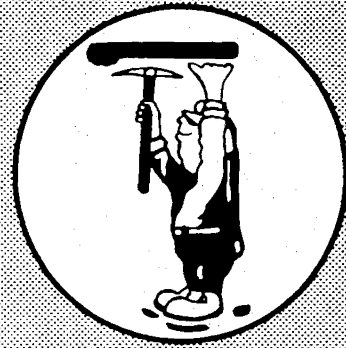
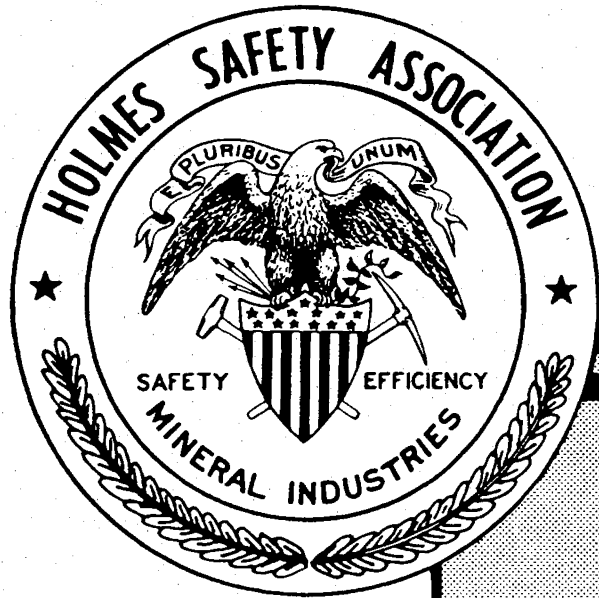


June 1980



# BULLETIN



United States Department of Labor  
**MSHA**  
Mine Safety and Health Administration

June 1980

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SLOGAN: THERE'S NO ROOM  
IN THE WORLD LARGER THAN  
THE ROOM FOR IMPROVEMENT



June 1980

## HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

### Excerpts from Code of Federal Regulations

#### Subchapter N--Metal and Nonmetal Mine Safety

##### Part 55--Health and Safety Standards-- Metal and Nonmetal Open-Pit Mines

Beginning with this bulletin, we shall familiarize ourselves with Part 55, Health and Safety Standards, Metal and Nonmetal Open-Pit Mines. The Standards contained in this Section were established for the purpose of protection of life, prevention of accidents, and promotion of health and safety of those miners working in each open-pit mine. We will begin with definitions as used in this part:

"American Table of Distances"--the current edition of "The American Table of Distances for Storage of Explosives" published by the Institute of Makers of Explosives.

"Approved"--tested and accepted for a specific purpose by a nationally recognized agency.

"Authorized person"--a person approved or assigned by mine management to perform a specific type of duty or duties or to be at a specific location or locations in the mine.

"Barricaded"--obstructed to prevent the passage of persons, vehicles, or flying materials.

"Berm"--a pile or mound of material capable of restraining a vehicle.

"Blasting agent"--any material consisting of a mixture of a fuel and oxidizer which--

- (a) Is used or intended for use in blasting;
- (b) Is not classed as an explosive by the Department of Transportation;
- (c) Contains no ingredient classed as an explosive by the Department of Transportation;
- (d) Cannot be detonated by a No. 8 blasting cap when tested as recommended in Bureau of Mines Information Circular 8179.

"Blasting Area"--the area near blasting operation in which concussion of flying material can reasonably be expected to cause injury.

SAFETY IS EVERYBODY'S BUSINESS

(For use in surface mining operations--metal and nonmetal)

"Blasting cap"--a detonator containing a charge of detonating compound, which is ignited by electric current or the spark of a fuse. Used for detonating explosives.

"Blasting circuit"--electric circuits used to fire electric detonators or to ignite an igniter cord by means of an electric starter.

"Blasting switch"--a switch used to connect a power source to a blasting circuit.

"Capped fuse"--a length of safety fuse to which a detonator has been attached.

"Capped primer"--a package or cartridge of explosives which is specifically designed to transmit detonation to other explosives and which contains a detonator.

"Circuit breaker"--a device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent setting without injury to itself when properly applied within its rating.

"Combustible"--capable of being ignited and consumed by fire.

"Company official"--a member of the company supervisory or technical staff.

"Competent person"--a person having abilities and experience that fully qualify them to perform the duty to which they are assigned.

"Conductor"--a material, usually in the form of wire, cable, or bus bar, capable of carrying an electric current.

"Detonating cord" or "detonating fuse"--a flexible cord containing a core of high explosives.

