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HazCom 30 CFR Part 47

Telling Miners About Chemical Hazards

U.S. Department of Labor
Mine Safety and Health Administration

Other Training Material
OT 49

July 2002

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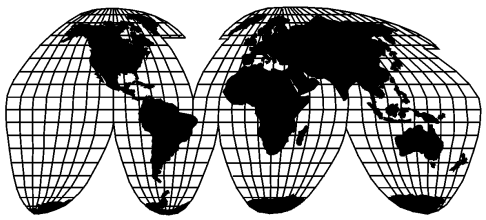


HazCom 30 CFR Part 47

Telling Miners About Chemical Hazards

U. S. Department of Labor
Elaine L. Chao
Secretary

Mine Safety and Health Administration
Dave D. Lauriski
Assistant Secretary

Other Training Material
OT 49

July 2002

HazCom Tool Kit

Welcome to the Hazard Communication (HazCom) Tool Kit. This package is designed to help you develop an effective, mine-specific HazCom program that meets the provisions of Part 47.

This package is divided into eight sections. These sections contain information you can copy or customize to meet your needs. You may want to put this material in a three-ring binder.

Let's take a brief look at each section.

Introduction - *Brief review of the rule with important dates to remember*

Hazard Determination

HazCom Program

Labeling

Material Safety Data Sheets (MSDSs)

HazCom Training

Contacts for HazCom Assistance

HazCom Rule

HazCom

HELP IS AS CLOSE AS...

Your Telephone

MSHA District & Field Offices
State Grants Program
(See Section on HazCom Assistance)

EFS Eastern U.S.	Toll Free 1-800-678-6746
EFS Western U.S.	Toll Free 1-800-579-2647

Your Computer

Information available on the internet: www.msha.gov

Your Local Field Office

MSHA inspection and educational field services staff will be distributing compliance assistance materials to your site. Feel free to contact your local MSHA office to request materials in advance. Materials are also available from the National Mine Health and Safety Academy. Write to the Academy staff at 1301 Airport Road Beaver, West Virginia 25813-9426. Call the Academy staff at (304) 256-3257, send fax to (304) 256-3368, or send an E-mail to: lord-mary@msha.gov

U.S. Department of Labor, Elaine L. Chao, Secretary

Mine Safety and Health Administration, Dave D. Lauriski, Assistant Secretary

Introduction

The purpose of the Hazard Communication (HazCom) Standard is to reduce injuries and illnesses related to chemicals in the mining industry.

Part 47 (HazCom) applies to any operator producing or using a hazardous chemical to which a miner can be exposed under normal conditions of use or in a foreseeable emergency (refer to Subpart J for exemptions).

Each operator must:

- Identify the chemicals at the mine
- Determine which chemicals are hazardous
- Establish a HazCom program
- Inform each miner who can be exposed, and other operators whose miners can be exposed, about chemical hazards and appropriate protective measures

Effective dates for compliance:

September 23, 2002, for mines employing six or more miners

March 21, 2003, for mines employing five or fewer miners

Understanding MSHA's HazCom

Lubricants and solvents, epoxies and paints, diesel fuel and gasoline, cyanide and cement, silica, mercury, and many other chemicals are either brought to mining operations or come from the mining process itself.

Chemicals are fundamental to life, but can also cause sterility, cancer, burns, and heart, kidney or lung disease, among other health problems. They can cause fires and explosions, but can also help fight fires and control explosions.

The mining industry reported over 3,000 chemical burns and poisonings to MSHA between 1990 and 1999. We (MSHA) believe miners may develop long-term health problems from chemicals as well. These illnesses, however, may occur years after an exposure when the relationship of illness to chemical can be difficult to see. We developed a standard, called HazCom, to reduce chemical injuries and illnesses.

What do I have to do?

If your operation is like most mining operations, compliance is not complicated. You must —

- Inventory the chemicals at your mine and determine which are hazardous.
- Keep a list of the hazardous chemicals.
- Establish a written HazCom program. We have models you can use for a pattern.
- Prepare a label and Material Safety Data Sheet (MSDS) for your product.
- Make sure that containers of hazardous chemicals are labeled.
- Keep MSDSs for the hazardous chemicals at your mine.
- Train your miners about the HazCom program and the hazardous chemicals to which they can be exposed.
- Allow your miners to look at the HazCom information you have and give them a copy if they ask.

These are basic compliance responsibilities. We wrote this booklet to help you understand what these requirements mean. We've included the complete HazCom standard in this booklet beginning on page 67. We've also produced a number of other training and information aids. Contact MSHA's Educational Field Services (EFS) or your local MSHA office to get HazCom compliance information.

We have put the preamble and final rule, links to other chemical information sites, and a number of other resources on our internet Home Page (www.msha.gov).

What is HazCom?

HazCom is an information and training standard (30 CFR 47). HazCom is based on two safety and health principles: Miners have a right to know about the chemicals to which they can be exposed and you have a responsibility to know about the chemicals at your mine. You must tell miners about the hazards associated with exposure, the methods you use to control exposure, and the safety measures to take. HazCom doesn't restrict chemical use, require controls, or set exposure limits.

