



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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VIA ELECTRONIC AND U.S. MAIL

Scott Dismukes
Attorney at Law
Eckert Seamans Cherin & Mellott, LLC
U.S. Steel Tower
600 Grant Street, 44th Floor
Pittsburgh, PA 15219

Re: S.H. Bell Root Cause Analysis for November 2017
United States v. S.H. Bell Company, Case No.: 4:17 cv 131

Dear Mr. Dismukes:

On January 18, 2018, you submitted to U.S. EPA a Root Cause Analysis (the RCA) on behalf of your client, S.H. Bell Company (Bell) for the raw products storage and material handling facility it owns and operates at 2217 Michigan Avenue in East Liverpool, Ohio (Facility). Bell submitted the RCA to U.S. EPA pursuant to its obligations under Paragraph 21 of the Consent Decree between the United States and Bell entered by the Northern District of Ohio on February 14, 2018 (the CD).

On February 8, 2018, to facilitate U.S. EPA's review of the RCA, we requested from Bell all digital video recordings taken of activities involving processing manganese ore (Affected Materials) at the Facility for the following dates: 1) November 17, 2017, 2) November 27, 2017, and 3) November 28, 2017. In a letter dated February 26, 2018, Bell submitted to U.S. EPA digital video recordings of its barge unloading operations for November 27th and 28th.¹ We subsequently worked with you and Bell to enable U.S. EPA to be able to view the files as submitted.

U.S. EPA has reviewed Bell's RCA along with the digital video recording and other information and does hereby approve the RCA upon specified conditions set forth *infra* pursuant to Paragraph 23(b) of the CD.

¹Bell did not submit a video to U.S. EPA for its barge unloading operations on November 17, 2017, because: 1) the CD required Bell to begin operating the video monitor 90 days from EPA's approval of its Video Monitoring Plan; 2) EPA approved Bell's Video Monitoring Plan on August 28, 2017, triggering the 90-day time period (which ended on November 26, 2017); and 3) November 17, 2017 was during the time period when Bell was not required to operate the digital video monitor.

Consent Decree Requirements

The CD requires Bell to *inter alia* calculate Monthly Manganese (Mn) Concentrations for each fenceline monitor operating at its Facility.² (Paragraph 18). When Bell calculates a Monthly Mn Concentration exceeding an Exceptional Action Level of 1.0 ug/m³ the CD requires it to prepare an RCA to “identify any and all emission unit(s) at the Facility that caused or significantly contributed to increased manganese emissions above the Exceptional Action Level.” (Paragraph 21).³ The RCA must “take into consideration available information and data as described in Paragraph 19.a and contain the elements identified in Paragraph 19.b.” (Paragraph 21(a)).

Paragraph 19 of the CD requires that:

- a. The Root Cause Analysis shall take into consideration available information and data from the Affected Materials Tracking System, the Digital Video Recording System, the fenceline monitors and the meteorological station, and other reasonably available relevant sources (including, but not limited to, particle morphology and composition data, speciated manganese analysis, analysis of other metals and “source fingerprint” species concentrations, source apportionment receptor modeling methods, data from other samplers, historical data, and/or observations of activity levels at other dust emission sources).
- b. The Root Cause Analysis shall:
 - (1) Identify all emission units at the Facility that processed, transferred, or stored Affected Materials during the monitoring period exceeding the Preventative Action Level;
 - (2) Identify all emission units operating or in use on the top 10 highest ambient manganese concentration days over the month, or the top 10% of the highest ambient manganese concentration days in the last twelve months, as applicable to the exceeded Preventative Action Level;
 - (3) Provide Affected Materials⁴ Tracking System records for the subject monitoring period;

²The CD defines “Monthly Manganese Concentrations” to mean “the average of all 24-hour filter sample concentrations collected over a calendar month at a single PM₁₀ Monitor.” (Paragraph 7). U.S. EPA is discussing with Bell the issue of Bell’s method of weighting its Monthly Mn Concentration calculations for cross-week months, and will address this issue in separate correspondence.

³At certain concentrations, manganese is a neurotoxin and causes neuromotor and neuropsychological deficits, including tremors, balance issues, negative cognitive effects, and mood changes. To protect public health, U.S. EPA and Bell established in the CD the 1.0 µg/m³ Exceptional Action Level, above which Bell must take significant actions to reduce the likelihood of future high Mn emissions from the Facility.

⁴The CD utilized the term “Affected Materials” to essentially mean materials containing Mn, and is defined therein as “ferromanganese materials and other materials with a manganese content (raw material, intermediate, or finished product) that are processed or otherwise handled at the Facility in a manner that could cause the generation of stack or fugitive emissions containing ferromanganese or manganese compounds.”