"Detonator"--a device containing a small detonating charge that is used for detonating an explosive, including, but not limited to, blasting caps, exploders, electric detonators, and delay electric blasting caps.

"Distribution box"--a portable apparatus with an enclosure through which an electric circuit is carried to one or more cables from a single incoming feed line, each cable circuit being connected through individual overcurrent protective devices.

"Electric blasting cap"--a blasting cap designed for and capable of being initiated by means of an electric current.

"Electrical grounding"--to connect with the ground to make the earth part of the circuit.

"Employee"--a person who works for wages or salary in the service of an employer.

"Employer"--a person or organization which hires one or more persons to work for wages or salary.

"Explosive"--any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion. Explosives include, but are not limited to black powder, dynamite, nitroglycerin, fulminate, ammonium nitrate when mixed with a hydrocarbon, and other blasting agents.

"Face or bank"--that part of any mine where excavating is progressing or was last done.

"Flammable"--capable of being easily ignited and of burning rapidly.

"Flash point"--the minimum temperature at which sufficient vapor is released by a liquid or solid to form a flammable vapor-air mixture at atmospheric pressure.

"Highway"--any public street, public alley, or public road.

"High potential"--more than 650 volts.

"Hoist"--a power-driven windlass or drum used for raising ore, rock, or other material from a mine, and for lowering or raising people and material.

"Igniter cord"--a fuse, cordlike in appearance, which burns progressively along its length with an external flame at the zone burning, and is used for lighting a series of safety fuses in the desired sequence.

"Insulated"--separated from other conducting surfaces by a dielectric substance permanently offering a high resistance to the passage of current and to disruptive discharge through the substance. When any substance is said to be insulated, it is understood to be insulated in a manner suitable for the conditions to which it is subjected. Otherwise, it is, within the purpose of this definition, uninsulated. Insulated covering is one means for making the conductor insulated.

"Insulation"--a dielectric substance offering a high resistance to the passage of current and to a disruptive discharge through the substance.

"Lay"--the distance parallel to the axis of the rope in which a strand makes one complete turn about the axis of the rope.

"Low potential"--650 volts or less.

"Major electrical installation"--an assemblage of stationary electrical equipment for the generation, transmission, distribution or conversion of electrical power.

"Man trip"--a trip on which persons are transported to and from a work area.

"Mill"--any ore mill, sampling works, concentrator, and any crushing, grinding, or screening plant used at, and in connection with, an excavation or mine.

"Misfire"--the complete or partial failure of a blasting charge to explode as planned.

"Multipurpose dry-chemical fire extinguisher"--a listed or approved multipurpose dry-chemical fire extinguisher having a minimum rating of 2-A:10-B:C, by Underwriters Laboratories, Inc., and containing a minimum of 4.5 pounds of dry-chemical agent.

"Overburden"--material of any nature, consolidated or unconsolidated, that overlies a deposit of useful materials or ores that are to be mined.

"Overload"--that current which will cause an excessive or dangerous temperature in the conductor or conductor insulation.

"Permissible"--a machine, material, apparatus, or device which has been investigated, tested, and approved by the Bureau of Mines or the Mine Safety and Health Administration and maintained in permissible condition.

"Potable water"--water which shall meet the applicable minimum health requirements for drinking water established by the State or community in which the mine is located or by the Environmental Protection Agency in 40 CFR Part 141, pages 169-182 revised as of July 1, 1977. Where no such requirements are applicable, the drinking water provided shall conform with the Public Health Service Drinking Water Standards, 42 CFR Part 72, Subpart J, pages 527-533, revised as of October 1, 1976. Publications to which references are made in this definition are hereby made a part hereof. These incorporated publications are available for inspection at each Metal and Nonmetal Mine Safety and Health Subdistrict Office of the Mine Safety and Health Administration.

"Powder chest"--a substantial, nonconductive portable container equipped with a lid and used at blasting sites for explosives other than blasting agents.

"Primer or Booster"--a package or cartridge of explosive which is designed specifically to transmit detonation to other explosives and which does not contain a detonator.

"Reverse-current protection"--a method or device used on direct-current circuits or equipment to prevent the flow of current in the reverse direction.

"Roll protection"--a framework safety canopy or similar protection for the operator when equipment overturns.

"Safety can"--an approved container, of not more than 5 gallons capacity, having a spring-closing lid and spout cover.

"Safety fuse"--a train of powder enclosed in cotton, jute yarn, and waterproofing compounds, which burns at a uniform rate; used for firing a cap containing the detonating compound which in turn sets off the explosive charge.