Who and What is Covered?

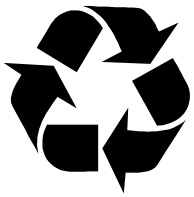
HazCom applies to "... any operator producing or using a hazardous chemical to which a miner can be exposed under normal conditions of use or in a foreseeable emergency."

We define "chemical" to mean "any element, chemical compound, or mixture of these." This can cover—

- liquids (such as diesel fuel),
- solids (such as coal dust), and
- gases (such as NO_2 from blasting).

Hazard Determination

What is hazard determination?



Hazard determination is your chemical inventory. You must identify the chemicals at your mine and determine if they can be a physical or health hazard. Some chemicals are physical hazards; some are health hazards; some can be both; and some are neither. Some chemicals are exempt from HazCom because they're already regulated by other Federal agencies.

Physical Hazards can cause injuries. The chemical may be a combustible liquid, a compressed gas, an organic peroxide, or an oxidizer. It may be flammable, explosive, unstable (reactive) or water-reactive.
Health Hazards can cause illnesses. The effects may be acute (of short duration) where symptoms often appear immediately, or chronic (of persistent duration) where symptoms usually appear after some time.

Are any chemicals at my mine exempt from HazCom?

Probably yes. HazCom has two classes of exemptions:

- Chemicals exempt from HazCom, and
- Chemicals exempt from labeling.

Some exemptions contain certain restrictions. You should understand these exemptions and restrictions before you conduct your hazard determination.

Common Exemptions From the HazCom Rule

1. *Consumer Product:* If you buy an ordinary consumer product, it's exempt from HazCom if—
   - you use it as the manufacturer intended, and
   - it does not expose the miner more often or for longer duration than ordinary consumer use.

Example: All-Purpose Cleaner

You purchase a case of cleaner with ammonia for your truck drivers to clean their windshields. The drivers clean them 2 or 3 times each shift. Should you include the cleaner in your HazCom program?

No. This is a consumer product being used as an ordinary consumer would use it.

You purchase a case of cleaner with ammonia for your janitor to clean counters, mirrors, windows, bathroom tile, and other parts of your mill. The janitor performs this work all day long. Should you include the cleaner in your HazCom program?

Yes. The cleaner will be used as the manufacturer intended, but the janitor is exposed to ammonia for a longer time than an ordinary consumer would be.

2. *Article:* Manufactured goods, such as plastic and metal pipes, conveyor belts, repair steel, and tires, are at every mine. For the purpose of HazCom, such goods are articles. Even if they contain a hazardous chemical, articles are exempt if they—

   - release no more than insignificant amounts of a hazardous chemical, and
   - pose no physical or health risk to exposed miners.

Example: Galvanized Steel

Your mine has a sump with a platform constructed of galvanized steel so your employees can access a pump. Your employees check this pump every day, while standing or kneeling on the galvanized steel platform. Under these circumstances, the galvanized steel is an article exempt from HazCom.

You decide to enlarge the platform to make the access to your pump even easier. A welder adds to the frame by welding additional galvanized pipe to the existing frame. The welding releases zinc fumes and several other hazardous chemicals from the pipe. The galvanized pipe is still an article, but is not exempt from HazCom during this project.

3. *Personal Items:* You don't need to include food, tobacco products, drugs, cosmetics, or other such personal items in either your hazard determination or your HazCom program. They are exempt if they are packaged and labeled for retail sale and intended for an individual miner's personal consumption or use.

Example: Hand Cleaner

You purchase a gallon of FloGo gel hand cleaner at an auto parts store for use in your mine's maintenance shop. The label says it is an eye irritant and it does not contain harsh solvents. The store does not have an MSDS to give you, but you get one through FloGo's web page. The MSDS says that:

- the product contains the following hazardous ingredients:
  - mineral oil,
  - sodium hydroxide, and
  - Ethanolamine;
- the product is safe and presents no immediate or long term health hazard;
- ingestion may require medical attention; and
- OSHA standards and SARA Title III do not apply to this cosmetic product.

Should you include FloGo in your HazCom program?

No. This product is classified by the Food and Drug Administration as a cosmetic and is exempt under HazCom.

Also, you may rely on the manufacturer's MSDS when it says that OSHA standards do not apply and you may infer that it also does not apply to HazCom. We designed HazCom to be compatible with OSHA requirements.

When I buy a product for my mine, how do I know if it's a chemical hazard?

You should check the product's label and MSDS first. They will tell you if the chemical poses a hazard. Beyond the label and MSDS, there are two questions to ask about a chemical:

- Can the chemical cause harm?
- Can a miner be exposed to the harm under normal conditions of use or in a foreseeable emergency?

If you answer "yes" to both, consider the chemical hazardous under HazCom.

What if a miner is exposed to the chemical but only at concentrations below the allowable exposure limit?

Overexposure is not the test for including a chemical in your HazCom program. HazCom is meant to address hazards from any chemical that can, under the right circumstances, cause a person harm, not just those with MSHA or other exposure limits. If a potential exists for a miner to be harmed by a chemical (and it is not exempt), you must include the chemical in your HazCom program.

