. C-43; Tr. 2047, 2919-2920). Halvorsen testified that the MSDS distance of 800 meters was reliable as a safe distance for a tank of liquified H_2S (Exh. C-48; Tr. 3189-3190). However, MCB is not dealing with liquified H_2S but rather a small amount of H_2S emitted unexpectedly when acid and black liquor were mixed contrary to its written procedures (Tr. 3190). From the boilout tank, assembly points C and R are 600 feet, assembly point P is 900 feet, and assembly point A is 800 feet (Tr. 2915-2916). Dr. Halvorsen testified that he would evacuate the mill if an H_2S release, which was eventually done on September 15, 2000 (Tr. 3105). Based on the company's lack of prior H_2S problems and engineering controls such as scrubbers, Dr. Halvorsen opined that MCB did not need to consider H_2S when developing its plan (Tr. 2912-2913, 2928-2929).

[11]Dr. Halvorsen considered the DOT Emergency Response Guidebook as a useful planning tool (Tr. 3105-3106).

Dr. Halvorsen looked at the process equipment and quantities of chemicals on site and determined that the amounts of H_2S that could be produced were fairly minimal (Tr. 2924-2925). He considered the release on September 15 to be a small release (Tr. 2917-2918). He also noted engineering controls, such as secondary containment,[12] scrubbers, and the NCG (non-combustible gases) program which prevents H_2S from escaping into the atmosphere would limit the migration of any unexpected release (Tr. 2924-2926).

The Secretary's expert Cummins also considered the September 15 release as small because it dissipated before the instruments carried by employees could even detect it and before anyone could smell it (Tr. 1719-1720). Miller testified that a mill wide evacuation was ordered because the extent of the emergency was not entirely clear (Tr. 144). The trend charts for the tanks do not show that anything was "rapidly expelled" from the boilout tank (Exh. C-34).

Also, it is noted that the Secretary's citation alleges MCB was required to designate assembly points located outside the mill for an H_2S release. Such allegation misstates the requirements of the standard (Tr. 1940). The standard does not require MCB to designate assembly points outside the mill. It simply requires employers to address the safe distances. In some situations, the safe distance may be outside the plant. The appendix to Subpart E, § 1910.38 states that safe areas may include parking lots, open fields, streets which are located away from the site of the emergency and which provide sufficient space to accommodate the employees. MCB's mill is bordered on two sides by a swamp, one side by a busy highway, and one side by a river. IH Jackson agreed that such conditions would be unsafe for evacuation of the mill (Tr. 280, 2034-2035).

The record does not show that the assembly points designated in MCB's evacuation plan were not safe distances as contemplated by the standard, even for the unexpected release of H_2S. The Secretary is unable to identify what should have been the safe distance or make any calculations as to the safe distance for an H_2S release.

A violation of § 1910.120(q)(2)(iv) is not established.

Items 2a and 2b - Alleged Violations of §§ 1910.134(d)(1)(i) and 1910.134(d)(1)(iii)

[12]Secondary containment holds any material that spills, such as if a vessel fails (Tr. 2926).

The citation alleges that MCB failed to select and provide appropriate respirators (item 2a) and to identify and evaluate the respiratory hazards (item 2b) in the chemical recovery tank farm area for the potential exposure to H_2S. Sections 1910.134(d)(1)(i) and 1910.134(d)(1)(iii) provide:

> (i) The employer shall select and provide an appropriate respirator based on the respiratory hazard(s) to which the worker is exposed and workplace and user factors that affect respirator performance and reliability.
>
> (iii) The employer shall identify and evaluate the respiratory hazard(s) in the workplace; this evaluation shall include a reasonable estimate of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. Where the employer cannot identify or reasonably estimate the employee exposure, the employer shall consider the atmosphere to be IDLH [immediately dangerous to life or health]

The respiratory standards are intended to specify broad performance criteria and require the employer to make a reasonable estimate of employee exposure. 63 Fed. Reg. 1152, 1299 (Jan. 8, 1998). Also, the employer is required to "prevent atmospheric contamination . . . as far as feasible" by using "accepted engineering control measures" such as closed systems. *See* § 1910.134(a)(1).

The Secretary alleges that MCB's employees, while in the chemical tank farm area, need to wear or have available emergency escape respirators[13] suitable for H_2S exposure. The respirators do not need to be worn but need to be immediately available (Tr. 1683). The MSDS for H_2S specifies that a "self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode" is to be used to escape from unknown concentrations of H_2S (Exh. C-12). The concentration of H_2S, if present on Sept 15, is unknown. OSHA expert Cummins testified that he recommends escape respirators, weighing approximately 3 pounds, supplying 5 minutes of air into the hood, and taking seconds to put on (Tr. 1626-1627, 1680).

There is no dispute that respirators, including escape respirators for protection against H_2S are not required by MCB to be worn or immediately available to employees in the tank farm area. Also, there are no alarms or monitors for H_2S in the area (Tr. 1082, 1955).

[13]An "escape-only respirator" is a respirator intended to be used only for emergency exit. *See* § 1910.134(b).

The parties agree that H_2S respirators are needed to protect employees who are exposed to H_2S (Tr. 101). Because of the invisible properties of H_2S and the potential for olfactory fatigue at relatively low levels, the need for respiratory protection is essential (Exh. C-12). The literature indicates that an H_2S induced loss of consciousness "reduces chances of flight" and that "H_2S is an exceptionally difficult gas from which to escape" (Exh. C-71). Also, MCB recognizes that mixing acid and black liquor could generate H_2S, which is flammable and toxic (Tr. 108). MCB's machine specific written LOTO checklists warn against the hazard of H_2S (Exh. C-14; Tr. 109).