"Safety switch"--a sectionalizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

"Scaling"--removal of insecure material from a face or highwall.

"Secondary safety connection"--a second connection between a conveyance and rope, intended to prevent the conveyance from running away or falling in the event the primary connection fails.

"Shaft"--a vertical or inclined shaft; a slope, incline, or winze.

"Short circuit"--an abnormal connection of relatively low resistance, whether made accidentally or intentionally, between two points of different potential in a circuit.

"Stray current"--that portion of a total electric current that flows through paths other than the intended circuit.

"Substantial construction"--construction of such strength, material, workmanship that the object will withstand all reasonable shock, wear, and usage, to which it will be subjected.

"Suitable"--that which fits, and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstances.

"Travelway"--a passage, walk or way regularly used and designated for persons to go from one place to another.

"Trip light"--a light displayed on the opposite end of a train from the locomotive or engine.

"Wet drilling"--the continuous application of water through the central hole of hollow drill steel to the bottom of the drill hole.

"Working place"--any place in or about a mine where work is being performed.

NOTE: 55.2 the definition for "Multipurpose dry-chemical fire extinguisher became effective August 30, 1979.



June 1980

## HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

### THE NEW WORKER

The subject for today's message is still another in which all of us are concerned, and one to which every person will need to contribute time and effort if we are to have a good safety record at our mine.

Every new employee comes into our section, shop, tipple, preparation plant, mine, etc., without the full knowledge of all the risks which must be faced in their new work. Although the miner may be experienced, they have never worked before in our particular department and, of course, cannot be expected to know our rules or our ways of working. To be sure, it is the supervisor's responsibility to see that everyone under their direction is properly trained, but everyone can be of considerable assistance to the supervisor in the training of new and inexperienced people by offering guidance to these people and giving them the benefit of your experience. We were all new at one time and, of course, were helped and guided by a lot of different people. Each of us can recall the time when we were learning to drive an automobile or learning the present job we are now performing. A considerable amount of patience, guidance, and training was required before we were allowed to "solo."

New employees require time to become accustomed to their work before they are really safe workers. Any new worker worth his salt wants to learn and comes onto the job expecting to be told and shown how to do their job. Their mind is open to new ideas and new knowledge. The new worker's training must be complete and accurate.

The safe way of doing each job and each operation must be shown.

Safety must be worked into each step of the operation as a part of the work procedure. An inexperienced and untrained person performing any operation, regardless of its nature, is a menace to themselves and to everyone around them. If the new worker is not trained properly, they may get hurt, and other co-workers may also be involved. For the sake of our safety, as well, we can do nothing less than give assistance and guidance in our safety rules and the hazards involved in the total job.

The instruction given a new miner should be kind and sympathetic in nature, and certainly we need to make the employee feel comfortable and wanted. If the employee feels that we are pulling for them to make good and that we are anxious to help them in every way, the possibilities are that they will respond to all our suggestions in the right spirit and develop into a good, steady, safe miner.

(For use in all mining operations)

SAFETY IS EVERYBODY'S BUSINESS



You can see your part in the safety training of a new worker, and of course, your part is important. While it is the job of the supervisor to start the new worker off in the right direction, they will need your help the rest of the way. Some of you will be working with the new employee and can keep an eye on them, catch things they do wrong, and give them a helping hand when needed. To be sure, you will need to practice safety yourself and set a good example for the new miner. By doing all this, you will help the new worker develop an attitude toward safety that will protect them for life and improve your safety performance.



June 1980

## HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

### Roof Sounding

FATALITY REPORT
5/20/80 - Roof Falls - Coal
1979 - 14 - Total
1980 - 12 - Total

Today, my subject is as old as man's history and as new as the first day he worked in a mine. You have probably guessed that I will talk about back and roof testing.

Since early times, man has relied greatly on his sense of hearing to judge the condition of solid substances. Possibly some cave man used a bone to tap the roof in his cave where he saw some fallen rock to help him decide whether to move or stay put. Certainly the early coal digger recognized that sounding was essential for his safety.

After all these years, the many instances of fatal roof-fall accidents where roof conditions were judged to be satisfactory indicate that our conclusions based on back or roof sounding were haphazard.