What do you mean by potential to harm?

If one of a chemical's basic characteristics is hazardous, the chemical is hazardous. A basic characteristic is one that's inseparable from the chemical's nature as, for example, poisonous is inseparable from arsenic or flammability is inseparable from gasoline.

What do you mean by potential exposure?

In some instances, the chemical may not be covered by HazCom even if it's hazardous. For example, it would not be covered if a miner cannot be exposed or the risk of exposure is so slight that it's unforeseeable. However, if a chemical is on-site, the potential for exposure to someone is almost certain.

Example: Foreseeable Exposure

Suppose a chemical liquor, or caustic, is only present in a certain area of your bauxite mill and you have miners in this area working near pipes that carry the caustic. You have other miners who work in the pit — far from the mill — who never go near the mill or the caustic. Although you could conceive of circumstances where the miner who does not work near the pipes can be exposed, it would not be reasonably foreseeable.

On the other hand, you can conceive of circumstances where miners who work daily near the pipes can be exposed. The caustic can eat through a pipe; a truck can back into a pipe; pressure can cause joints to leak. Exposure is foreseeable for the miners under these circumstances.

Common Decisions — Obvious Choices

In most instances, the choices will be obvious. The potential harm is well-known and the decision whether to include the chemical or not is relatively simple. Diesel fuel and motor oil are two hazardous chemicals commonly found on mine property.

Example: Diesel Fuel

You have three pieces of diesel-powered equipment at your open pit mine which you fuel with Petro Off-Road Diesel #2. Petro's MSDS says this product is a combustible by Department of Transportation standards and Petro recommends that it be treated as a slight health hazard with specifics in the MSDS about how to treat certain emergencies. The MSDS says that long term repeated exposure of laboratory animals to whole diesel exhaust has resulted in an increased incidence of lung cancer in them. The MSDS also tells you that the National Fire Protection Association indicates no health hazard.

One person is assigned to fuel your equipment. The operators of the machines do not help fuel the equipment. Is this a hazardous chemical under these conditions?

Yes.

- Diesel fuel is combustible and both the maintenance person and the machine operators have a potential for being burned and must know of this hazard.
- There can be severe, acute health effects from breathing the hot fumes, such as if some spills on the engine.
- Exhaust fumes contain toxic gases and can be carcinogenic as well.

Example: Motor Oil

The label says that there's no known hazard. The MSDS says that used motor oil has been found to be carcinogenic in animal studies.

- Motor oil is not a hazardous chemical when it's being put in an engine.
- Used motor oil is a hazardous chemical, but not normally to equipment operators (unless they're draining the used oil, for example).

Miners who drain used oil from the equipment must be told of the carcinogenic hazard.

How do I know if my mine's product is a hazardous chemical?

All mining commodities are chemicals. If your commodity is coal, coal poses both a physical and a health hazard, and therefore, is considered a hazardous chemical. In metal and nonmetal mining, many mine products, though not all, are hazardous. Components, such as respirable crystalline silica, can make a commodity harmful. If your mine's product is hazardous, you must include it in your HazCom program.

You probably already know how your product should be classified. If not, you will have to review available scientific evidence, or obtain an MSDS for your product from another source, and make a hazard determination.

Why is rock a problem when it contains only a low percentage of silica?

Silica is a common component in many mine commodities and its dangers are well-known. If you breathe enough respirable crystalline silica dust over a period of time, you will eventually get silicosis, a disabling — even fatal — illness. The International Agency for Research on Cancer has identified respirable crystalline silica in an occupational environment as a human carcinogen.

If you're processing material that has silica in it and your miners can be exposed to the respirable, or smallest, silica particles, you should have trained your miners about silica already. If your miners are adequately trained about the hazards of silica, the protective measures, and the controls in place, you should not have to re-train them.

You must still prepare a label and MSDS, however, and include silica (or the product that contains the silica) in your HazCom program.

What about chemicals I produce as part of the mining process?

Mines also produce hazardous chemicals by mixing and through chemical reactions that occur at the mine. You buy ammonium nitrate and fuel oil for blasting and it produces nitrogen dioxide (NO_2) as a result of the explosion. It is a hazardous chemical.

Some of these may already be addressed on the source chemical's MSDS. For example, NO_2 may be listed as a hazard on the MSDS for the explosive.

Example: Concrete

Concrete is a construction material made by mixing gravel or crushed stone with sand, cement, and water. The sand, gravel and stone contain silica. (You can treat components of the concrete, such as the crushed stone, the sand, and the cement individually or as a mixture—as we do here.)

When mixing the concrete for a floor, it is a hazardous chemical:

- Dust from the aggregate contains respirable silica.
- Cement will burn abraded skin.

When placing the wet mixture, it is a hazardous chemical:

- The wet cement will burn unprotected skin.
- However, the silica in the sand and crushed stone does not pose a hazard in this form since it is unlikely to become respirable when wet.