The issue in dispute, however, is whether a reasonable estimate of an H_2S hazard exists in the chemical tank farm area requiring an appropriate escape respirator to be worn or immediately available. MCB's written hazard communication program, which includes a respiratory program, was prepared by the safety and health division (Exhs. C-17, C-18, C-19, R-45). Safety manager Miller testified that MCB's assessment of the chemical tank farm area showed that escape respirators were not required. A qualitative exposure assessment of each area of the mill was conducted in 1998 to determine the possibility of employees' exposure to various chemicals. The assessment in the tank farm area included reviewing MSDSs of the chemicals in the area, the possibility of by-products, and air monitoring results (Tr. 4952-4953). Beginning in 1990, exposure monitoring for each process job or task was performed by MCB. None of the H_2S monitoring showed levels above the PEL. MCB performed industrial hygiene audits which in 1997 found that "no H_2S was seen in any sample at a detection limit of approximately 0.2 ppm" (Exh. R-35, R-36, R-37; Tr. 3875-3876, 3880-3881, 3884-3885). Also, there is no showing of any prior unexpected H_2S releases in the tank farm area (Tr. 3888).

MCB does not manufacturer or store H_2S. It is not used in its kraft paper processes. Instead, the Secretary asserts that H_2S is a potential exposure as an off product. However, the 396 confined space entry permits for September 2000 showed no presence of H_2S (Tr. 2069). With regard to engineering controls, MCB uses a non-condensable gas (NCG) system to remove contaminants, including H_2S, which is a by-product, and incinerate them (Tr. 2304, 2311). Each control room is under positive pressure and uses filtered air (Tr. 2539). Also, each tank has a containment area that will hold 110 percent of the contents (Tr. 3848). The mill has 2 separate sewer systems to prevent acid and black liquor from mixing (Tr. 2313-2314). It is noted that safety manager Miller, who has

visited approximately 20 paper mills over the years, testified that none of the kraft mills required respirators in their tank farm areas (Tr. 3847, 3896).

The Secretary argues that because of the unexpected transfer of acid from the brine tank to the boilout tank, such as occurred on September 15, there is a potential for an H_2S release. The question, though, is whether the potential was a reasonable estimate of employees' exposure to a respiratory hazard requiring the need for escape respirators. The answer is no under the circumstances of this case. The black liquor tanks in the tank farm area based on the piping system have no connection to tanks with acid, including reaction tank. The boilout tank only has an indirect connection through the brine tank (Tr. 1015-1016). There are no employees assigned to work at the boilout tank (Tr. 3888-3889). Also, for transfer of acid to the boilout tank to occur and generate H_2S, a combination of factors needs to occur at the same time, including an employee error in not complying with written operating procedures, high levels of black liquor, and low levels of water (Tr. 4960). The record fails to show how often brine is transferred to the boilout tank during normal production as opposed to a mill outage or the nature and quantities of contents in the boilout tank.

Based on these factors in its respirator assessment, MCB's IH Carol Wilkins-Hall, who performed the qualitative exposure assessment, concluded that respirators, including escape respirators, were not required in the tank farm area (Tr. 4954-4956). She determined that an H_2S release was not reasonably foreseeable (Tr. 4955-4956). She interviewed each employee in the area and none of the employees said that they had smelled or complained of H_2S (Tr. 3887, 4952-4953, 4957-4958). In 2000, approximately 1000 confined space entry permits were written and 995 showed no H_2S; 4 showed a level of 1 ppm and only 1 showed a level of 5 ppm which is below OSHA's 20 ppm level (Tr. 3662).

Dr. Sheldon Rabinovitz, an industrial hygienist and Ph.D in physiology and pharmacology, opined that respirators, including escape respirators, are not required in tank farm areas (Tr. 4531). He considered MCB's hazard assessment adequate (Tr. 4542). He also concluded that based on his analysis, the likelihood of generating hazardous amounts of H_2S were "unrealistically low" based on the low amount of sulfides generally found in the boilout tank and an unexpected transfer of acid from the brine tank (Tr. 4546, 4548-4549). Rabinovitz agreed that to generate H_2S, three events

(unexpected transfer of acid, sufficient sulfides, and low amount of water) have to occur simultaneously, which he considered a low probability as to each event (Tr. 4551, 4553-4554).

The standard requires that employers assess the need for respirators for normal use and "reasonably foreseeable emergency situations." 63 Fed. Reg. at 1198. Despite the release on September 15, 2000, the record fails to show that employees needed to wear or have available escape respirators suitable for H_2S in the chemical tank farm area. Based on its monitoring data, the mill's history of no releases in the tank farm area, the outdoor conditions, and the mill's prohibition against transferring unneutralized acid, it is concluded that respirators, including escape respirators, were not shown to be required. Alleged violation of §§ 1910.134(d)(1)(i) and 1910.134(d)(1)(iii) are not established.

Item 5 - Alleged Violation of § 1910.1200(h)(1) or in the Alternative § 1910.1200(h)(2)(ii)

The citation alleges that MCB failed to provide contractors with effective information as to the potential for an H_2S release while working on the tanks containing black liquor. Section 1910.1200(h)(1) provides:

> Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (*e.g.*, flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and material safety data sheets.

In the alternative, § 1910.1200(h)(2)(ii) requires that employees are informed of:

> Any operations in their work area where hazardous chemicals are present.

The purpose of the hazard communication standards is to ensure that information concerning chemical hazards is transmitted to employees through a comprehensive program. *See* § 1910.1200(a). Hazard communication "applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency." *See* § 1910.1200(b)(2).

There is no dispute that MCB did not inform its maintenance contractor ABC that H_2S could be generated in the boilout tank or black liquor tanks (Tr. 101-102, 764). ABC Safety supervisor Chilton testified that he was not aware of the potential of an H_2S release until the release on September 15, 2000. He had not received any information from MCB about the potential of an H_2S release from the tanks. Therefore, Chilton did not require ABC employees to have respirators available (Tr. 356-358).