Let's consider roof sounds as we recognize them today. The three chief sounds are the solid sound, the drummy sound, and the thud sound. The solid or ringing sound is caused by a continuation of the vibration of the surface when it is struck similar to a vibrating string. This sound indicates a solid roof. The drummy sound is definite in tone also. It results from the vibrations being reflected back and forth through an air space between the surface being tapped and the adjacent surface. This sound indicates the back or roof is ready to fall and immediate correction is needed. A thud sound develops when there is a crack in the back or roof in which the vibrations are damped like a vibrating string is damped by the touch of your finger because the rock on one side of the crack does not vibrate with the rock on the other side. This sound also occurs when air pockets along cracks, slips, etc., are angled about 40 degrees or more, or when the thickness of the rock being sounded is too great to let the reflecting vibrations, which make a drummy sound, reach the listener. This thud sound will vary in tone with the distance of the cavity from the back or roof surface being sounded. Obviously the thud sound indicates questionable roof at best.

Another factor which we must consider is the sounding tool. Because the sound we hear is from the impact of two solids, the sounding tool should be one that holds the least vibrations. Tools with blunt ends hold vibrations less than those with narrow ends; therefore, a hammer or a testing rod is the best choice of available tools.

(For use in underground coal-mining operations)

Although this meeting has been devoted mainly to roof sounding, we must practice our roof sounding skill in proper sequence with our senses of vision and touch so that we don't expose ourselves to the dangers of weak roof. Let's train ourselves to recognize the main sounds and adopt the attitude of the inspector who checks railroad car wheels. Does he tolerate a wheel with a flaw? Should we tolerate roof with a flaw? Of course not. We can't discard and replace the roof, but we can and must apply the needed correction.



June 1980

## HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

### HEART ATTACKS

The most common cause for heart attack is a clot in one of the blood vessels that supply the heart. This type of heart attack is called a coronary because of blockage of the coronary arteries or veins.

The victim of a heart attack will usually have severe pain behind the breastbone. It's usually described as a crushing (viselike) pressure. This will give the victim a feeling of apprehension. To put it plainly--he will be scared! He will also have shortness of breath and often will be sweating. He may have nausea or be vomiting.



Notice that these symptoms are stated as "usually" happening. Sometimes the pain connected with a heart attack does not come on suddenly in the chest behind the breastbone. The pain may first appear in the left arm, move into the neck, and then to the left side of the chest. It may stay in the upper abdomen or be at the back of the chest. While the pain is usually severe and stays severe, it might be mild. In fact, a victim might think he only has indigestion.

### SIGNS/SYMP TOMS

1. Shortness of breath
2. Anxiety
3. Crushing pain in chest, under breastbone, or radiating down left arm.
4. Ashen color
5. Possible perspiration and vomiting.

### FIRST AID TREATMENT

Have someone call for medical help and in the meantime:

1. Place victim in a semi-reclining or sitting position.
2. Give oxygen if available.
3. Loosen tight clothing at the neck and waist.
4. Administer nitroglycerine pill if victim is carrying them and asks you to get them (they are administered by putting one under the tongue).
5. Keep onlookers away.
6. Comfort and reassure him.
7. Do not allow him to move around.
8. Give no stimulants.

(For use in all mining operations)



June 1980

## HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

### HEAT CRAMPS

Affects people who work or do strenuous exercises in a hot environment.

#### SIGNS/SYMPTOMS

1. Painful muscle cramps in legs and abdomen
2. Faintness
3. Profuse perspiration

#### FIRST AID TREATMENT

1. Move victim to a cool place
2. Give him sips of salted drinking water (one teaspoon of salt to one quart of water)
3. Apply manual pressure to the cramped muscle

#### PREVENTION

1. People who work hard in high temperatures should drink large amounts of cool water
2. Add a pinch of salt to each glass of water

### HEAT EXHAUSTION

Pale and clammy skin, perspiration.

#### SIGNS/SYMPTOMS

1. Pale and clammy skin
2. Profuse perspiration
3. Rapid and shallow breathing
4. Weakness, dizziness, and headache

#### FIRST AID TREATMENT

1. Care for victim as if he were in shock
2. Remove victim to a cool area, do not allow chilling
3. If body gets too cold, cover victim

### HEAT STROKE

Red and flushed, skin hot and dry.

