

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Surface
(Sand and Gravel)

Fatal Machinery Accident
August 24, 2023

MN Portable Wash 086 (A5567 Wash Plant)
Cemstone Products Company
Isle, Mille Lacs County, Minnesota
ID No. 21-03205

Accident Investigators

Christopher Veenstra
Mine Safety and Health Inspector

Ryan Moberg
Mine Safety and Health Inspector

Originating Office
Mine Safety and Health Administration
Duluth District
515 W. 1st Street #323
Duluth, MN 55802
Christopher Hensler, District Manager

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OVERVIEW

On August 24, 2023, at 7:48 a.m., Chad Minenko, a 45 year-old lead with over 17 years of mining experience, died when a wash plant feed box struck and pinned him between the feed box and a handrail.

The accident occurred because the mine operator did not: 1) block the feed box against hazardous motion, and 2) correct the hazards of the low oil level in the feed box hydraulic lift system.

GENERAL INFORMATION

Cemstone Products Company (Cemstone) owns and operates the MN Portable Wash 086 (A5567 Wash Plant) mine (MN Portable), a portable, surface sand and gravel mine, that was in Isle, Mille Lacs County, Minnesota at the time of the accident. Cemstone's main office is in Mendota Heights, Minnesota. As a portable mine, the mine operator can move this wash plant to other locations as required. The wash plant had been at this location for approximately 14 years. The mine employs two miners and operates one ten-hour shift per day, five days per week. The mine operator uses front-end loaders to feed material onto the feed belt, which then passes through the feed box for even distribution, and onto the wash screen for washing and sizing. The mine

operator moves the product from the wash plant via various belt conveyor systems to stockpile the final product.

The principal management official at MN Portable at the time of the accident was:

Joshua Miller

Northern Division Lead for Cemstone

The Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection at this mine prior to the accident on April 26, 2023. The 2022 nonfatal days lost incident rate for MN Portable was zero, compared to the national average of 0.96 for mines of this type.

DESCRIPTION OF ACCIDENT

On August 24, 2023, at approximately 6:00 a.m., Minenko and Miller started their shift at a Cemstone operation in Brooke Park, Minnesota. According to interviews, at approximately 7:00 a.m., Minenko and Miller traveled in separate vehicles to the site where the wash plant was located and arrived at approximately 7:25 a.m. The miners were preparing the plant for a move to another location. Roland Karg, Plant Operator, was already at the plant removing a water pump cable to aid in transporting the plant. Minenko traveled directly to the wash plant, while Miller stopped at the shop. Several minutes later, Miller traveled to the wash plant and witnessed Minenko working at the feed box.

Minenko had removed the bolts securing the feed box and informed Miller that he was having difficulty removing a handrail section to lower the feed box into its travel position. Minenko stated that he tried hammering the section free with no success. Miller handed Minenko a larger hammer, but Minenko could still not remove the section. Miller then suggested to Minenko that he cut the sleeves holding the handrail posts, as the posts had rusted and jammed in the sleeves. Miller gave Minenko a handheld grinder to cut the sleeves. Miller then received a phone call from an electrician who needed his assistance. Minenko informed Miller that he had attempted to pressurize the feed box hydraulic lift system provided to raise or lower the feed box but thought that the system was low on hydraulic oil. Miller asked Minenko if he needed anything, to which Minenko responded, "I'm good." Miller then told Minenko that he was leaving to assist the electrician and to call him if he needed anything.

According to interviews, Minenko instructed Karg to raise the feed conveyor because the head pulley chute was partially inserted into the feed box (see Appendix C). Karg started the generator supplying power to the plant and, using the feed conveyor system, began raising the feed conveyor. Minenko attempted again to remove the handrail section, placing himself directly behind the feed box. Karg stated that as soon as the feed conveyor head pulley chute cleared the feed box, the feed box fell, pinning Minenko to the handrail section.

Karg called over the plant radio for someone to call 911. Then he climbed the access ladder to the wash plant and attempted to lift the feed box but was unsuccessful. David Remer, Redi-Mix Division Plant Manager, called 911 at 7:48 a.m. Michael Remer, Front-End Loader Operator, was operating a front-end loader nearby and responded by driving the loader to the wash plant.

Karg instructed Remer to lift the feed box with the front-end loader. Once the feed box was lifted, Minenko fell to the platform. D. Remer arrived at the scene, and he and Karg began cardiopulmonary resuscitation (CPR).

At 7:51 a.m., the Mille Lacs County Sheriff's Office and Mille Lacs Health System Emergency Medical Services (EMS) arrived at the mine. EMS continued CPR and lowered Minenko to the ground on a stretcher. EMS transported Minenko to Mill Lacs Health System hospital where Angelique Quinn Piper, M.D. for Midwest Medical Examiners, pronounced Minenko dead at 9:06 a.m.

