

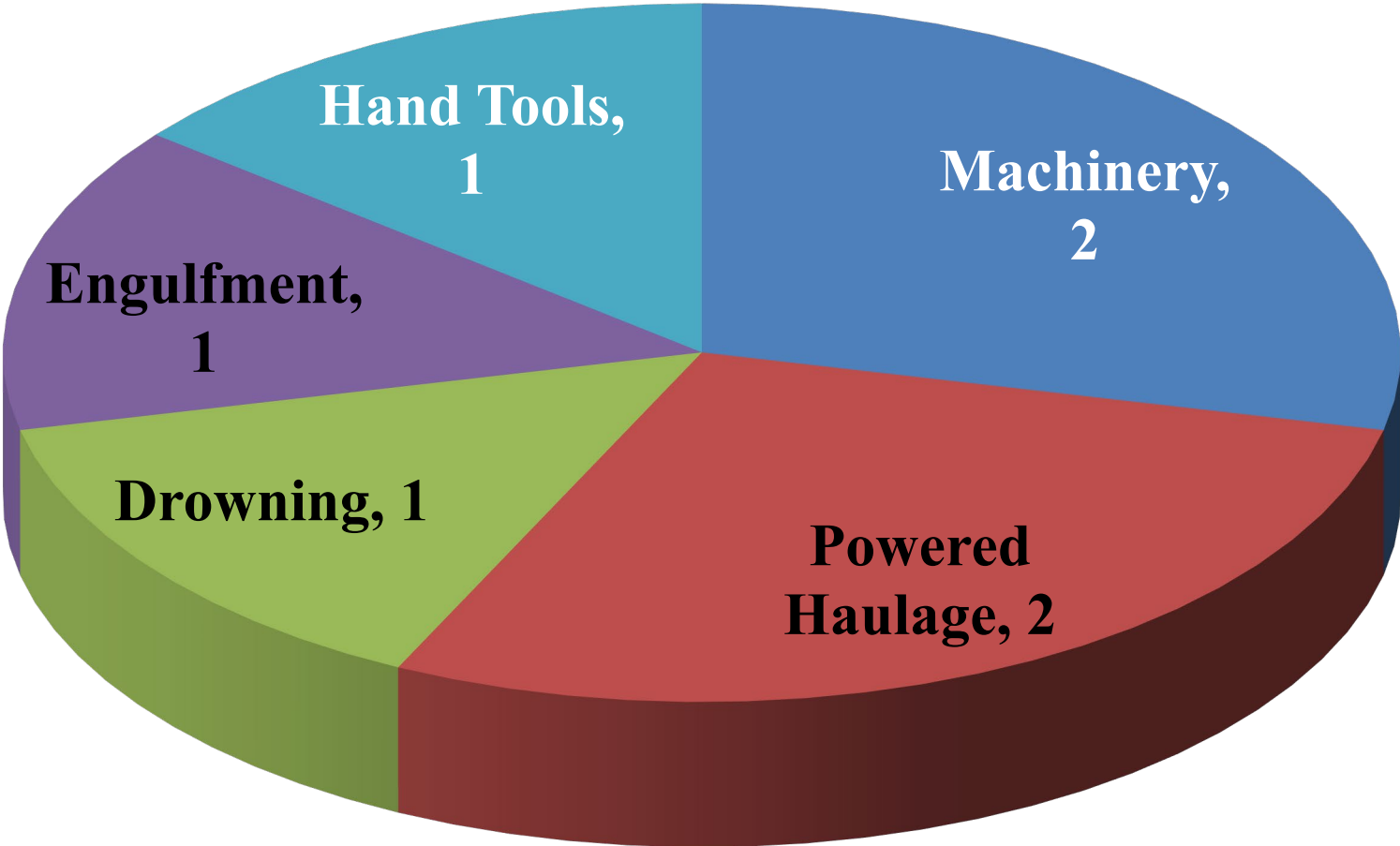
MSHA Fatalities

October 22, 2022 – January 25, 2023

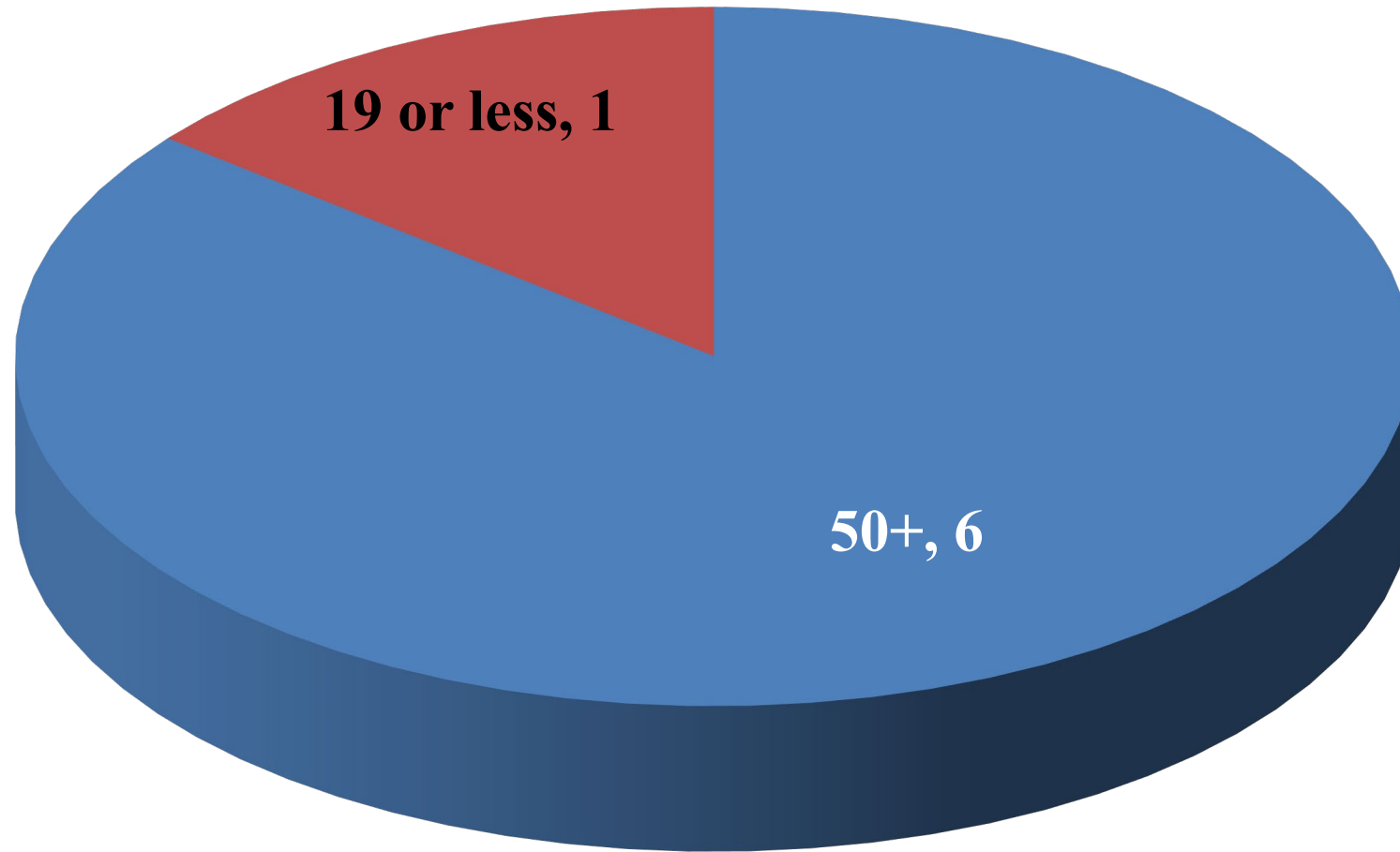
MSHA Stakeholder Meeting
January 25, 2023