#### SIGNS/SYMPTOMS

1. Face is red and flushed
2. Victim becomes rapidly unconscious
3. Skin is hot and dry with no perspiration

(For use in all mining operations)



June 1980

## HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

### SAFE DRIVING CONDUCT

1. I will drive in an alert, courteous, and sane manner.
2. I will always operate my vehicle at a safe speed, and at no time will I take risks.
3. I will not drive when my senses and ability are affected by liquor, drugs, emotion, drowsiness, illness, or otherwise.
4. I will be ever-cautious toward pedestrians, keeping in mind that I, too, am often a pedestrian.
5. I will be tolerant toward other drivers.
6. I recognize that my right to drive a vehicle upon the streets and highways is a privilege that must be shared with others and not abused.
7. I will obey all traffic laws, signs, and signals.
8. I will never insist on my right-of-way or other **traffic** rights when, by my extending or granting the same right to the other driver, or pedestrian, I may prevent an accident or injury.
9. I will keep my vehicle in a safe and proper working condition at all times.
10. Above all, in my driving, I pledge that I will--  
"Do Unto Others as I Would Have Others do Unto Me."

---

Is not this driving code worthy of your consideration?

(For use in all mining operations)

SAFETY IS EVERYBODY'S BUSINESS

# ABSTRACT FROM FATAL ACCIDENT

June 1980

HOLMES SAFETY ASSOCIATION  
MONTHLY SAFETY TOPIC



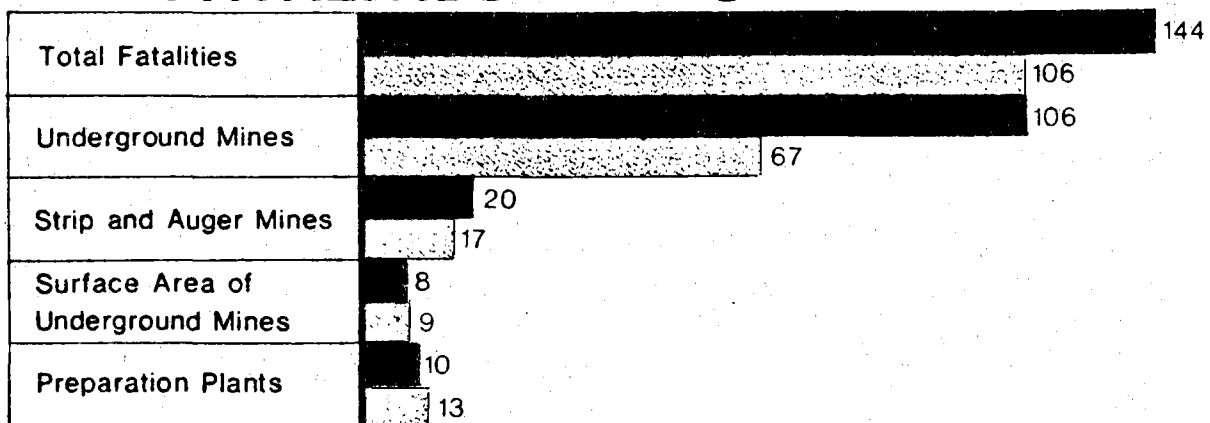
## FATAL ROOF FALL ACCIDENT

General Information: A roof fall accident occurred at the face of No. 1 left entry resulting in the death of a loading-machine operator helper. He had about one year and 10 months mining experience, the last 5½ months of which were as loading-machine operator helper.

Description of Accident: The accident occurred when he was apparently attempting to test the roof in by the last row of permanent roof bolts or preparing to install temporary roof support, when he was struck by a falling piece of rock approximately 5 inches thick, 106 inches in width, and 120 inches long. The loading-machine operator stated that after loading the first four shuttle cars of coal he observed the loose roof and informed the victim on two occasions that the roof was loose and to get a long rock bar, located in the belt entry, to take the rock down with.

Cause of Accident: The accident occurred when the victim was apparently attempting to test the roof in by the last row of permanent roof supports or preparing to install temporary roof supports after having been informed on two occasions that the roof was loose and needed to be taken down.

## COAL \* FATALITIES During 1978 and 1979



1979  
1978

\* Preliminary Data for 1979

SAFETY IS EVERYBODY'S BUSINESS

# ABSTRACT FROM FATAL ACCIDENT

June 1980

HOLMES SAFETY ASSOCIATION  
MONTHLY SAFETY TOPIC



## FATAL MATERIAL HANDLING ACCIDENT

General Information: A field supervisor was involved in a materials handling accident and died enroute to the hospital. The mine was a limestone quarry and plant. The limestone was drilled, blasted, and hauled by truck to the plant where it was crushed and sized. It was then transported by conveyor belts to holding bins which discharged into rotary kilns where it was heated to 2200 degrees F to make quicklime. The finished product was shipped by tank trucks to industry.

Description of Accident: On the day of the accident the victim started work at the regular starting time. The victim had been hired through contractors to install a new conveyor system.