The concrete floor, once set, is not a hazardous chemical.

Years later, when breaking or cutting the floor into small pieces so it can be removed, it's a hazardous chemical again because the silica can become respirable.

HazCom Program

Your program may be in any format, so long as it includes all the required information. You can use whatever format works best for your operation.

The sample program in this section is optional. We are making it available as just one way you might put together your HazCom program. You may decide to use the entire sample program or you might select certain sections to enhance the program you already have in place.

Instructions

This sample program covers all the required topics under Part 47. If you complete these materials thoughtfully with regard to your own operation, you will have developed a HazCom program that complies with Part 47.

If you need assistance completing the HazCom program, you may contact Educational Field Services, MSHA District Offices, or an MSHA State Grants Program (see section on Contacts for HazCom Assistance).

Hazard Communication Program

Mine Name: _____

ID No.: _____

47.32(a)(1) Hazard Determination

Each chemical brought on mine property and each chemical produced on mine property will be evaluated to determine if it is hazardous as specified in Table 47.21(refer to Hazard Determination tab).

47.32(a)(2) Labels and Other Forms of Warning

The labeling system at this mine is: (refer to Labeling tab)

Manufacturers' Labels

Other _____
(Describe any in-house system, such as use of special numbers or graphics)

47.32(a)(3) Material Safety Data Sheets (MSDS)

This program includes a current, legible, and accessible Material Safety Data Sheet (MSDS) for each hazardous chemical at this mine site.

Manufacturers' MSDS

Other _____
(If it is necessary to create an MSDS at this mine, refer to MSDS tab)

MSDSs will be accessible to miners during each work shift for each hazardous chemical to which they may be exposed either:

- At each work area where the hazardous chemical is produced or used
- At an alternative location ( ), provided that the MSDS is readily available to miners in an emergency.

47.32(a)(4) Miner Training

All miners will receive instruction about the physical and health hazards of chemicals in their work areas, the protective measures they can take against these hazards (personal protective equipment, ventilation, warning signs, etc.), and the contents of the mine's HazCom program (47.2) (refer to HazCom Training tab).

NOTE: 30 CFR, Part 46 & Part 48, have been amended to include HazCom Training Requirements

47.32(c)(1)(2) Training for Other Operators

Other operators at this mine will be provided with access to MSDSs and informed about hazardous chemicals to which their miners can be exposed, the labeling system on the containers of these chemicals, and appropriate protective measures.

47.32(b)(1,2) List of Hazardous Chemicals

This is a current list of all hazardous chemicals used, stored, or produced at this mine, including hazardous chemical waste.

Each hazardous chemical on this property will be clearly identified in exactly the same way on the list, its container label, and its corresponding MSDS.

No.	Chemical/Common/Trade Name	Mine or Work Area

Labeling

A label is an immediate warning about a chemical's most serious hazards. You must ensure that containers of hazardous chemicals are marked, tagged, or labeled with the identity of the hazardous chemical and appropriate hazard warnings. The label must be in English and prominently displayed. You can add warnings in other languages or use symbols to help miners understand the label contents.

We are not requiring you to label mine products that go off mine property, though you must provide the information if a customer asks for it. Hazardous chemicals brought to a mine should already be labeled. If they're not, contact the manufacturer or supplier right away.

What does a label do?

A label is a miner's first valuable source of information about a chemical. A label gives a chemical's name, or identity, as it appears on the MSDS and on your list of hazardous chemicals. It displays information about a chemical, such as its flammability, reactivity, personal protective equipment, and special precautions to be taken when working around the chemical.

Does every hazardous chemical container at my mine have to be labeled?

Yes, unless it is exempt from the labeling requirements. These exemptions are listed in 30 CFR 47.92 Subpart J of the regulation. The standard allows alternatives for portable, temporary containers and stationary process containers. Also, the definition of containers further clarifies what has to be labeled.

Do portable, temporary containers have to be labeled?

When a substance is transferred from a labeled container into a portable, unlabeled container and it's going to be used by the person who did the transfer, you do not have to label it. Also, other miners can use this unlabeled container if you ensure that they know what's in it and what the hazards are. If the material is not used up by the end of the shift, however, you must label the container with at least the common name of the chemical or return the substance to its original labeled container.

Example: Portable Container

You have two workers assigned to your lube truck. Each day, one of them fills two 6-quart containers, one with hydraulic fluid and the other with transmission fluid from labeled 55-gallon drums. The lube men use the containers to service your equipment. Do the containers have to be labeled?

No. The miners using the containers know what substances are in them and (since you have trained them) what the hazards are. The lube men can identify the fluids by their color. If any fluids are still in the containers at the end of the shift, however, you still must label the container or dump the unused fluids back into their original drums.

What are the alternatives to labeling?

If you have bins, hoppers, tanks, or other stationary process containers holding a hazardous chemical, you may use signs, placards, process sheets, batch tickets, operating procedures or other suitable alternatives rather than a label. The alternative must identify the container to which it applies, communicate the same information as required by a label, and be immediately available throughout each work shift to miners in the work area.