Chilton, however, knew that mixing black liquor and acid could generate H_2S and that black liquor was present in the boilout tank (Tr. 392-393). The record reflects that this was common knowledge among the employees (Tr. 2073). Also, the hazards of H_2S and how it may be formed were included in the MSDSs available to ABC (Tr. 2090-2092). Chilton testified that he had access to all the MSDSs at the mill (Tr. 393). Further, there is no showing that ABC had ever worked on the boilout tank or black liquor tanks prior to the September outage, although it was regularly present at the mill (Tr. 422-423).

By their terms, the cited standards at § 1910.1200(h) do not require employers to provide information to contractors, but rather is limited to providing training and information to the employer's employees. The primary responsibility of the employer is to provide information about hazardous chemicals "to their employees" § 1910.1200(b). Section 1200(h)(1) states that "employers shall provide employees with effective information and training on hazardous chemicals in their work area."

An employer's responsibility to provide information to contractors is located in § 1910.1200(e)(2), which states that in multi-employer workplaces, where employees of other employers may be exposed to hazardous chemicals, the employer who stores or uses hazardous chemicals is to include in its hazardous communication program:

> (1) the methods the employer will use to provide the other employer(s) on-site access to material safety data sheets (MSDS) for each hazardous chemical the other employer(s)' employees may be exposed to while working;
> (2) the methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and

> (3) the methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

As stated in the preamble, the standards "simply require that employers describe methods in their written HCS programs to make those already-present MSDSs available to the other employers on the site when the other employers' employees are being exposed." 59 Fed. Reg. 6126, 6157 (Feb. 9, 1994). Employers are not required to actually give the MSDS to other employers but is to make them accessible. 59 Fed. Reg. at 6158.

Section 1910.1200(h), in contrast, requires employers to train their employees. Section 1910.1200(e)(2) gives contractors the tools to provide this training to their own employees by requiring the host employer to provide access to MSDSs. The Review Commission has not construed § 1910.1200(h) as requiring employers to provide information to contractors, but has always considered that provision in relation to an employer's training of its own employees. *See Atlantic Battery Co.*, 16 BNA OSHC 2131, 2172 (No. 90-1747, 1994).

Also, the record shows that MCB complied with its hazard communication program as set forth in § 1910.1200(e)(2). MCB provided ABC access to MSDSs for each hazardous chemical to which ABC may have been exposed, including H_2S (Tr. 393, 502). The information regarding the potential for forming H_2S is contained in the MSDSs (Tr. 2090-2092). In fact, the contract required ABC to access MSDSs for chemicals its employees will encounter (Exh. R-30).

MCB also provided ABC with information regarding precautionary measures. ABC was required to attend a meeting where the hazard communication program was reviewed and discussed. It was required to provide its employees with all material and information discussed during the pre-bid meeting and tour (Exh. R-30; Tr. 3778).

ABC was told that H_2S was potentially present in the mill; all confined spaces were to be checked for H_2S; and, H_2S was hazardous (Tr. 515, 518). MCB had weekly meetings with contractors, which included discussions on hazardous chemicals, including H_2S (Tr. 510-511, 3798-3799). Contractors, including ABC, were trained on MCB's evacuation plan for emergencies (Tr. 390-391).

Also, the boilout tank and black liquor tanks are labeled with placards advising that black liquor was in the tanks (Exh. R-7; Tr. 2125). The placards list the hazards and notes that black

liquor smells like rotten eggs. The placard also provides a warning to "avoid contact with acids" (Exh. R-7B).

A violation of § 1910.1200(h)(1) is not established.

Alleged Violations of Lockout/Tagout (LOTO)

MCB is cited for violating the LOTO standards at § 1910.147(c)(6)(i) (serious item 3; annual audits), § 1910.147(d)(6) (serious item 4; verifying energy sources), § 1910.147(c)(4)(i) (willful citation; written machine specific lockout procedures) and § 1910.147(d)(3) (repeat citation; applying energy isolating devices).

Section 1910.147(a) states that the LOTO standards apply when work involves the "servicing and maintenance of machines and equipment in which the *unexpected* energization or start up of the machines or equipment, or release of stored energy could cause injury to employees." LOTO's purpose is "the control of energy during servicing and/or maintenance" activities. The energy control procedures required under § 1910.147(c) is:

> to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source, and rendered inoperative.

In addition to denying the alleged violations, MCB asserts that the LOTO standards do not apply to the work performed on the boilout tank and the two, 50% black liquor tanks. MCB argues that (1) the transfers of acid on September 14 and 15 were exempted as normal production operations, (2) the tie-in project on the boilout tank and black liquor tanks involved "construction work" and not "servicing and/or maintenance activities," and (3) there was no unexpected energization or release of stored energy as contemplated by the standard because the tanks are inert steel without any moving parts.

Normal Production

MCB asserts that the work performed on September 14-15 was similar to normal operations, although the mill was in an outage. Assistant operations manager Williams testified that the tall oil

cook on September 14 was routine (Tr. 1083). Tall oil operator Taylor agreed that the normal ingredients for a tall oil cook were used and that he followed standard operating procedures before transferring the unneutralized brine to the boilout tank (Tr. 874, 902-903). Also, the boilout, black liquor tanks and associated equipment were used for their intended function–transfer and storage of chemicals (Tr. 4776-4777). MCB argues that normal production activities are not changed to "service and maintenance" because an operator fails to follow a procedure.

Section 1910.147(a)(2)(ii) provides that "normal production operations are not covered by this [LOTO] standard." "Normal production operations" is defined at §1910.147(b) as the "utilization of a machine or equipment to perform its intended production function."