- (4) Identify and support appropriate corrective action measures to implement at the identified emission unit(s), if any, and/or any reasonable and feasible additional control(s), if any, that can be implemented at the identified emission unit(s) to further reduce manganese emissions beyond a *de minimis* level; and
 - (5) Include a schedule for implementation of corrective action measures and/or additional control(s) identified in the preceding subparagraph.
- c. [U.S.] EPA may request supplemental information from [Bell] regarding the corrective action measures and/or additional controls proposed in the Root Cause Analysis.
 - d. Upon receipt of approval by [U.S.] EPA of the Root Cause Analysis, [Bell] shall implement any corrective action measures and/or additional control(s) identified in the approved Root Cause Analysis in accordance with the approved schedule.

Bell's Manganese Concentrations in November 2017

Using the November 2017 emissions readings for the fenceline monitor at the West Monitoring Location (West Monitor), Bell calculated a Monthly PM₁₀ Manganese Concentration of 1.08 µg/m³ which exceeded the Exceptional Action Level of 1.0 µg/m³. Daily PM₁₀ Mn concentrations at the West Monitor exceeded 1.0 µg/m³ on November 18th, 27th, and 28th. The PM₁₀ Mn concentration recorded at the West Monitor on November 27, 2017 was 20.83 µg/m³.

Bell's RCA for November 2017

Information Considered

Pursuant to Paragraph 21 of the CD, Bell prepared an RCA for November 2017 for which it examined the following:

1. Weekly batch average PM₁₀ Mn data for November 2017;
2. West Monitor daily PM₁₀ Mn concentrations for November 2017;
3. Meteorological data for November 2017;
4. Affected Materials Tracking System Records for November 2017;
5. Digital video recordings for November 2017; and
6. PM₁₀ Monitoring data collected by Ohio EPA at the adjacent East Liverpool Water Treatment Plant.

Bell's Analysis of Cause of Exceptional Action Level Exceedance

Bell focused on November 27, 2017, because the Mn concentrations for this day were exponentially greater than for any other day. Bell's RCA states that "it is mathematically clear that the high Mn concentrations on November 27, 2017 at the West monitoring location was the sole reason for the exceedance of the Exceptional Action Level. Accordingly, S.H. Bell conducted an analysis of potential onsite and offsite factors that caused the high Mn concentration of November 27."

While six emissions units at the Facility processed Affected Materials on November 27th, Bell states that digital video footage showed that the source of the elevated manganese readings was a six-hour unloading of silicomanganese⁵ from the Straight Sided Barge Dock (the SSB Dock).⁶ It is U.S. EPA's understanding that unloading a barge at the SSB Dock consists of scooping material from the barge hold with a hydraulic excavator and dumping the material into a truck bed on land. The excavator moves along the length of the barge unloading material during the unloading process. Bell employs a single mobile wet suppression unit (Mister) at the SSB Dock to help control fugitive dust emissions during the unloading of a barge. To maximize emissions control, the operator must move the Mister in tandem with the excavator.

Bell's RCA states that the elevated Mn emissions from the SSB Dock occurred when the excavator operator failed to move or properly adjust the location of the Mister during the unloading of the barge.⁷ This omission allowed the release into the atmosphere of Mn particles generated during the barge unloading. Bell also determined that the other emissions units operating or in use for Affected Materials on November 27, 2017 were operating in a normal fashion, and did not cause or significantly contribute to the elevated Mn concentrations recorded on that day. Bell also claimed that "there is a potential that offsite Mn emissions impacted [the Mn concentrations recorded by] S.H. Bell's West monitor" on November 27, 2017. Bell's stated basis for this claim is that the predominant wind direction (24-hour) was from the West/Southwest.

Based on its review, Bell identified the following root causes of the exceedance of the Exceptional Action Level:

- The excavator operator was not properly trained on the proper procedure for barge unloading Affected Material, including the proper placement of the Mister;
- The shift supervisor did not properly oversee the barge unloading;
- Bell did not require the barge excavator operator to fill out a written verification that the excavator operator had followed the proper procedure for barge unloading Affected Material, including the proper placement of the Mister; and
- Bell did not have a policy mandating severe employee discipline for failing to follow the proper procedure for barge unloading of Affected Material, including the proper placement of the Mister.

⁵Silicomanganese is an "affected material" as defined in the CD.

⁶The emission units processing Affected Materials on November 27, 2017 were: 1) Straight-Sided Barge Dock; 2) Truck Unloading; 3) PA Truck Load-Out Shed; 4) Ohio Truck Load-Out Shed; 5) Carman Packaging Hopper; and 6) Pneumatic Vacuum Packaging System.