Marcus Smith
Chief, Accident Investigations
MSHA Enforcement

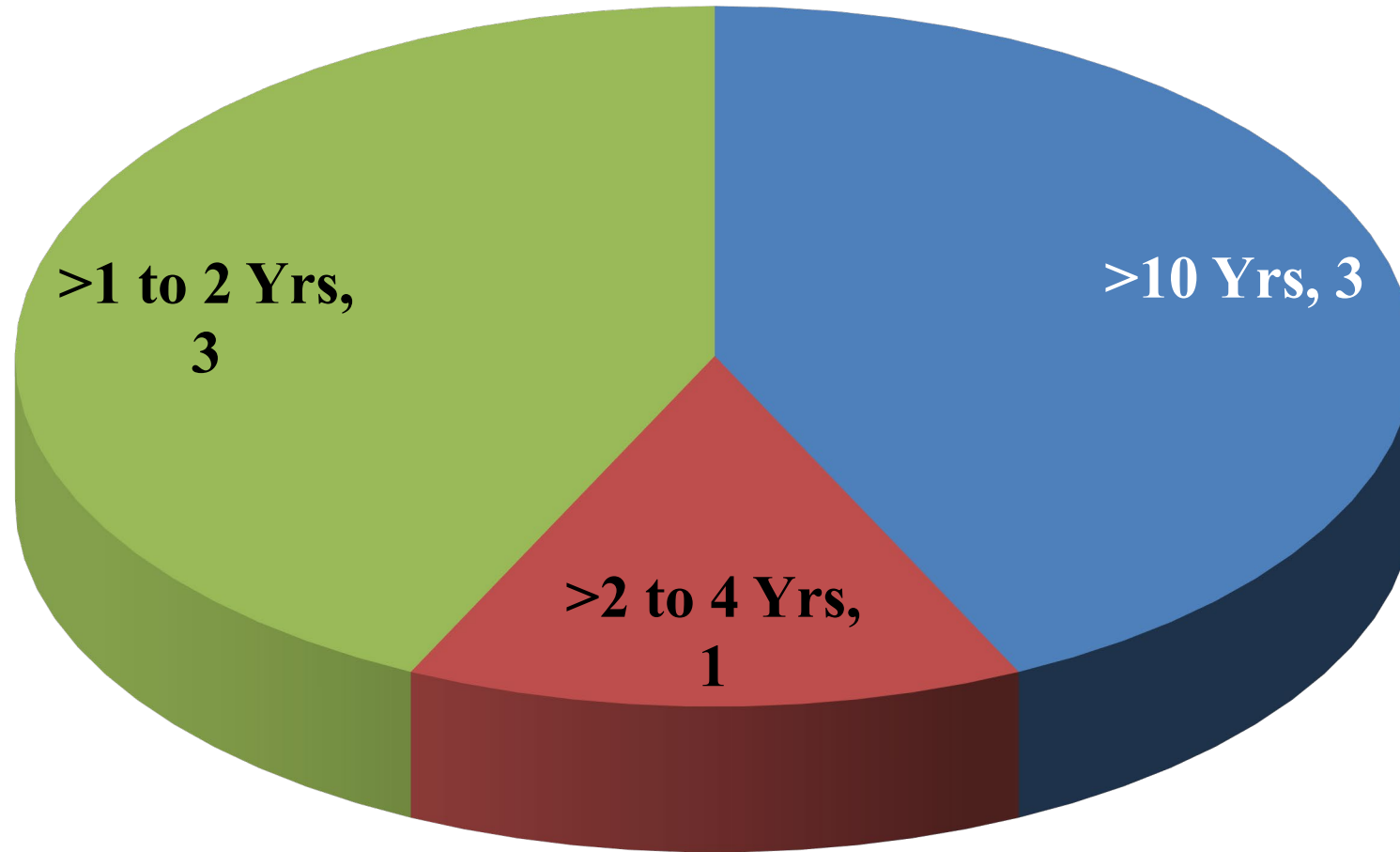
Accident Classifications



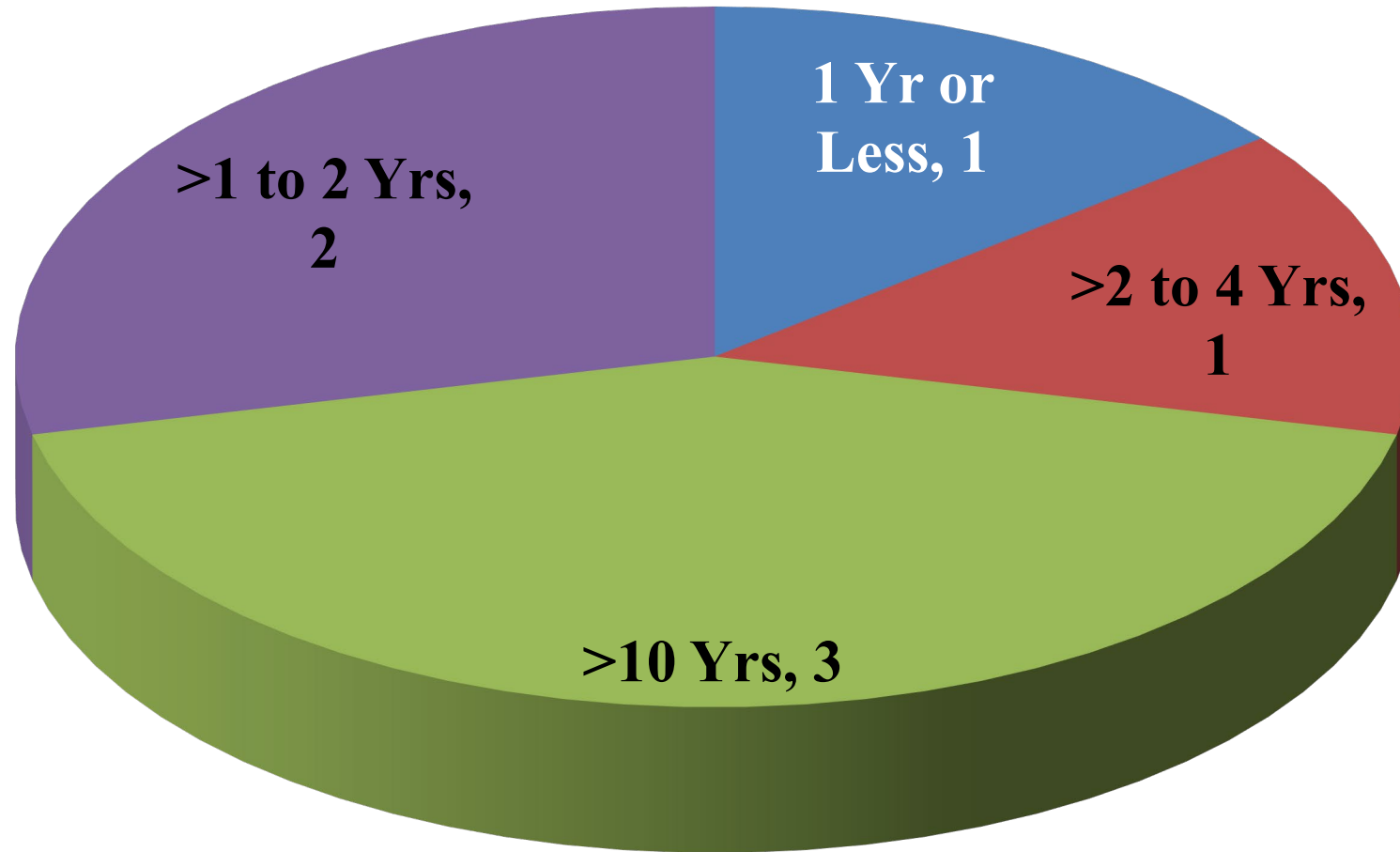
Number of Mine Employees