The record in this case shows that normal production operations were suspended. The mill was in an annual outage performing improvement projects and maintenance work on its equipment and machines, including the boilout and black liquor tanks. The mill was shut down and not producing any kraft paper. The amount of water and the level of contents in the boilout tank were unusual and due to the boiling out of the evaporators and black liquor system (Tr. 2570-2573, 3483). Although normal ingredients were used in the tall cook, the cook was needed because the old acid lines were drained into the reaction tank so that the old lines could be replaced (Tr. 857-858, 1082, 3721-3722, 3738). Tall oil operator Taylor did not consider it a normal cook; it was unique and probably contributed to the transfer of unneutralized brine to the boilout tank (Tr. 872, 899).

MCB, during the outage, was not engaged in normal production operations and is not entitled to the exemption.

Construction Work

MCB asserts that the work on the boilout tank and 50% black liquor tanks was construction because new pipelines were being added to increase the tanks' overall capacities. The LOTO standards specifically exempt from their application, "construction, agriculture and maritime employment." See § 1910.147(a)(1)(ii)(A).

The exemption applies to "construction employment." OSHA defines construction work at § 1910.12(b) as "work for construction, alteration, and/or repair, including painting and decorating." Neither the preceding ANSI Z244-1982 standards (Exh. R-56), nor the LOTO preamble 54 Fed. Reg. 36644 (September 1, 1989) (Exh. R-57) define construction employment.

The definition of "servicing and/or maintenance" at § 1910.147(b) involves workplace activities, which include "constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment." The LOTO preamble states that "OSHA believes that workers constructing machinery and equipment need the same safeguards as other employees doing other servicing on maintenance operations. 54 Fed. Reg. at 36660.

There is no dispute that the tanks are equipment as contemplated by the LOTO standards. MCB's LOTO procedures identify the tanks as equipment (Exhs. C-22, C-23, C-24). During the outage, MCB's project required constructing new pipelines and modifying existing pipelines in order to store more black liquor in case a single tank reached capacity.

The tie-in job was performed by ABC,[14] a company engaged in the construction, repair and maintenance work on pressure vessels (Tr. 352). The ABC employee on the boilout tank on September 15, 2000, was preparing to weld a doubler on an exiting overflow line which had been lowered 2 feet. The purpose of the doubler is to add support to the joint. The employee was replacing the doubler after the pipe had been lowered.

MCB's tie-in project did not involve construction employment. Instead, the work involved constructing, modifying, and installing parts (existing and new parts) to the existing boilout and black liquor tanks as contemplated by the servicing and maintenance activities of LOTO. Also, it is noted that when MCB notified national emergency response, MCB characterized the work as maintenance (Exh. C-64). The tanks remained the same in size and purpose.

Unexpected Energy Sources

The Secretary argues that there was the potential for unexpected energization or release of stored energy from the boilout tank due to the mixture of acid with black liquor and the emission of H_2S. The MSDS for black liquor warns of the potential for H_2S if mixed with acid (Exh. C-12). The Secretary's expert chemist Kevin Cummins described the mixing of sulfuric acid, water, and the sulfides in black liquor as stored energy which, when combined, produces heat and releases chemical

[14]MCB does not argue that ABC was the responsible employer. Although a subcontractor, ABC performed its work in accordance with MCB's procedures and supervision (Exh. C-20). MCB remained the responsible employer for the alleged conditions.

energy in the form of H_2S (Tr. 5308-5310, 5320-5322). The Secretary does not dispute that the energy source was not electrical, mechanical, hydraulic, or pneumatic (Tr. 2163-2165).

MCB's expert Edward Grund[15] opined that LOTO did not apply in this case because an employee welding on the outside of the boilout tank was not exposed to injurious contact with the chemicals (Tr. 5046-5047). Grund's opinion on the application of LOTO is based on contact with a hazardous amount. According to Grund, chemical energy does not apply to gas or vapors, and a chemical reaction is not chemical energy under LOTO (Tr. 5128, 5130).

Section 1910.147(a) provides that LOTO applies to machines and equipment "in which the *unexpected* energization or start up of the machines or equipment, or release of stored energy could cause injury to employees." The record shows that the boilout and black liquor tanks are inert steel shells, without moving parts that could be energized or start up (Tr. 38-39, 5033). The issue is whether there was a potential for an "unexpected energization" or the release of "stored energy" which could cause injury to employees.

LOTO defines "energy source" as "any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy." *See* § 1910.147(b). Chemical energy would include chemical reactions derived from mixing chemicals. The definition is not limited to a single chemical or whether the chemical is a gas or vapor. Black liquor, sulfuric acid, and H_2S are hazardous chemicals.

Although employees did not enter the boilout tank and black liquor tanks, the work activities performed by ABC required new penetrations into the tanks or replacing piping in existing penetrations. Also, the boilout tank had an open hatchway and vents.

When the work, as in this case, involves penetrations of the tanks, LOTO is required. MCB's LOTO program for line breaking includes line breaking on tanks which have the "potential to release hazardous materials" (Exh. C-26). MCB defines lockout/tagout to include locking and tagging out of service of "all valves supplying the equipment with any liquid, gas, or steam" (Exh. C-20). MCB's LOTO procedures are required if penetrating the tank shell or when an employee has to enter the tank. Under such circumstances, the valves and pumps controlling the flow of contents into the

[15]Grund assisted in drafting ANSI Z-244-1982 (Exh. R-56; Tr. 4870-4871) which was used by OSHA as the source document for LOTO standards at §1910.147 (Exh. R-57).

tank are to be locked out. The LOTO of piping systems requires removing the contents of the piping system and isolation of the energy source (Exh. R-57, p. 36,658). The LOTO standards apply to situations in which an employee is entering or working on a piping system or tank in which he could come into contact with a chemical.