Example: Labeling at a Prep Plant

You use ammonia to neutralize water after it has washed coal at your preparation plant. The ammonia is piped from a 1000-gallon reservoir to a holding tank for the used wash water about 50 feet away. The anhydrous ammonia becomes ammonium hydroxide in the wash water tank. What has to be labeled?

You must label the reservoir of anhydrous ammonia. You must tell the miners who work in the area that the pipe between the reservoir and holding tank contains anhydrous ammonia when you train them in the operating procedures. You also must label, or have a sign, placard, or other label alternative for the wash water tank indicating ammonium hydroxide.

Do I have to label the chemicals that come from the mining process?

You don't have to label containers of the raw material being mined or milled (if no hazardous chemicals are added), such as—

- a feed hopper at your primary crusher,
- wash tanks for your sand plant, or
- bagging machines.

You do have to label containers of hazardous chemicals produced during ore processing, such as—

- the tank containing ammonium hydroxide wash water from the coal washing process, or
- the feed tank for the flotation reagents (if hazardous) used to separate the mineral from the ore.

What information is required on labels for chemicals that I produce?

Labels may be in any format as long as they are obvious, legible, accurate, in English, and convey the appropriate hazard information. A label must include:

- The chemical's identity that permits cross-referencing between the label, the list of hazardous chemicals, and the MSDS.
- The appropriate hazard warnings for all hazards (health and physical), such as "suspected human carcinogen," "skin irritant," or "flammable".
- You should prioritize the hazards on the label based on their severity. For example, if the chemical is classified as a carcinogen, the carcinogen warning should be prominent.
- If applicable, you should also include the target organs affected. For example, "causes lung damage" is an appropriate warning.
- The name and address of a responsible party who can provide additional information about the chemical.

When my product goes off the mine-site, does it have to be labeled?

No. But if a customer requests a HazCom label, you must provide the label or a copy of the labeling information to the customer. Many mines put label information on the back of weigh tickets. This is an acceptable alternative way of labeling your product.

What if a label gets damaged?

We recognize that labels may become damaged through normal wear-and-tear. Mining can be a harsh, grating environment. Sometimes, chemical containers (and labels) are rubbed, banged, scratched, or otherwise damaged to a point where the label is unreadable. If the required information on the label is no longer legible, you must re-label the container immediately.

For the purpose of compliance, we interpret "immediately" to mean during the shift in which it was damaged. A miner must not use a chemical from an unlabeled container at any time, unless it is a temporary, portable container and you are sure the miner knows what is in it.

What else do I need to know about labeling?

- You are not responsible for inaccuracies on a label provided by a chemical's manufacturer or supplier. In some instances, a manufacturer may learn of new information about their product and send you an updated label. You must replace the existing label when you receive the new one.
- If you learn of significant new information about your mine product, you must update your label within 3 months.
- You must not remove or deface existing labels.

What do you mean by significant?

For the purpose of HazCom, "significant" new information is any that would reasonably influence how a miner uses a chemical, the precautions you or the miner take, or the personal protective equipment selected. Although you have three months to update your label, you must inform potentially affected miners right away.

Warning

This product may contain greater than 0.1% silica which has been linked to chronic respiratory diseases. Repeated inhalation of respirable crystalline silica may have carcinogenic effects.

WARNING

Injurious to eyes. Use of tight-fitting goggles is recommended. Causes skin irritation. Gloves and protective clothing recommended. Avoid breathing dust. A NIOSH approved respirator is recommended. Avoid skin and eye contact with wet cement. Can cause burns.

Portland cement contains in excess of .1% crystalline silica. Prolonged and repeated inhalation of crystalline silica can cause silicosis, a disabling and potentially fatal lung disease. Additionally, respirable crystalline silica has been designated as carcinogenic to humans.

Avoid eye contact or prolonged contact with skin. Wash thoroughly after handling. In case of eye contact, flush with plenty of water for at least fifteen minutes. Consult a physician immediately. Keep out of the reach of children.

Material Safety Data Sheets (MSDSs)

The Material Safety Data Sheets for the Nonmetal Mining Industry were provided by the National Sand, Stone & Gravel Association. Those for Bituminous Coal were provided by Peabody Coal Company. The Mine Safety and Health Administration appreciates their assistance in the production of this publication.

You must have an MSDS for each hazardous chemical which you produce or use. The MSDS must be legible, accurate, and in English. The MSDS must also be available in the work area where your miners can be exposed. As an alternative, you may keep MSDSs in a central location as long as they're available to miners in an emergency.

What does an MSDS do?

A chemical's MSDS provides comprehensive technical and emergency information. It serves as a reference document for exposed miners, operators, health professionals, and firefighters or other public safety workers.

What do you mean by "making an MSDS available"?

"Availability" means that you cannot have obstacles that delay access to HazCom information. In emergencies, the miner must be able to get the needed information.

HazCom allows you to keep MSDSs in a way that you choose, provided that the information is available for employees. You may keep them, for example, in a 3-ring binder, on a computer database, access them through an internet MSDS library, or use a fax-on-demand service. Whether in a paper or electronic medium, you must give miners access to the MSDS. If you keep your MSDSs on a computer, you may have to show miners how they can access the HazCom information on the computer.