INVESTIGATION OF THE ACCIDENT

On August 24, 2023, at 8:31 a.m., Stacey Hannover, Regional Safety Manager for Cemstone, called the Department of Labor National Contact Center (DOLNCC). The DOLNCC contacted Daniel Goyen, Assistant District Manager, who sent Ryan Moberg, Mine Safety and Health Inspector, to the mine. Christopher Hensler, District Manager, sent Christopher Veenstra, Mine Safety and Health Inspector, to the mine as the lead accident investigator. At 10:17 a.m., Moberg arrived at the mine and issued an order under the provisions of Section 103(k) of the Mine Act to ensure the safety of the miners and preservation of evidence. Moberg interviewed witnesses and gathered preliminary evidence.

On August 24, 2023, at 4:35 p.m., Veenstra arrived at the mine and continued the investigation by conducting an examination of the accident scene, interviewing miners and mine management, and reviewing conditions and work practices relevant to the accident. See Appendix A for a list of persons participating in the investigation.

DISCUSSION

Location of the Accident

The accident occurred at the KPI-JCI Astec Wash Plant, model number 6203-32LP. The plant is used to wash and size sand and gravel (see Appendix B).

Weather

At the time of the accident, there was a light mist with temperatures in the low 60s and winds of zero to three miles per hour. Investigators determined that the weather at the time of the accident did not contribute to the accident.

Equipment Involved

The wash plant involved in the accident consisted of a feed box, a screen unit, a dewatering screw, and a belt conveyor (see Appendix C). KPI-JCI Astec Companies manufactured the plant screen and feed box. The feed box weighed approximately 2500 lbs. The feed box had two Hercules HTR-2010 hydraulic cylinders and a Simplex P160A series hydraulic pump to lower the feed box in a controlled manner for transport. The hydraulic pump had a manual handle to pressurize and extend the cylinders as well as a release screw to relieve pressure from the cylinders, allowing the operator to lower the feed box. KPI-KCI Astec Companies manufactured the dewatering screw. Argo Industries manufactured the frame of the plant.

Warning signs on the plant screen stated: “WARNING Read and understand manual before using this machine. Failure to follow operating instructions could result in personal injury or damage to equipment.” The manufacture affixed the warning labels to each side of the screen and miners can view them while accessing the platforms surrounding the screen. Before the accident, the miners were working to secure all components of the plant so they would not vibrate or move during transportation, as required by the manufacturer’s operations manual. Detaching the feed box from the frame and lowering it to its supporting bracket was a necessary part of securing the plant’s components for transport.

However, the mine operator did not ensure that the feed box was blocked against hazardous motion before the bolts securing the feed box to the frame were removed (see Appendix D). Investigators determined that this contributed to the accident.

The manufacturer’s operations manual also required a series of checks prior to operating the Simplex P160A hydraulic pump, to ensure reliable service. According to the manual, the hydraulic oil level in the feed box’s hydraulic pump reservoir should be approximately two-thirds full to supply the proper amount of oil to the cylinders. The manual also included instructions to bleed any air from the hydraulic system before operation. The mine operator did not follow these parts of the manufacturer’s operating instructions. Under the investigators’ observation, the company measured the hydraulic oil in the feed box’s reservoir and it was just over one-half full. Under observation by the investigators, the company tested the feed box cylinders and found there was not enough oil in the system to prevent the feed box from falling. This testing also revealed that there was air in the hydraulic system. When the company removed the air from the system and retested the feed box cylinders with the proper amount of oil, the cylinder’s rods functioned properly by retracting into the cylinder. Investigators determined that the mine operator did not correct the hazards of the low oil level in the feed box cylinders, which contributed to the accident. The mine operator also did not bleed the air that had infiltrated the hydraulic system, which contributed to the accident. Investigators determined that had the mine operator filled the hydraulic system with the proper amount of hydraulic oil and had the air been removed from the system, the box would not have moved.

Examinations

Workplace examinations conducted on the plant several days prior to, and on the day of the accident, indicated the mine operator found no adverse conditions.

Training and Experience

Minenko had over 17 years of experience in the mining industry. Minenko received all training in accordance with MSHA Part 46 training regulations.

ROOT CAUSE ANALYSIS

The accident investigation team conducted an analysis to identify the underlying causes of the accident. The team identified the following root causes, and the mine operator implemented the corresponding corrective actions to prevent a recurrence.

1. Root Cause: The mine operator did not block the feed box against hazardous motion.

Corrective Action: The mine operator will remove the Simplex P160A hydraulic pump and two Hercules HTR-2010 cylinders. The mine operator will raise or lower the feed box with a crane.

2. Root Cause: The mine operator did not correct the hazards of the low oil level in the feed box hydraulic lift system.

Corrective Action: The mine operator will remove the Simplex P160A hydraulic pump and two Hercules HTR-2010 cylinders.