In this case, the ABC employee was completing the tie-in project by preparing to weld the doubler around the lowered overflow line. There is no dispute that the pipelines into and out of the boilout tank were not locked out. Although the transfer of acid to the boilout tank was contrary to MCB's written procedures to transfer only neutralized brine, there was no mechanical means utilized that prevented the acid from being transferred to the boilout tank. The purpose of LOTO is to prevent such an unexpected transfer. The valves and motors on the pipeline were not locked and tagged out. The transfer of acid to the boilout tank resulted in the build up of heat and pressure and the hazardous release of energy in the form of H_2S or acid mist from the tank. The introduction of acidic brine caused the unexpected energization or release of stored energy as contemplated by LOTO.

The energy released from the boilout tank posed potential contact hazards to employees. The release of H_2S or acid mist clearly could cause injury to employees. The contact hazard could be to a hazardous gas or vapor. The ABC employee was preparing to weld near an opening in the top of the tank when he began having breathing difficulties and needed assistance from the scaffolding because of the release. Several other employees needed oxygen treatments and the mill was evacuated because of the release of chemical energy.

The LOTO standard contemplates some relationship between the release of unexpected energization and contact with an employee who may be exposed. The ABC employee was exposed to potentially injurious contact to a hazardous chemical that could have been prevented if the tank was locked out.

The LOTO standards apply to MCB's work on the boilout and black liquor tanks.

Item 3 - Alleged Violation of § 1910.147(c)(6)(i)

The citation alleges that MCB failed to conduct annual audits of its specific lockout procedures to determine if authorized employees were following the written lockout program. Section 1910.147(c)(6)(i) provides:

> The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements of this standard are being followed.

It is undisputed that at the time of OSHA's inspection, MCB did not have available a written lockout procedure for the boilout tank and the #1 and #2, 50% black liquor tanks (Exh. C-16; Tr. 173). Also, there was no checklist procedure for the boilout tank and the #1 and #2, 50% black liquor tanks.

Safety manager Miller testified that he thought the procedures were available. However, during the transfer of programs to the computer, which began in late 1999, the lockout programs for the boilout tank and black liquor tanks were inadvertently not transferred (Exh. C-15; Tr. 163-164).

MCB has a written lockout program, which includes written lockout procedures, and in some cases checklist procedures for other tanks at the mill. The procedures instruct employees in shutting and opening of pipeline valves going to and from the tanks (Exhs. C-14, C-21). In November, after the OSHA inspection, MCB prepared written lockout procedures for the boilout tanks and 50% black liquor tanks (Exhs. C-22, C-23, C-24).

MCB performed a LOTO audit in 1998 (Exh. C-16; Tr. 171-172). According to IH Jackson, safety manager Miller stated that "no supervisors had done lockout audits since 1998," and there were no other documents which could be considered audits (Tr. 170, 1956). A review of the 1998 audit shows that no audits were performed on the boilout tank and black liquor tanks and that on occasion equipment should have been locked out, but was not (Tr. 173-174).

The standards require periodic inspections of LOTO procedures to ensure that the program is effective and employees are trained. The periodic inspections must include (1) performance by an authorized employee, (2) deviations or inadequacies must be identified and corrected, and (3) the auditor must review the employees' responsibilities under the energy control procedure.

The record shows that MCB does 4 types of audits satisfy LOTO's inspection requirements. First, in 1997, RACES (Reducing Accidents Creates Employee Safety) was initiated. RACES is a behavior-based safety process. MCB trained approximately 290 employees to audit various critical behaviors, including lockout/tagout (Tr. 270-271). Every auditor is an authorized employee (Tr. 2390). During the audit, an employee is asked whether a lock was used and the equipment is

verified as locked out. If the equipment is not locked out, the job is stopped and the purpose of lockout is reviewed by the auditor (Tr. 2391-2392). RACES for 2000 shows that 280 employees were audited for LOTO, of which only 1 was found at risk (Exh. R-12). Miller testified that MCB does hundreds of authorized employee audits on various safety issues on a daily basis through RACES (Tr. 180, 272). Mechanic Danny Barker, who performed the inspections, testified that the RACES inspections were voluntary and employees elected to be observed (Tr. 2409). Also, it is noted that the purpose of RACES inspections is not to confirm compliance with the standard or evaluate the procedures for deficiencies (Tr. 2392).

The second form of periodic inspection includes the audits of LOTO performed by the maintenance department for the recovery area. Robert Lyles, a supervisor and authorized employee, testified that at least once every two weeks he observed one of the 14 maintenance employees locking out equipment. He checks the equipment to ensure that it is locked out, the correct lock is used, and the employee verifies the lockout. He has not observed any deficiencies (Tr. 2609-2610).

Third, supervisor Keefe, an authorized employee, performs periodic audits of lockout procedures. For almost every project, shift supervisor Terry Keefe testified that he checks to make sure locks are in proper places and employees follow procedures. He questions employees. If not proper, the job is stopped and locks are properly applied. Each of the 9 employees in the chemical recovery area are audited at least once per year (Tr. 3491-3492, 3495).

Fourth, the safety department implemented ABSS (activity based safety systems). ABSS requires each supervisor to meet with each employee during the first hour of the shift to discuss safety topics, including LOTO, if being performed. Also, the safety department reviews the lockout program each year (Tr. 3901-3903).

Edward Grund, a LOTO expert, examined MCB's audit system and opined that it meets and exceeds the requirements for periodic inspections under LOTO (Exh. R-58; Tr. 5063-5065). With regard to the failure to audit a specific procedure, which was the lockout of the boilout tank and black liquor tanks, he testified that the standard does not require an audit of a specific procedure. Also, he noted that there was no showing of maintenance or servicing activities having been performed on the three tanks during two years preceding OSHA's inspection (Tr. 1012-1013, 2607-2608, 3497-3498, 5062-5063).