Do I have to prepare an MSDS for my product or the raw materials being mined or milled?

You have to prepare an MSDS for your product and the raw material if it's hazardous. Like the label, you must give a copy of the MSDS to your customer if requested. You must also make the MSDS for your products available to your miners.

What categories of information does an MSDS have to include about a hazardous chemical?

The MSDS must contain information for the following categories (or indicate if no information is available):

1. *Identity:* The chemical and common name if it is a single substance and those of the hazardous ingredients if it is a mixture. It must permit cross-referencing between the list of hazardous chemicals, the chemical's label, and the MSDS.
2. *Properties:* The physical and chemical properties, such as boiling point, melting point, vapor pressure, evaporation rate, solubility in water, pH, appearance and odor, flash point and flammability limits.
3. *Physical Hazards:* The potential for fire, explosion, and reactivity.

4. *Health Hazards:* The potential to cause an illness or injury, such as its acute and chronic health effects, the signs and symptoms of exposure, any medical conditions that are aggravated by exposure and the primary routes of entry.
5. *Carcinogenicity:* You must include information about the chemical's carcinogenicity.
6. *Exposure Limits:* You must include either the MSHA or OSHA exposure limit, if there is one, and any other limits recommended by the preparer of the MSDS, such as the ACGIH TLV or NIOSH REL.
7. *Safe Use:* Any precautions for safe use, such as appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks.
8. *Control Measures:* Such as ventilation, process controls, restricted access, protective clothing, respirators, and goggles.
9. *Emergency Information:* Appropriate emergency procedures, such as special instructions for firefighters and first aid procedures; and the name, address, and telephone number of a contact person who can provide additional information about the hazardous chemical and the appropriate emergency procedures.
10. *Date Prepared:* The preparation or revision date of the MSDS.

I burn hazardous waste under an EPA permit. Do I have to prepare MSDSs for that hazardous waste?

No. Some mine operators have EPA permits to burn hazardous waste in their kilns or to dispose of hazardous waste in tailings. If EPA has granted you a permit to burn hazardous waste at your mine, HazCom requires you to provide exposed miners and designated representatives with access to any materials that will help them understand the hazards and know the protective measures. Often, you will receive a shipping manifest with a truck or railroad car of hazardous waste, but no MSDS.

Similarly, if your mine's waste is regulated as a hazardous waste by EPA under RCRA or CERCLA, you do not have to prepare an MSDS for it. You do, however, have to allow your miners access to any information you have that will help them understand its hazards and the necessary protective measures.

Under these types of circumstances, you must give the miner access to any information you have that—

- Indicates the waste's components;
- Describes its physical and health hazards; or
- Specifies the appropriate protective measures.

How long do I have to keep an MSDS?

You must keep a chemical's MSDS for as long as the chemical is at the mine and notify miners 3 months in advance before you dispose of the MSDS. That notice can be a verbal or written notice, an announcement in a company newsletter, part of a safety meeting, or a posting on the mine bulletin board.

What if the manufacturer changes the MSDS?

If the manufacturer changes the contents of the MSDS, then you must only keep the most current version. If the updated information makes a significant safety and health difference, you must tell your miners this new information.

Material Safety Data Sheet
(Natural Sand or Gravel)

1. IDENTIFICATION

Chemical Name:	Natural Sand or Gravel	Chemical Formula:	N/A
Trade Name:	Sand or Gravel	Molecular Weight:	N/A
Synonyms:	Construction Aggregate	DOT Identification No:	None

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Natural Sand* or Gravel*	None	100	See section 6
*Composition varies naturally – typically contains quartz (crystalline silica).	14808-60-7	>1	

3. PHYSICAL DATA

Appearance and odor: Angular or round multicolored particles. No odor.

Specific Gravity: 2.55 – 2.80

Boiling point (At 1 Atm.): N/A

Vapor Density in Air (Air = 1): N/A

Vapor Pressure (mmHg @ 20°C): 0

% Volatile, By Volume: 0%

Evaporation Rate (at 1Atm, and 25°C; n-butyl acetate = 1): 0

Solubility in Water: Negligible

4. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Avoid contact with incompatible materials (see below).

Incompatibility (materials to avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosion. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated by handling.

Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not flammable

Flammable Limits in Air: Not Flammable

Extinguishing Agents: None required

Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.)

Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL= permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.

Other Particulates: 2001 ACGIH TLV® = 10mg/m^3 (inhalable/total particulate, not otherwise specified), 2001 ACGIH TLV® = 3mg/m3 (respirable particulate, not otherwise specified); OSHA PEL = 15mg/m^3 (total particulate, not otherwise regulated), OSHA PEL = 5mg/m^3 (respirable particulate, not otherwise regulated).

Respirable Crystalline Silica (SiO_2 /quartz): ACGIH TLV® = 0.05mg/m^3; MSHA and OSHA PEL = 10mg/m^3 ÷ (%SiO_2 + 2) for respirable dust containing crystalline silica.