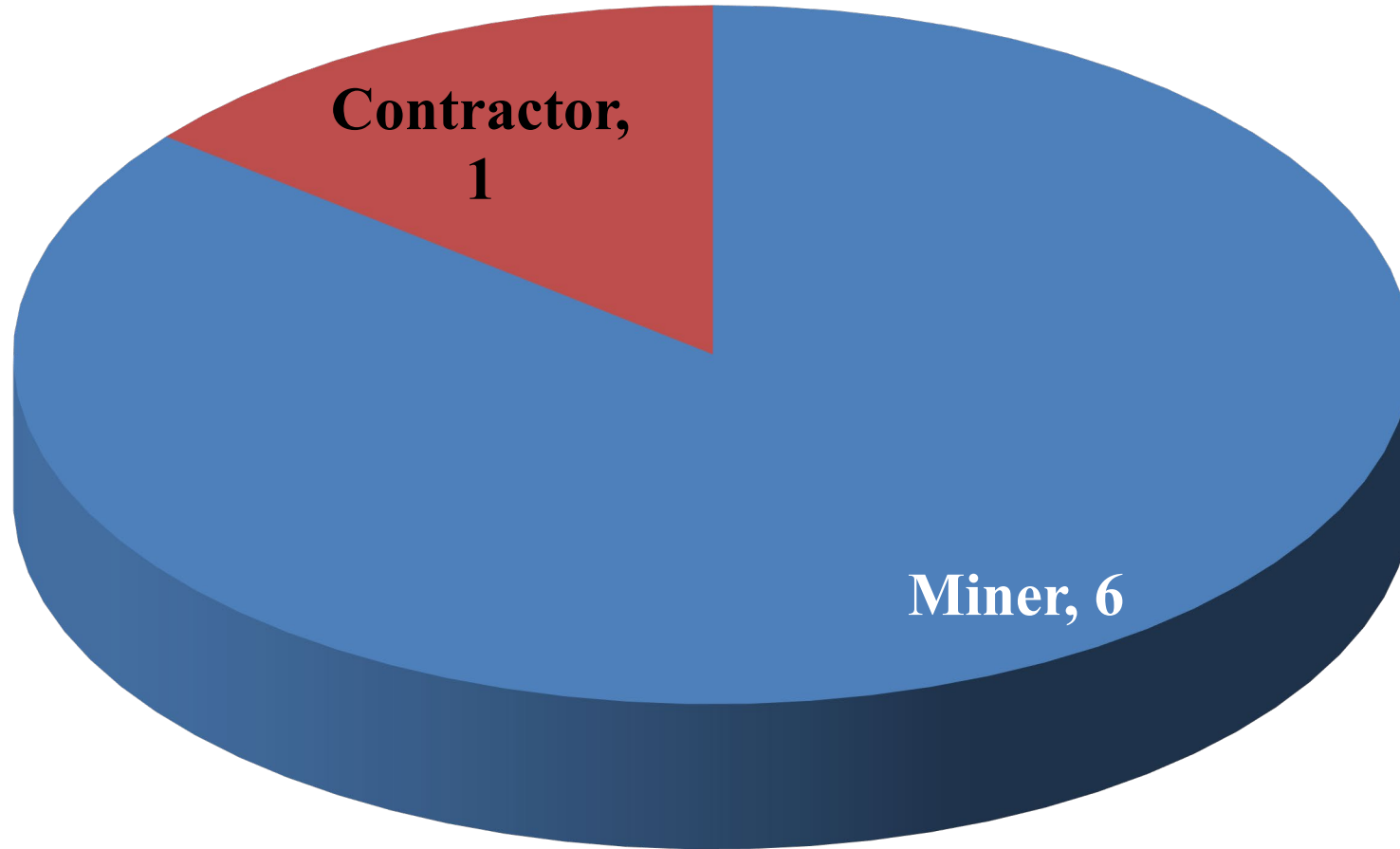
Experience at the Mine



Experience at the Activity



Mine Employees and Contractors



Viburnum #35 (Casteel Mine)
Viburnum, Missouri
Accident Classification: Powered Haulage
December 6, 2022