MCB is not cited for failing to document or certify audits, but rather failing to perform audits. Miller denies that he told IH Jackson that there had been no audits performed since 1998 (Tr. 171, 272). The mill implemented a new audit system for LOTO in 1998 (Tr. 270). Jackson did not ask about the new system or ask the employee in charge (Tr. 272).

The alleged violation is not established.

Item 4 - Alleged Violation of § 1910.147(d)(6)

The citation alleges that MCB did not verify by test that the boilout tanks and the two 50% black liquor tanks were isolated prior to work by a contractor during the period of September 4-15, 2000. Section 1910.147(d)(6) provides as an element in establishing energy control procedures that:

> Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and deenergization of the machine or equipment have been accomplished.

There is no dispute that the pipeline from the brine tank which was carrying a highly acidic brine remained open on September 15, 2000. The boilout tank was not isolated when the ABC employee was preparing to weld a doubler around the overflow line. The other work performed by ABC on the tanks had been done earlier in the week. Although the tanks were not isolated on Sept 15, assistant operations manager Williams testified that the black liquor tanks were locked out when ABC had performed the earlier work on the tanks (Tr. 995-999).

The basis for the citation is that there was no verification "that the tanks were truly isolated" (Tr. 2076). The standard applies to verification after the equipment was locked out. MCB does not dispute that the tank was not locked out, which is alleged in repeat citation no. 3.

Also, IH Jackson understood that "the only verification that was done was a visual verification of whether the valve was in the open or closed position" (Tr. 1960, 2076). The Secretary argues that visual inspections are inadequate because they do not contain measures to identify and ensure that all valves, motors, and pumps are secured. According to the Secretary, there is a difference between verifying that a valve is open or closed versus verifying that it is locked out. IH Jackson testified that the LOTO does not permit visual verification that valves are closed but rather requires actual operation to ensure that it is deenergized (Tr. 2081-2082, 2233, 4778-4779).

Despite the Secretary's argument, the preamble to LOTO states that :

> OSHA also considers the use of visual inspection procedures to be of critical importance throughout the lockout procedure. Visual inspection can confirm that switches, valves, breakers have been properly moved and secured in the off or safe position. Visual inspection can verify whether or not locks or other protective devices have been applied to control points" (Tr. 2081).

Also, in an interpretation letter dated November 16, 2000, OSHA stated:

> Other appropriate means of hazardous energy verification may include visual inspection techniques, e.g. visually checking that the safety blocks are in place (Exh. R-59).

Section 5.2.4(2) of ANSI standard Z244.1 "Verification of Isolation" states that "test the equipment or process by use of appropriate test equipment and/or visual inspection to determine if the energy isolation has been effective" (Exh. R-56). Also, LOTO expert Grund testified that visual verification is permitted (Tr. 5067, 5069).

Although the abatement differs, a violation for failing to verify is contained in citation no. 3, alleging a violation for failing to lockout. Therefore, the alleged violation for failing to verify at § 1910.147(d)(6) is vacated.

Willful Citation No. 2

Alleged Violation of § 1910.147(c)(4)(i)

The citation alleges that MCB failed to develop written machine specific lockout procedures for equipment such as the boilout tank and the #1 and #2, 50% black liquor tanks, during the outage in September 4-15, 2000. Section 1910.147(c)(4)(i) provides:

> Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

MCB was cited for not documenting the specific energy control procedures for the boilout and black liquor tanks. MCB notes that the preamble states that a single procedure can cover similar machines which have similar types of controls (Exh. R-57, p. 36,670). However, unless the equipment or machines are similar, using the same type and magnitude of energy and the same type of controls, the standard requires that the energy control procedure be specific as to each tank. *Drexel Chemical Co.*, 17 BNA OSHC 1908 (No. 94-1460, 1997). *See also* 53 Fed. Reg. 15,509

(1988). For unique equipment, the employer may supplement with a checklist (Exh. R-57, p. 36,671).

MCB's argument that the exception at § 1910.147(c)(4) for some equipment is rejected. Safety manager Miller does not dispute that the tanks have more than one energy source and that more than one lock is needed to completely isolate the tanks (Tr. 189). Therefore, since there is more than one energy source, the exception by its terms does not apply. Miller agrees that written specific LOTO procedures are necessary for the boilout tank and black liquor tanks (Tr. 192-193). Also, MCB's generic lockout program, which Miller described as for something simple like a light switch, is inadequate for the tanks (Exh. C-21, Tr. 178).

There is no dispute that at the time of the release on December 15, 2000, MCB did not have available specific LOTO procedures or checklists for the boilout tank and 50% black liquor tanks (Tr. 162-163, 1053-1054). The record does not controvert that prior to 1999, MCB had machine specific LOTO procedures for the boilout tank and black liquor tanks kept on a database maintained by the safety department (Tr. 3913-3914). However, in 1999, MCB began transferring its over 8,000 machine specific LOTO procedures to a new computer system. By September 2000, MCB believed that the procedures had been transferred to the new system (Exh. C-15; Tr. 151-154). It was not until OSHA's inspection that MCB discovered that approximately 5% of the procedures, including the LOTO procedures for the boilout and black liquor tanks, inadvertently had not been transferred (Tr. 3914). Prior to OSHA's inspection, safety manager Miller was not notified that the procedures were missing (Tr. 3921-3922). MCB's program instructs employees to contact the safety department if they need to perform maintenance on equipment that did not have a lockout procedure (Exh. C-21; Tr. 181).