Total dust, respirable and nonrespirable: 1973 ACGIH TLV® = 30mg/m^3 ÷ (%quartz + 3).

Total Dust: MSHA PEL = 10mg/m^3 (for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV® booklet).

Per ACGIH, adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated By Exposure: Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunction. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure

X Inhalation _Skin _Ingestion

Acute Toxicity

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.
SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.
SKIN ABSORPTION: Not expected to be a significant exposure route.
INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.
INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

Use of natural sand and gravel for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

First Aid

EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.
SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.
INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.
INHALATION: Move to fresh air. Dust in throat and nasal passages should clear spontaneously.
Contact a physician if irritation persists or later develops.

For emergencies, contact _____
(your company's designated emergency contact)

Chronic Toxicity
Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection. Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica. There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects.

Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking. Sand or gravel is not listed as a carcinogen by the International Agency for Research on Cancer PAC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP'S Report on Carcinogens. 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection
For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1mg/m^3, a NIOSH approved dust respirator is recommended. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5mg/m^3, a NIOSH approved HEPA filter respirator is recommended. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5mg/m^3, a NIOSH approved positive pressure, full face respirator or equivalent is recommended. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation
Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.
Skin Protection
See "Hygiene" section below.
Eye Protection
Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.
Hygiene
Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

Other Control Measures

Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

This product is not intended or designed for use as an abrasive blasting medium or for foundry applications, and should not be used for these purposes.

Follow the personal protection and controls set forth in Section 7 of this MSDS when handling this product. Respirable crystalline silica-containing dust may be generated during processing, handling, and storage.

Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

Steps to be Taken in Case Material is Released or Spilled

The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact _____
(your company's designated emergency contact)

Waste Disposal Method

Pick up and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None
Placard Required: None
Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f) and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

Material Safety Data Sheet
(Limestone)

1. IDENTIFICATION

Chemical Name:	Limestone	Chemical Formula:	N/A
Molecular Weight:	N/A	Trade Name:	Crushed Stone
DOT Identification No:	None		

Synonyms: Aggregate, Aglime, Barn Lime, Coverstone, Flexible Base, Fluxing Agent, Manufactured Sand, Mineral Filler, Screenings

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Limestone*	1317-65-3	100	See section 6
*Composition varies naturally – typically contains quartz (crystalline silica).	14808-60-7	>1	

3. PHYSICAL DATA

Appearance and odor: Angular gray, white and tan particles ranging in size from powder to boulders. No odor.

Specific Gravity: 2.6 – 2.75

Boiling point (At 1 Atm.): N/A

Vapor Density in Air (Air = 1): N/A

Vapor Pressure (mmHg @ 20°C): N/A

% Volatile, By Volume (@ 100°F): 0%

Evaporation Rate (at 1 Atm. and 25EC; n-butyl acetate = 1): 0

Solubility in Water: 0

4. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Avoid contact with incompatible materials (see below).

Incompatibility (materials to avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous Decomposition Products: Limestone ignites on contact with fluorine and is incompatible with acids, alum, ammonium salts, and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not Flammable

Flammable Limits in Air: Not Flammable

Extinguishing Agents: None Required

Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.) Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration

(MSHA); OSHA PEL = permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.
Limestone (Calcium Carbonate): ACHIH TLV® = $10mg/m^3$; OSHA PEL = $15mg/m^3$ (total dust); OSHA PEL= $5mg/m^3$ (respirable fraction), MSHA PEL = $10mg/m^3$ (total dust).

Other Particulates: 2001 ACGIH TLV® = $10mg/m^3$ (inhalable/total particulate, not otherwise specified), 2001 ACGIH TLV® = 3 mg/m^3 (respirable particulate, not otherwise specified); OSHA PEL = $15mg/m^3$ (total particulate, not otherwise regulated), OSHA PEL = $5mg/m^3$ (respirable particulate, not otherwise regulated).

Respirable Crystalline Silica (SiO_2 /quartz): ACGIH TLV® = $0.05mg/m^3$; MSHA and OSHA PEL = $10mg/m^3 \div (\%SiO_2+2)$, for respirable dust containing crystalline silica.

Total dust, respirable and nonrespirable: 1973 ACGIH TLV® = $30mg/m^3 \div (\%quartz + 3)$.

Total Dust: MSHA PEL = 10 mg/m^3 (for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV® booklet).

Per ACGIH, adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs & PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure: Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure

X Inhalation _Skin _Ingestion

Acute Toxicity
EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.
SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.
SKIN ABSORPTION: Not expected to be a significant exposure route.
INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.
INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

First Aid
EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelids) open. Occasionally lift the eyelids) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.
SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.
INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.
INHALATION: Move to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

For emergencies, contact _____
(company's designated emergency contact)

Chronic Toxicity
Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years

after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.
Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.
There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Some of these studies of silicotics do not account for lung cancer confounders, especially smoking.
Limestone is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP's Report on Carcinogens. 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

California Proposition 65: WARNING: This product contains chemical(s) known to the state of California to cause cancer.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection
For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1mg/m^3, a NIOSH approved dust respirator is recommended. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5mg/m^3, a NIOSH approved HEPA filter respirator is recommended. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5mg/m^3, a NIOSH approved positive pressure, full face respirator or equivalent is recommended. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation: Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.
Skin Protection
See "Hygiene" section below.
Eye Protection
Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.
Hygiene
Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

Other Control Measures

Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate.
Do not store near food and beverages or smoking material.