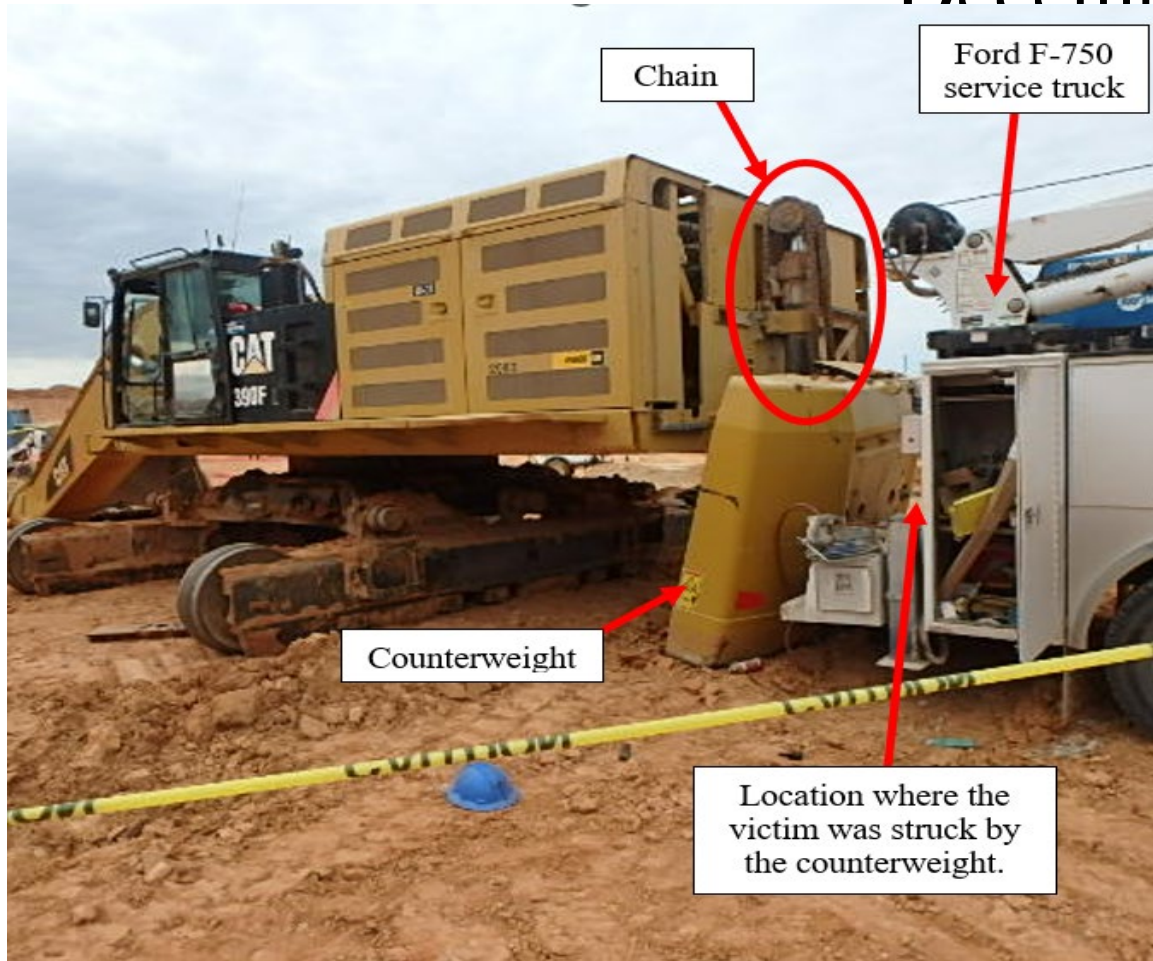


A miner died when the diesel tractor he was operating struck a pillar. The miner was thrown from the tractor and crushed under the rear tire of the tractor.

Best Practices

- Wear seat belts when operating mobile equipment.
- Maintain control of equipment while it is in operation.
- Train miners in the safe performance of their assigned tasks.

Signal Peak Silica of Atascosa
Poteet, Texas
Accident Classification: Machinery
December 16, 2022



A contract mechanic died when the counterweight of an excavator, that he was trying to remove, fell and struck him.

Best Practices

Operators should:

- Position miners to stay clear of hoisted loads and avoid pinch points when working on or near moving equipment or machinery;
- Follow safe work procedures consistent with the design of the equipment when working on or near such equipment.

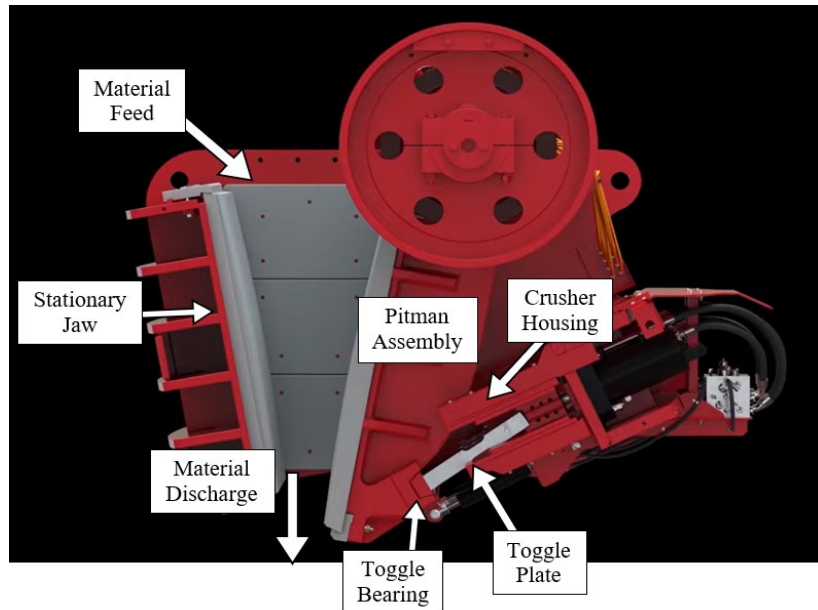
Sevierville Quarry

Sevierville, Tennessee

Accident Classification: Machinery

January 4, 2023

A miner was fatally injured while he was positioned between the pitman assembly and the crusher housing of a jaw crusher to remove a toggle bearing. The pitman assembly rotated, pinning the miner against the crusher housing.



Best Practices

Operators should:

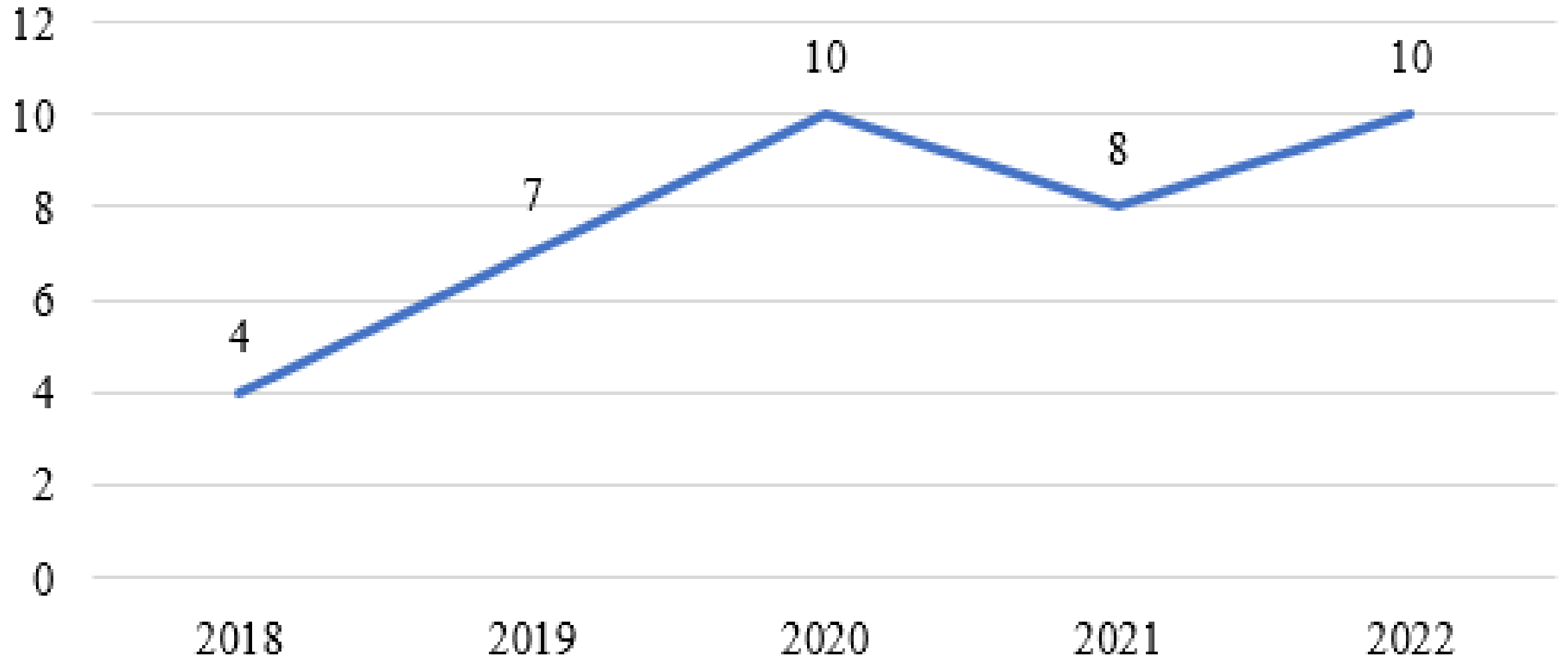
- Block machinery components against motion before beginning maintenance or repairs;
- Position miners in a safe location and away from potential pinch point areas;
- Conduct repairs according to manufacturer's recommendations; and
- Develop procedures for working safely in confined spaces.

Machinery

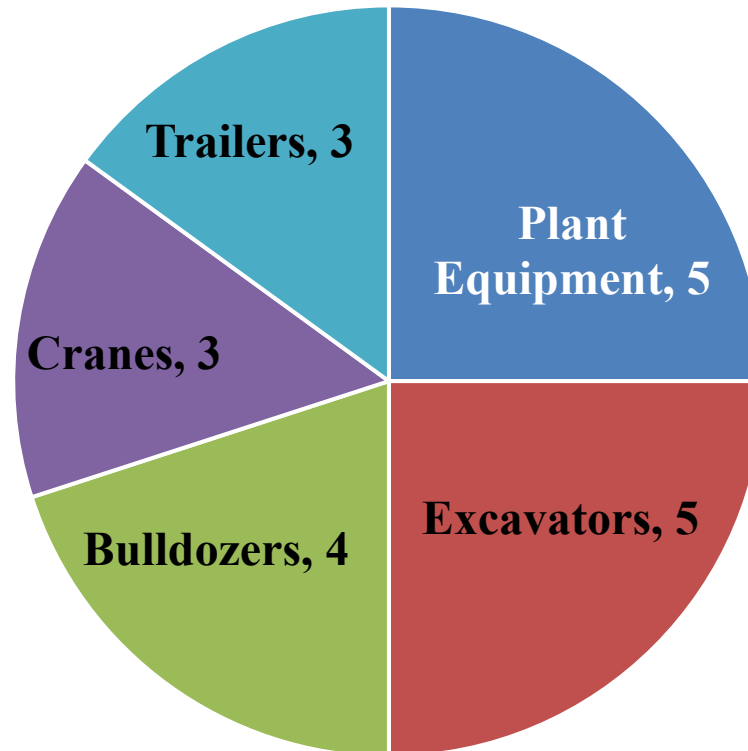
Accidents are classified as “machinery” when they result from the action or motion of machinery or from failure of component parts.

In CY2022, ten fatal machinery accidents occurred. These accidents involved two bulldozers, two excavators, a continuous mining machine, a soil compactor, an auger conveyor, a crane, an electric shovel, and a drill. This was a 25% increase from CY2021 (from 8 to 10).

Fatal Machinery Accidents CY2018 - CY2022



Top Five Pieces of Equipment involved in MSHA 2018 - 2022 Machinery Fatalities



Top Three Root Causes

2018 - 2022 Machinery Fatalities

The mine operator did not provide adequate training.

The mine operator did not assure that guards were in place while equipment was in operation.

The mine operator did not block equipment against hazardous motion before performing repairs or maintenance.

Top Three Corrective Actions 2018 - 2022 Machinery Fatalities

Mine operators developed and implemented written procedures to assure all MSHA-required training is provided.

Mine operators trained miners to secure all guards in place while equipment is in operation.

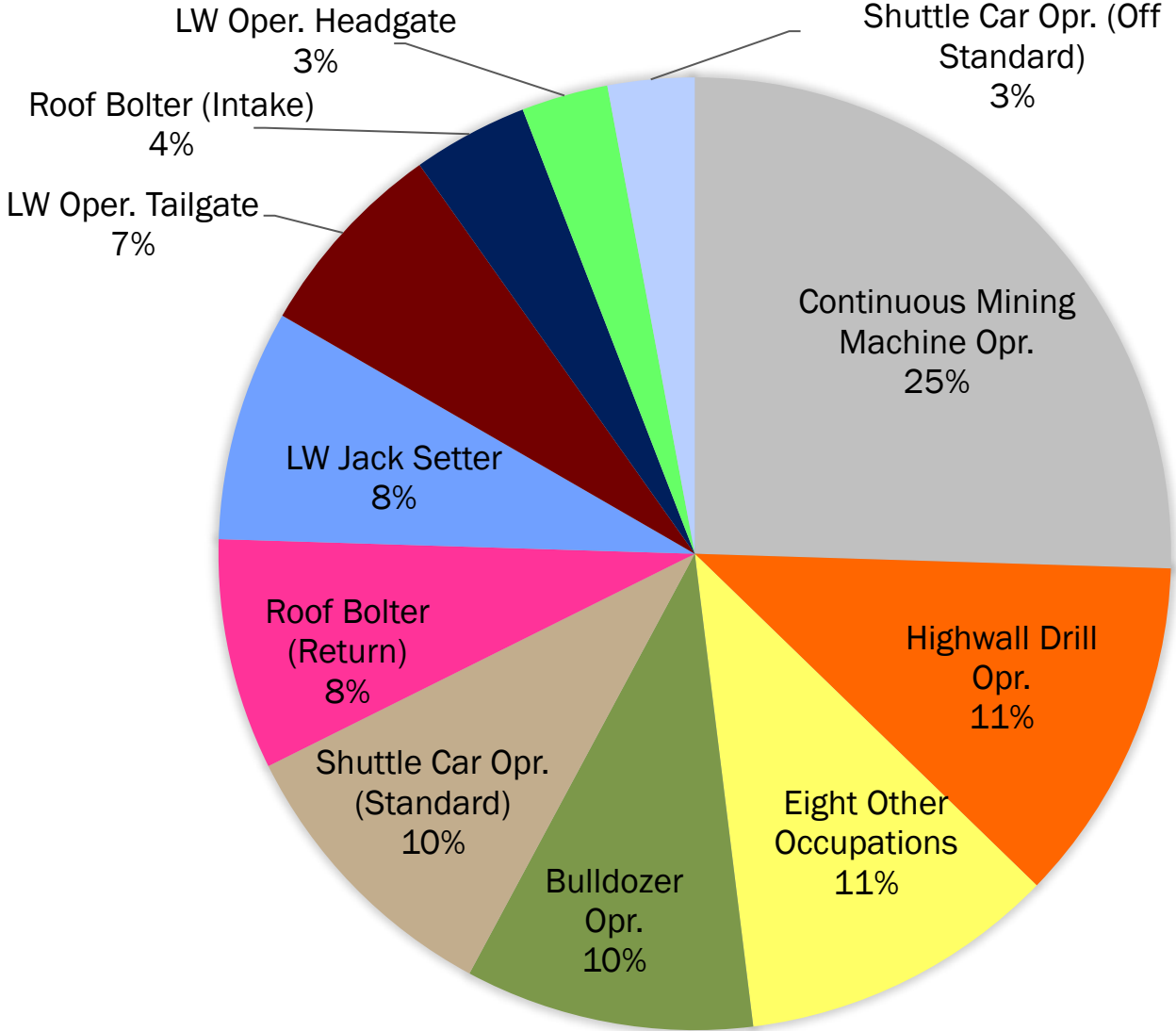
Mine operators developed and implemented written procedures that require miners to block equipment against hazardous motion before performing repairs or maintenance.