CONCLUSION

On August 24, 2023, at 7:48 a.m., Chad Minenko, a 45 year-old lead with over 17 years of mining experience, died when a wash plant feed box struck and pinned him between the feed box and a handrail.

The accident occurred because the mine operator did not: 1) block the feed box against hazardous motion, and 2) correct the hazards of the low oil level in the feed box hydraulic lift system.

Approved By:

Christopher Hensler
District Manager

Date

ENFORCEMENT ACTIONS

1. A 103(k) order was issued to Cemstone Products Company.

A fatal accident occurred at this mine on August 24th, 2023. This order is being issued to under the authority of the Federal Mine Safety and Health Act of 1977, under Section 103(k) to insure the safety of all persons at the mine and requires the operator to obtain the approval of an authorized representative of MSHA of any plan to recover any person in the mine or to recover the mine or affected area. This order prohibits any activity in the affected area. The operator is reminded of the obligation to preserve all evidence that would aid in investigating the cause or causes of the accident in accordance with 30 CFR 50.12.

2. A 104(a) citation was issued to Cemstone Products Company for a violation of 30 CFR 56.14105.

On August 24, 2023, a fatal accident occurred at this mine when a wash plant feed box dropped, pinning a miner between the feed box and a handrail. The mine operator did not block the feed box against hazardous motion before removing the bolts that secured the feed box to the frame.

3. A 104(a) citation was issued to Cemstone Products Company for a violation of 30 CFR 56.14100(b).

On August 24, 2023, a fatal accident occurred at this mine when a wash plant feed box dropped, pinning a miner between the feed box and a handrail. The mine operator did not correct the low oil level defect or bleed the air infiltrating the feed box hydraulic lift system, which allowed the feed box to move. When tested, the feed box hydraulic lift system did not work due to the inadequate level of oil present and air in the system.

APPENDIX A – Persons Participating in the Investigation

Cemstone Products Company

Stacey Hannover
Joshua Vivant
David Remer
Joshua Miller
Roland Karg
Michael Remer

Regional Safety Manager
Aggregate Operations Manager
Redi-Mix Division Plant Manager
Northern Division Lead
Wash Plant Operator
Front-End Loader Operator

Mine Safety and Health Administration

Elwood Burriss
Ryan Moberg
Christopher Veenstra

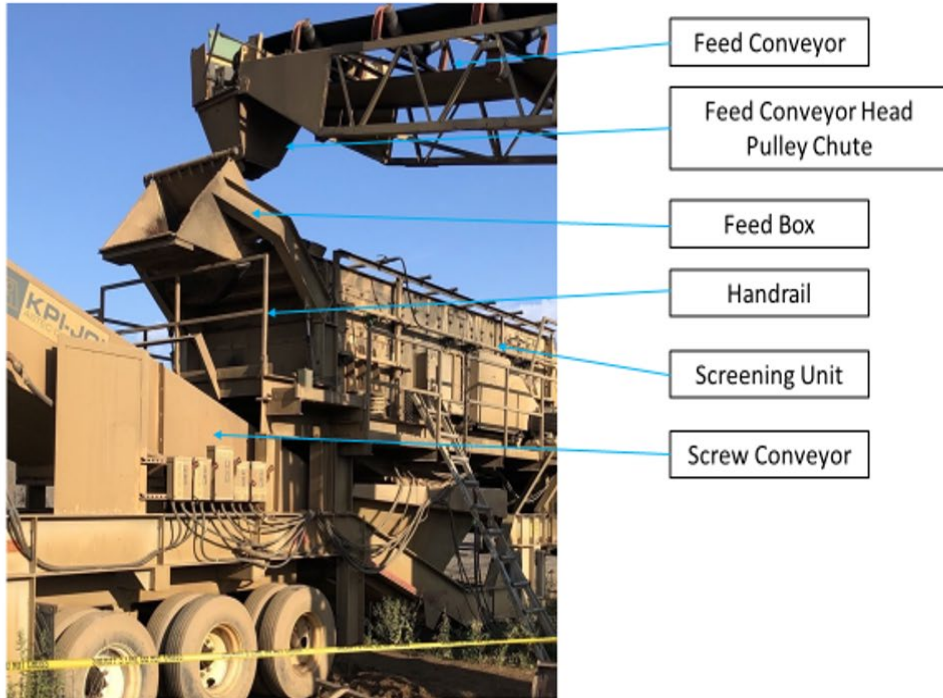
Staff Assistant
Mine Safety and Health Inspector
Mine Safety and Health Inspector

APPENDIX B – Aerial View of Wash Plant



Accident Site

APPENDIX C – Wash Plant



APPENDIX D – Bolts Used to Block Feed Box Removed