A crane operator and a truckdriver saw the victim loading conveyor frames on the trailer. The crane operator stated that they had two conveyor frames loaded on the flat bed trailer with the catwalks of both conveyor frames projecting approximately 2 feet 6 inches beyond the sides of the trailer. The crane operator said that after the two frames had been loaded, the victim told him to swing over and set two pieces of 8-inch channel iron 20 feet long and one piece of 4-inch diameter pipe 3/8 inches thick and 20 feet long on the catwalk. He then jumped up on the catwalk and was holding one end of the material to guide it, as the crane operator lowered the iron into position, and as the load settled into position on the catwalk, the conveyor frame started to tip over. When the crane operator saw the frames start to tip he tried to lift the iron off of the catwalk thinking the frames would settle back down; however, the frame had tipped too far and fell, pinning the victim between the handrail and the conveyor frame. The crane operator and the truckdriver then hooked one end of the conveyor frame and raised it up enough to free the victim. The victim was transported by ambulance to the hospital where he was pronounced dead on arrival.

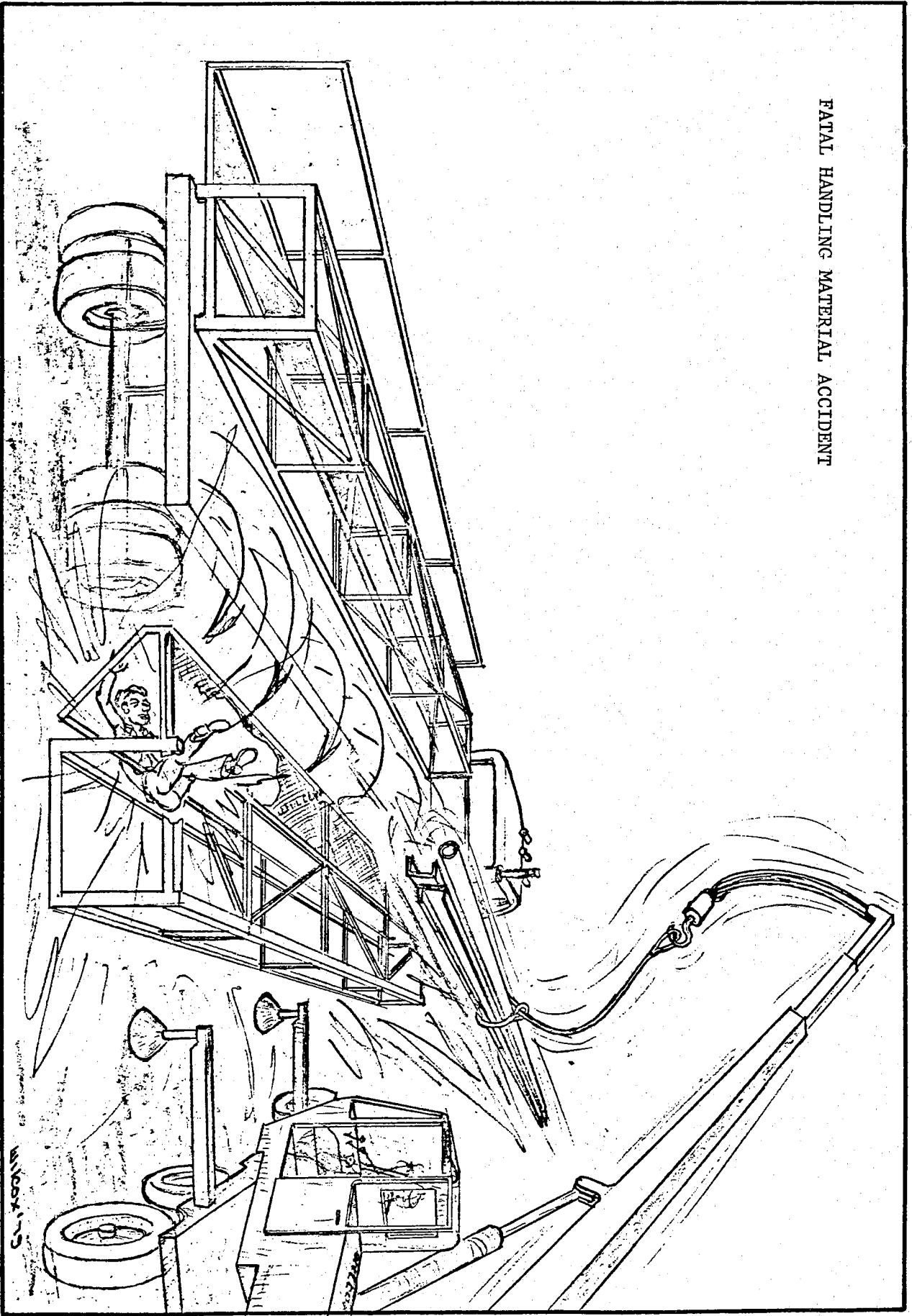
Cause of Accident: The cause of the accident was placing a load on the overhanging walkway of the conveyor frame before it was tied down, or placed in a stable mode, causing it to tip over and crush the victim's chest. A contributing cause, affecting the severity of the accident, was the victim placing himself on the unsecured conveyor frame as additional material was loaded. Also he should have stayed clear of the load and guided the channels and pipe with taglines.