⁷Bell also listed two other less prominent causal factors: 1) the excavator operator was pressing to finish the barge (the second barge on November 27th) because the end of his work shift was approaching; and 2) the excavator operator failed to follow the instructions of the shift supervisor to notify him if additional help was need to properly reposition the Mister.

Bell's Proposed Solution in the RCA

Based on its analysis of the root causes of the exceedance, Bell proposed and implemented the following corrective measures:

- Bell demoted the November 27th excavator operator so that he will no longer work as an excavator operator unloading barges;
- Bell issued a memo to all of its employees stating that failing to comply with affected Material handling procedures during barge unloading will result in a 3-day suspension for a first offense, and a suspension pending termination for a second offense;
- Bell implemented a new policy requiring that excavator operators must contact supervisors and halt barge unloading if the excavator operator is unsure of the proper barge unloading procedure;
- Bell conducted excavator operator training emphasizing proper Mister placement;
- Bell developed and now requires the use of a written checklist containing the proper procedures to unload a barge containing Affected Material, which the excavator operator and supervisors must verify for each barge unloading process;
- Bell increased supervision of barge loading of Affected Material; and
- Bell changed its barge unloading process for Affected Material to either: 1) wet material when permitted by the customer; or 2) leave barge lid covers on except when the excavator is unloading from that portion of the barge.

U.S. EPA's Analysis of Bell's RCA for November 2017

U.S. EPA appreciates the thoroughness of the causal analysis in Bell's RCA and concurs that the emissions from the SSB Dock from unloading a barge on November 27th caused Bell to exceed the Exceptional Action Level in November 2017. The digital video footage shows that the Mister failed to adequately control fugitive emissions from the barge unloading operations, resulting in the West Monitor recording Mn concentrations of 20.83205 $\mu\text{g}/\text{m}^3$, more than 20 times the Exceptional Action Level of 1.0 $\mu\text{g}/\text{m}^3$.

U.S. EPA believes, however, that pursuant to Paragraph 19.d of the CD, Bell's proposed corrective measures in the RCA should have included "reasonable and feasible additional controls" that can be implemented at the identified emission units to further reduce Mn emissions. Bell's proposed and since implemented corrective measures consisted of training, oversight, issuing memos, requiring more supervision, and disciplining employees who fail to follow policies. While these measures should have a positive impact, U.S. EPA is concerned that the more often an excavator operator must manually move the Mister during unloading operations, the more likely it is that the operator could fail to do so, or could inadequately or improperly position the Mister.

U.S. EPA believes it is incumbent upon Bell to do more to safeguard against future human error from "improper placement" of the one Mister currently being used by Bell during barge unloading operations. Bell can eliminate or drastically reduce the potential for future Exceptional Action Level exceedances by adding two additional Misters: the first positioned in coordination with the current Mister to provide more comprehensive barge coverage, and the

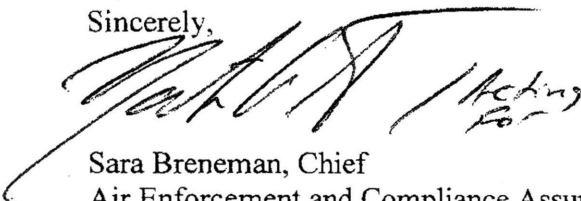
second positioned to cover significant emissions from the excavator dumping the Affected Materials into the truck. The addition of two Misters is a reasonable and feasible control that could be implemented at the SSB Dock, which would significantly safeguard against future high-emission events. Because the Misters would require less repositioning for each barge unloading, adding them to the barge unloading process would significantly reduce the potential for human error-which caused the November 27th elevated emissions.⁸


In addition, adding two more Misters also optimizes Bell's ability to control fugitive emissions from unloading Affected Materials at the SSB Dock. Our review of the videos you provided U.S. EPA shows that one Mister did not adequately control fugitive emissions from the barge unloading, even when the excavator operator properly positioned the Mister. As stated above, adding another Mister to cover the barge and a third Mister to cover the truck will vastly expand the control efficiency for unloading Affected Materials at the SSB Dock.

U.S. EPA therefore approves Bell's RCA, pursuant to Paragraph 23(b) of the CD, on the condition that Bell installs and operates two additional Misters at its unloading operations of Affected Materials at the SSB Dock, as set forth above.

Please submit to U.S. EPA within 30 calendar days a schedule for purchasing, installing and operating the two additional Misters at the Facility. You may also of course contact EPA's attorneys by email at matson.john@epa.gov or zia.humane@epa.gov, and by telephone, respectively, at (312) 886-2243 or (215) 814-3454, if you wish to discuss any aspect of this matter further.

Sincerely,


Sara Breneman, Chief
Air Enforcement and Compliance Assurance
Branch
U.S. EPA Region 5

 / For
Zelda Maldonado, Chief
Air Enforcement Branch
U.S. EPA Region 3