ABC safety manager Chilton testified that he wanted a checklist for anything that would need to be locked out. He had checklists for the boilers but not the boilout and black liquor tanks (Tr. 401-402). Chilton testified that he requested the checklist from ACT safety consultant John Spangler (Tr. 402). It was a general request for any checklists for the tank system (Tr. 403). He said that he made the request during weekly safety meetings (Tr. 404). Chilton did not specifically make a request of MCB, and Spangler denies that Chilton made such a request (Tr. 402-403, 530-531).

MCB's LOTO system has three components (Tr. 161). First, MCB has a lockout program

that included a procedure for all equipment (Exh. C-20; Tr. 161, 3917). Second, MCB developed over 8,000 machine specific procedures for individual pieces of equipment, including the tanks (Tr. 161, 3916). Finally, certain areas of the mill developed checklists to use in locking out large systems, such as boilers, which may require as many as 200 locks (Tr. 161).

Based on the record, the Secretary fails to show that MCB knew or should have known that it did not have a specific LOTO procedure for the boilout tank and black liquor tanks. It lacked knowledge that the procedures had not been transferred to the new computer system (Tr. 3914-3917). Safety manager Miller was surprised that the procedures were not there (Tr. 315-316). Previously, employees said that the programs had existed (Tr. 3519, 3569-3570). The computer consultants represented to MCB that the procedures had been transferred (Exh. C-15). Chilton's request was for a checklist which differs from a procedure (Tr. 161, 404-406). MCB denies that Chilton made such a request and asserts that there was never a checklist for the tanks (Tr. 530-531). Chilton agrees that MCB had procedures for the 3 tanks but he was looking for a checklist (Tr. 364-365). Also, ABC had not worked on the tanks prior to the shutdown (Tr. 422-423). The record indicates that the only work done on the tanks was the repair of a leak on the outside of the #2 tank in 1999, which is when the LOTO programs started to be transferred to the computer (Tr. 2608).

The tanks are steel shells without moving parts and there had not been any changes made to the tanks in the years preceding the release on September 15, 2000 (Tr. 164-165). Also, no entries into the tanks had been performed in the preceding year (Exh. C-14; Tr. 1011-1013). The requirement to develop a written procedure is triggered by the performance of servicing or maintenance activities. *See* § 1910.147(c)(1).

Also, it is noted that Chilton and others testified that the tanks were easy to lockout as compared to boilers (Tr. 393, 726, 5075-5076). The boilout tank has approximately 10 valves to lockout within 8 feet of the tank, which are easily identifiable (Tr. 1020-1021). Operator William Talley testified that when he locked out the tank after the accident, he knew which valves to close and they were located on the south side of tank approximately 4 feet from the tank wall (Tr. 1831-1832).

After OSHA's inspection, the LOTO procedures for the tanks were prepared effective November 2000. The energy source was identified as chemical (Exhs. C-22, C-23, C-24; Tr. 3944-3945).

The violation is not established.

Repeat Citation No. 3

Alleged Violation of § 1910.261(b)(1) or, in the Alternative, § 1910.147(d)(3)

The citation alleges that MCB did not ensure that all energy isolation devices (valves and pumps) needed to control the flow of chemicals to and from the boilout tank, and the 50% black liquor tanks were applied to isolate the tanks from the flow of chemicals prior to a contractor's employees worked on them on September 4-15, 2000. Section 1910.261(b)(1), applicable to paper mills, provides:

> Devices such as padlocks shall be provided for locking out the source of power at the main disconnect switch. Before any maintenance, inspection, cleaning, adjusting, or servicing of equipment (electrical, mechanical, or other) that requires entrance into or close contact with the machinery or equipment, the main power disconnect switch or valve, or both, controlling its source of power or flow of material, shall be locked out or blocked off with padlock, blank flange, or similar device.

In the alternative, the Secretary alleges § 1910.147(d)(3), which provides:

> All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).

It is undisputed that the boilout tank was not completely isolated to prevent the transfer of acidic brine. Shift supervisor Keefe and tour foreman Tyre testified that the boilout and 50% black liquor tanks were not locked out (Tr. 1905, 3548).

Section 1910.261(b)(1) requires valves to be locked out to prevent the flow of material during servicing of equipment that requires entrance into or close contact with the equipment. On September 15, 2000, the valve from the brine tank to the boilout tank was not locked out while an ABC employee was preparing to weld a doubler on the boilout tank's overflow line. As discussed, the employee was performing servicing work. A violation of § 1910.261(b)(1) is established. MCB's post-hearing brief does not dispute the violation.

The standards at § 1910.261 specifically apply to pulp, paper and paperboard mills which is MCB's industry. As such, the specific industry standard prevails over the general industry standard at § 1910.147(d)(3). *See* 1910.5(c).

Repeat Classification for Citation No. 3

A violation is considered a repeat violation under § 17(a) of the Act, if, at the time of the alleged repeat violation, there is a Commission final order against the employer for a substantially similar violation. *Potlatch Corporation*, 7 BNA OSHC 1061, 1063 (No. 16183, 1979). The Secretary establishes substantial similarity, prima facie, by showing that both violations are of the same standard. *Monitor Constr. Co.*, 16 BNA OSHC 1589, 1594 (No. 91-1807, 1994).

On August 13, 1999, a citation was issued to Mead Corporation's plant in Chillicothe, Ohio (Exh. C-27). The citation alleges a serious violation of § 1910.147(d)(3) for failing to lock out floating aerator platforms in the lagoon while performing preventive maintenance. An aerator is a device that agitates the water in waste ponds to add oxygen. The aerator floats and consists of a large propeller on the bottom, powered by a 480-volt motor on top (Exhs. R-38, R-39, R-40; Tr. 3952-3953).