QUARTERLY STAKEHOLDER MEETING

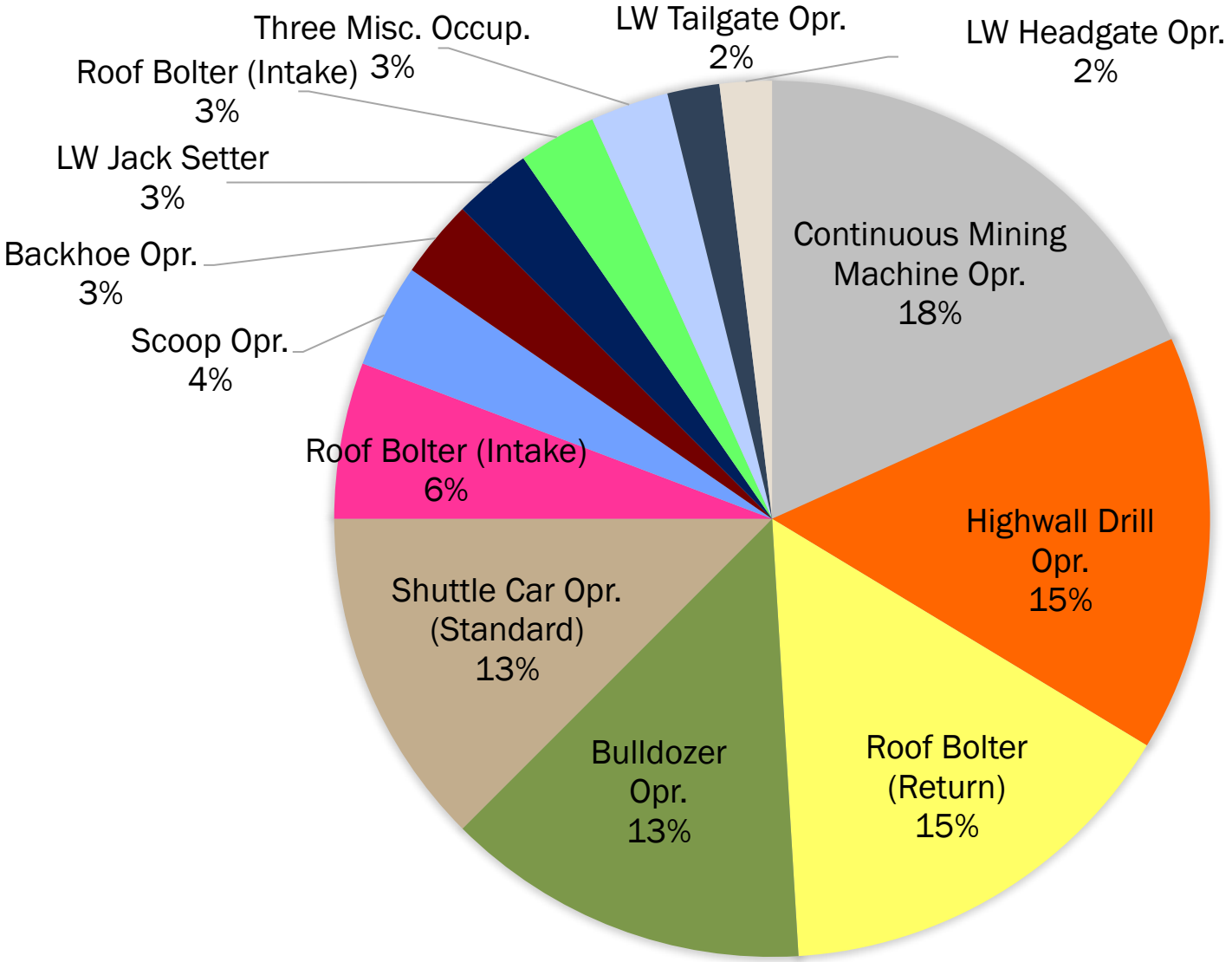
HEALTH - BRIEFING AND COMMUNICATION
JANUARY 25, 2023