Recommendations: Materials should be stored and stacked in a manner which minimizes falling of materials. Taglines should be attached to materials that require steadying or guidance.

(For use in surface mining operations)



FATAL HANDLING MATERIAL ACCIDENT



CLAYTON

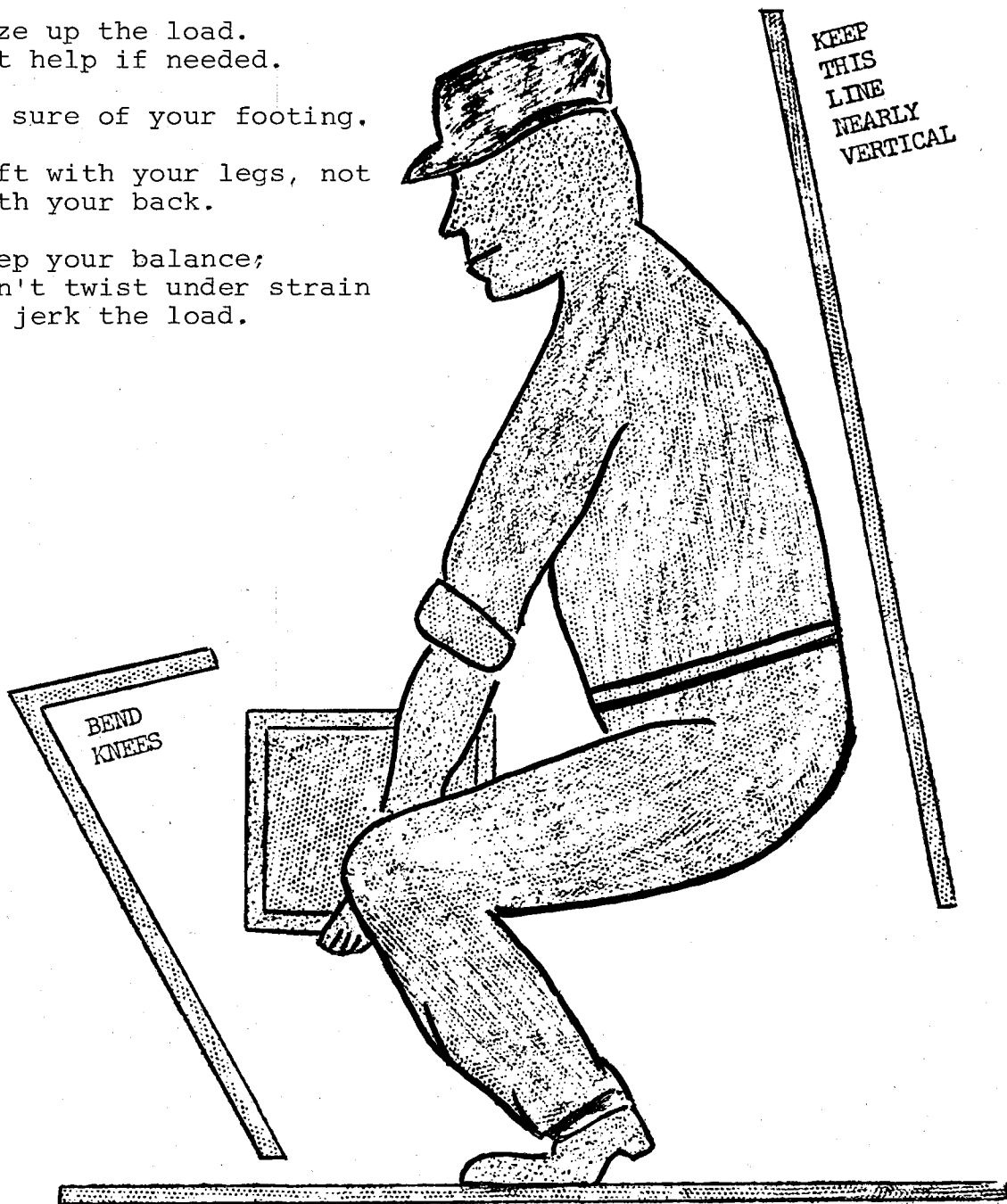


June 1980

## HOLMES SAFETY ASSOCIATION MONTHLY SAFETY TOPIC

### PROPER LIFTING TECHNIQUES

1. Size up the load.  
Get help if needed.
2. Be sure of your footing.
3. Lift with your legs, not  
with your back.
4. Keep your balance;  
don't twist under strain  
or jerk the load.