The 1999 citation to Mead Corporation has become a final order (Tr. 233-237). MCB is a division of Mead Corporation. Mead Corporation is actively involved in MCB affairs, including performing annual and bi-annual reviews of MCB's safety and health programs, walkaround audits, and interviewing employees (Tr. 3935-3936).

The aerators in the Chillicothe mill and the boilout tank were cited under the LOTO standard for failing to lockout. However, in this case, specific industry standard at § 1910.261(b)(1) applies. Therefore, it is not the same standard as cited in the Chillicothe case. Also, unlike the aerators, the tanks have no moving parts (Tr. 3962). The aerator floats (Tr. 3964). The purpose of the tanks is different than the aerator (Tr. 3963). The aerator is powered by electricity and is primarily an electrical hazard (Tr. 3963). The boilout tank is not powered and is locked out by turning valves. The boilout tank presents a chemical hazard. The Chillicothe violation concerns the potential release of mechanical energy from the rotation of a propeller if the electrical power source is not locked out (Tr. 4251-4252). On the other hand, the failure to lockout the valves controlling the pipelines to and from the boilout tank present a potential chemical release and an inhalation hazard.

In that the Secretary failed to show a violation of the same standard and substantial similarity of conditions, the violation of § 1910.261(b)(1) is not repeated under § 17(a) of the Occupational Safety and Health Act. Instead, it is reclassified as serious because MCB knew that the boilout tank was not locked out and the failure to lockout could cause serious injury if acid was unexpectedly mixed with black liquor, as in this case.

Unpreventable Employee Misconduct Defense

MCB asserts that tall oil operator Bill Taylor failed to follow its written SOP in pumping off the contents of the tall oil cook when unneutralized brine was transferred to the boilout tank (Tr. 1296). MCB's operating instruction for the pump off of tall oil soap cooks directs operators not to pump brine if the pH level is less than 10.5. The instruction states that "[o]nce the brine has been neutralized, it is ready to be put into the liquor recovery process and can be pumped to the boilout tank. Never pump brine with a pH less than 10.5 back into the process. Add spent liquor or caustic to brine to increase pH" (Exh. R-5 Section 2.18). The operator is also instructed to check the pH.

In order to establish an employee misconduct defense, the employer must show that (1) it has established work rules designed to prevent reasonably anticipated unsafe conditions; (2) it has adequately communicated the work rules to its employees; (3) it has taken steps to discover violations of the rules; and (4) it has effectively enforced the work rules when violations have been discovered. *Nooter Construction Co.*, 16 BNA OSHC 1572, 1578 (No. 91-237, 1994).

Based on the record, MCB's unpreventable employee misconduct defense is rejected. The transfer of acidic brine was caused by a mis-communication between the operator and the tour foreman, not employee misconduct. Operator Taylor was responding to an instruction from a supervisor. Taylor has been a tall oil operator for 3 years without any evidence of past disciplinary problems (Tr. 885). He is not a chemist (Tr. 892). Taylor said that he did not know what was in the tank when he started work on September 15. He was instructed by his foreman to "just bring it up to heat" (Tr. 903). Taylor ran a test on the contents and found that it was "off scale high" meaning it had a "high acid content." Taylor testified that he was concerned and asked his tour foreman Tyre what to do. He was told to "pump it off" which Taylor understood to mean to pump it to the boilout tank. Taylor did not consider it a regular soap cook, the mill was in an outage (Tr. 871-873). Taylor testified that Tyre said that "there wouldn't be much of it (acid) anyway" (Tr. 875). Taylor thought

it would be safe and did not know other employees were working at the boilout tank (Tr. 902). Tyre did not testify. The inadvertent transfer of acidic brine to the boilout tank was not due to employee misconduct. It is noted that Taylor was not disciplined by MCB for violating any work rules because of his pending retirement (Tr. 1099). Also, the operator instruction for pH monitoring does not prevent acid from being inadvertently transferred (Tr. 1670).

Penalty Consideration

The Review Commission is the final arbiter of penalties in 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, which is the principal factor considered, depends upon the number of employees exposed, the duration of the exposure, the precautions taken against injury, and the likelihood that an injury would result. *J. A. Jones Construction Co.*, 15 BNA OSHC 2201, 2214 (No. 87-2059, 1993).

MCB is a large employer and not entitled to credit for size. MCB employs approximately 740 employees at the Cottonton mill and approximately 1,300 employees worldwide (Tr. 91-92). MCB is also not entitled to credit for history because it has received serious citations in the preceding three years. MCB is given credit for good faith based on having overall good safety programs, including lockout/tagout, confined space, and air monitoring programs. There is no record of prior chemical releases requiring a mill evacuation.

A penalty of $5,000 is assessed for violation of § 1910.261(b)(1) (citation no. 3). Employees were exposed to the unexpected release of H_2S or acid, requiring hospitalization and oxygen treatments. The release caused the evacuation of the mill. There is no dispute that the pipeline from the brine tank to the boilout tank was not locked out.

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 1, alleged violation of § 1910.120(q)(2)(iv), is vacated.

2. Item 2a and 2b, alleged violations of §§ 1910.134(d)(1)(i) and 1910.134(d)(1)(iii), are vacated.

3. Item 3, alleged violation of § 1910.147(c)(6)(i), is vacated.

4. Item 4, alleged violation of § 1910.147(d)(6), is vacated.

5. Item 5, alleged violation of § 1910.1200(h)(1) or, in the alternative, § 1910.1200(h)(2)(ii), is vacated.

Willful Citation No 2

1. Item 1, alleged violation of § 1910.147(c)(4)(i), is vacated.

Repeat Citation No. 3

1. Item 1, alleged violation of § 1910.261(b)(1), is affirmed as serious and a penalty of $5,000 is assessed.

/s/
KEN S. WELSCH
Judge

Date: December 20, 2002