Gregory B. Meikle, Chief Division of Health - Enforcement

Coal CY2021 Samples > 100 µg/m³ Silica



Coal CY2022 Samples > 100 µg/m³ Silica



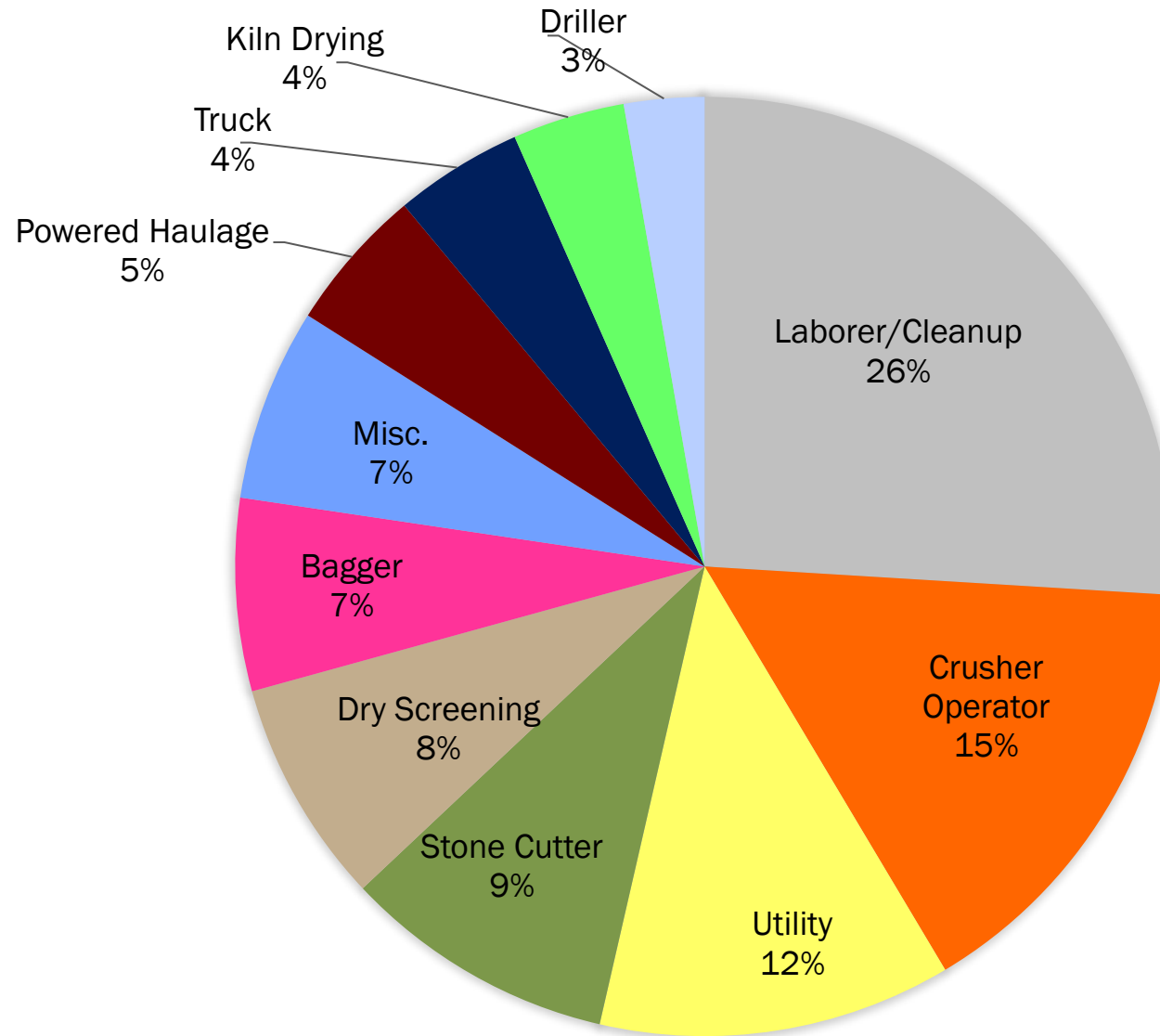
Best Practices in Dust Control

Coal Mining Occupations with the Highest Exposures to Respirable Crystalline Silica CY2022

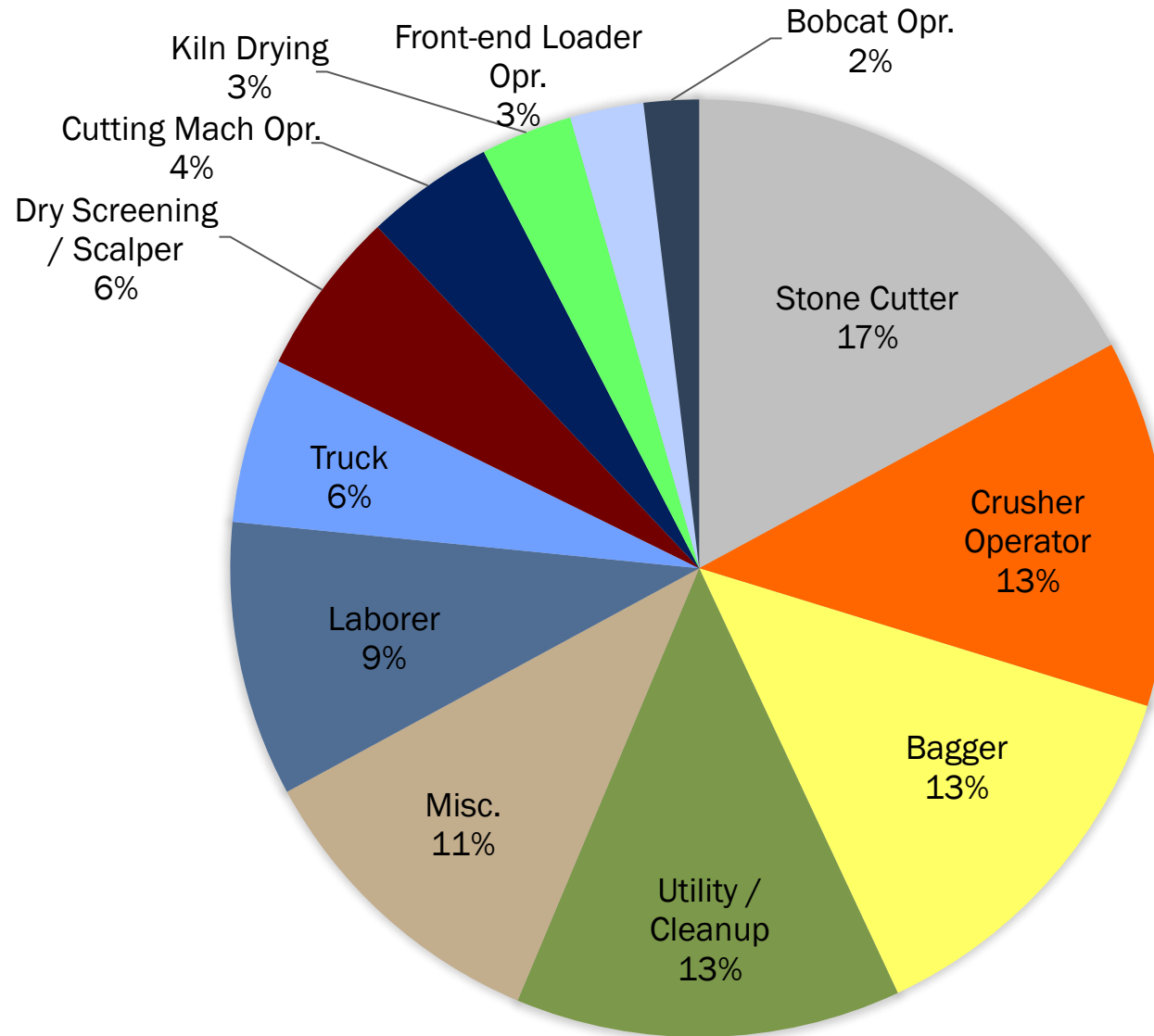
Occupation	*Best Practices
Continuous Mining Machine Operator	Water spray systems at the cutting drum or boom; volume and location
	Increased face ventilation
Highwall Drill Operator	Enclosed cab filtration systems (Environmental)
	Dry Dust Collector System or wet drilling or suppression
Bulldozer Operator	Enclosed cab filtration systems (Environmental)
	Equipment maintenance and cab cleaning
Roof Bolter Operator	Working up-wind of dust generating activity
	Provide, maintain, and clean an approved dust collector system
Longwall Face Occupations	Increased face ventilation; both velocity and quantity
	Shearer-mounted spray systems (shearer-clearer)
Shuttle Car Operator	Exhausting face ventilation
	Position operator on the opposite side of scrubber exhaust