BULL STRENGTH IS NOT ENOUGH--YOU HAVE TO APPLY POWER WHERE IT COUNTS.

DO LIFTING JOBS MECHANICALLY, WHENEVER POSSIBLE. LIFT SAFELY.

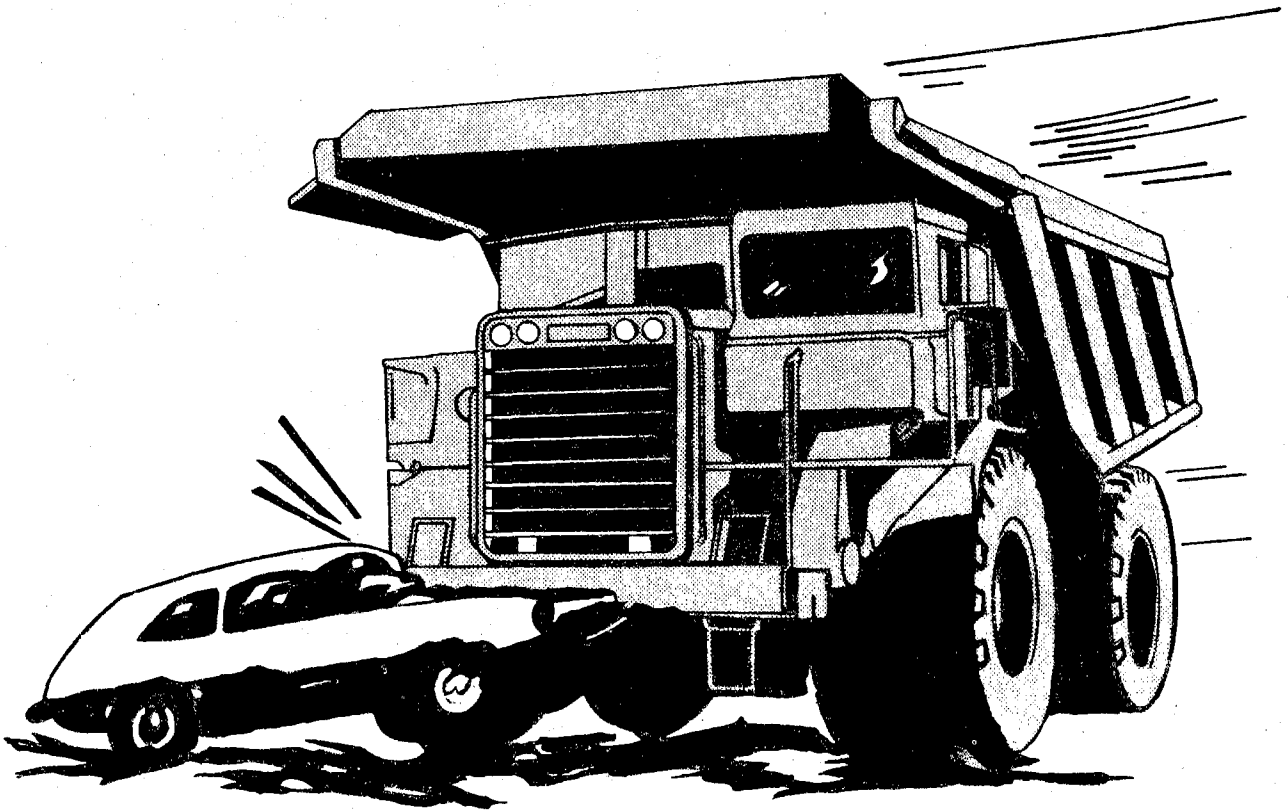
(For use in all mining operations)

June 1980

HOLMES SAFETY ASSOCIATION

# RIGHT-OF-WAYS should be Established, Posted, and Observed.

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FOR SAFETY  
IN 1980



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Education and Training  
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Denver, Colorado 80225

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