*A comprehensive list of Best Practices can be found <https://www.cdc.gov/niosh/mining/works/coversheet2173.html>; only 2 are listed here for the various occupations.

M/NM CY2021 Samples > 100 µg/m³ Silica



M/NM CY2022 Samples > 100 µg/m³ Silica



Best Practices in Dust Control

M/NM Mining Occupations with the Highest Exposures to Respirable Crystalline Silica CY2022

Occupation	*Best Practices
Stone Cutter/ Polisher	Wet cutting when possible
	Local Exhaust Ventilation system at the workstation and or area
Crusher Operator	Implement a properly designed wet spray system
	Maintain isolation/enclosures and Local Exhaust Ventilation system
Baggers	Utilize dual-nozzle bagging system for 50- to 100-lb bags
	Local Exhaust Ventilation system or Overhead Air Supply Island System
Truck/Powered Haulage	Enclosed Cab / Dust Collector
	Water Travelways
Labor/Maintenance/Utility	Good housekeeping; no dry sweeping or dry material clean-up
	Control dust from sources such as outside air, dirty clothes, cloth chairs, etc.
Screening	Use wet suppression or Local Exhaust Ventilation
	Isolation and enclosure
Kiln	Environmental Enclosure/Control Room/Maintenance
	Water

*A comprehensive list of Best Practices can be found [CDC - Mining - Best Practices for Dust Control in Metal/Nonmetal Mining - NIOSH](#); only 2 are listed here for the various occupations.

Cabs and Environmental Enclosures

Since the last quarterly meeting October 20 there has been;

- Five (5) overexposures to respirable silica occurred at coal mines
 1. 12/20/2022 a Highwall Drill; 0.50 mg/m³ respirable coal mine dust with 25.5% quartz and concentration of 127 µg/m³ respirable quartz. A revision to the Surface Mine Respirable Dust Control Plan included: Boot cleaner, cleaning schedule for the cab, and other practices limiting the entry and exit (opening the door) in specified areas and activities.
 2. 12/08/2022 a Front End Loader; 0.55 mg/m³ respirable coal mine dust with 23.4% quartz and concentration of 128 µg/m³ respirable quartz. The front bottom glass seal was missing leaving a 1/4" gap open to the outside environment for the length of the glass, and there was an unsecured access panel in the floorboard which also left the cab open to the outside environment. The cab was repaired.
 3. 12/07/2022 an Excavator; 0.75 mg/m³ respirable coal mine dust with 46.8% quartz and concentration of 352 µg/m³ respirable quartz. A Surface Mine Respirable Dust Control Plan included: Boot cleaner, cleaning schedule for the cab, and other practices limiting the entry and exit (opening the door) in specified areas and activities.

Cabs and Environmental Enclosures

Since the last quarterly meeting October 20 there has been;

- Five (5) overexposures to respirable silica occurred at coal mines (Continued)
 4. 12/06/2022 a Bulldozer; 0.762 mg/m³ respirable coal mine dust with 18.6% quartz and concentration of 141 µg/m³ respirable quartz. A Respirable Dust Control Plan was established with maintenance and cleaning included on a schedule.
 5. 12/01/2022 an Excavator; 1.09 mg/m³ respirable coal mine dust with 14.3% quartz and concentration of 156 µg/m³ respirable quartz. It was stated: “the excavator was almost new, and no defects found, however he noted the operator was a heavy smoker and ran the shift with the door open during the shift and noted that he spoke to him about this and noted visible dust that day.” A Surface Mine Respirable Dust Control Plan included: a cleaning schedule for the cab, and other practices limiting the entry and exit (opening the door) in specified areas and activities.

Cabs and Environmental Enclosures

Since the last quarterly meeting October 20 there has been;

- Two (2) overexposures respirable silica occurred at metal and nonmetal mines
 1. 12/15/2022 a Ball Mill Operator; a 1.82 mg/m³ respirable dust with 20.2% quartz and concentration of 368 µg/m³ respirable quartz (cristobalite). *This citation is still outstanding, but additional controls and time spent in the enclosure will be key to the abatement.*
 2. 10/27/2022 (Citation) a Front End Loader; 1.45 mg/m³ respirable mine dust with 28.7% quartz and concentration of 417 µg/m³ respirable quartz. A new door seal kit, sealed other holes, cleaned air conditioner/filter, and a plan with a schedule for maintenance was implemented to abate the violation.

Best Practices for Cabs and Environmental Enclosures

A properly designed and **maintained** cab or environmental enclosure can greatly reduce miners' exposure to respirable dust, including respirable crystalline silica

Maintaining cab integrity minimizes outside contaminants from entering the cab by providing positive pressure

- Maintain/replace seals and gaskets around doors and windows
- Patch/fix holes and cracks in cab structure, doors, and windows
- Maintain seals around filter housings to increase the efficiency of the filter



Photos courtesy of CDC/NIOSH

Best Practices for Cabs and Environmental Enclosures

A properly designed and **maintained** cab or environmental enclosure can greatly reduce miners' exposure to respirable dust, including respirable crystalline silica

Some other key considerations that can help reduce exposures:

- Do not operate a piece of equipment with the doors or windows open
- Clean the inside of the cab regularly
- Replace the filters according to the manufacturer's recommendation



Photos courtesy of CDC/NIOSH

AN OPERATOR RESPONSIBLY

EXPOSURE MONITORING (In compliance with 30 C.F.R. §§ 56/57.5002)

Dust surveys shall be conducted, and as frequently as necessary, to determine the adequacy of the control measures.

- MSHA conducts respirable dust sampling with a special sampling tool called a cyclone that limits the dusts collected to **10 microns and less**.
 - Operators are required to conduct exposure monitoring to determine the adequacy of controls as frequently as necessary.
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- Using similar MSHA industrial hygiene sampling equipment allows a mine operator comparison with MSHA results.
 - Operators are not required to conduct exposure monitoring using the same equipment as MSHA however.



QUESTIONS ?

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