9. SPILL, LEAK AND DISPOSAL PRACTICES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material. Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact _____
(your company's designated emergency contact)

WASTE DISPOSAL METHOD

Pick up and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None

Placard Required: None

Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f) and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

Material Safety Data Sheet
(Nepheline Basalt)

1. IDENTIFICATION

Chemical Name:	Nepheline Basalt	Chemical Formula:	Mixture
Molecular Weight:	N/A	Trade Name:	Traprock
DOT Identification No.	None		

Synonyms: Construction Aggregate, Coverstone, Flexible Base, Low-Silica Abrasive Blasting Agent (SSPC Type 1, Class A), Manufactured Sand, Mill Sand, Rockwool Aggregate, Trap Mix Aggregate

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Traprock*	None	100	See section 6
*Composition varies naturally – typically contains low levels of crystalline silica.	1408-60-7	<1	

3. PHYSICAL DATA

Appearance and Odor: Angular particles ranging in size from sand to boulders.

Specific Gravity: 3.0 – 3.4

Boiling point (At 1 Atm.): N/A

Vapor Density in Air (Air = 1): N/A

Vapor Pressure (mmHg @ 20°C): N/A

% Volatile, By Volume (@ 100° F: N/A

Evaporation Rate (at 1Atm. and 25° C; n-butyl acetate = 1): N/A

Solubility in Water: Negligible

4. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Avoid contact with incompatible materials (see below).

Incompatibility (materials to avoid): Traprock ignites on contact with fluorine and is incompatable with acids, alum, ammonium salts, and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.

Hazardous Decomposition Products: None known

Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not flammable

Flammable Limits in Air: Not Flammable

Extinguishing Agents: None required

Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS: (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.) Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV® = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL= permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.

Other Particulates: 2001 ACGIH TLV® = $10mg/m^3$ (inhalable/total particulate, not otherwise specified), 2001 ACGIH TLV® = $3mg/m^3$ (respirable particulate, not otherwise specified); OSHA PEL = $15mg/m^3$ (total particulate, not otherwise regulated), OSHA PEL = $5mg/m^3$ (respirable particulate, not otherwise regulated).

Respirable Crystalline Silica (SiO_2/quartz): ACGIH TLV® = $0.05mg/m^3$; MSHA and OSHA PEL = $10mg/m^3 \div (\%SiO_2 + 2)$, for respirable dust containing crystalline silica.

Total dust, respirable and nonrespirable: 1973 ACGIH TLV® = $30mg/m^3 \div (\%quartz + 3)$.
Total Dust: MSHA PEL = $10mg/m^3$ (for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV® booklet).

Per ACGIH, adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure: Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure:

X Inhalation _Skin _Ingestion

Acute Toxicity
EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.
SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.
SKIN ABSORPTION: Not expected to be a significant exposure route.
INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.
INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

First Aid
EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.
SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.
INGESTION: if person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.
INHALATION: Move to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

For emergencies, contact_____ (your company's designated person)

Chronic Toxicity
Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms

(signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica. There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects.

Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Some of these studies of silicotics do not account for lung cancer confounders, especially smoking. Traprock is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated crystalline silica as carcinogenic (Group I). The NTP's Report on Carcinogens, 9th edition, lists respirable crytalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

7. PERSONAL PROTECTION AND CONTROLS

RESPIRATORY PROTECTION: For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1mg/m^3, a NIOSH approved dust respirator is recommended. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5mg/m^3, a NIOSH approved HEPA filter respirator is recommended. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5mg/m^3, a NIOSH approved positive pressure, full face respirator or equivalent is recommended. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user-training program, respirator repair and cleaning, respirator fit testing, and other requirements.
VENTILATION: Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.
SKIN PROTECTION: See "Hygiene" section below.
EYE PROTECTION: Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.
HYGIENE: Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.
OTHER CONTROL MEASURES: Respirable dust levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. The personal protection and controls identified in Section 7 of the MSDS should be applied as appropriate.
Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

The personal protection and controls identified in Section 7 of the MSDS should be applied as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

Prevent spilled materials from inadvertently entering streams, drains, or sewers.

WASTE DISPOSAL METHOD

Pick up and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

For emergencies, contact _____
(your company's designated emergency contact)

10. TRANSPORTATION

DOT Hazard Classification: None

Placard Required: None

Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f)] and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact

Material Safety Data Sheet
(Cement-Treated Base)

1. IDENTIFICATION

Chemical Name:	N/A	Chemical Formula:	Mixture
Trade Name:	Cement-Treated Base	Molecular Weight:	N/A
Synonyms:	CTB	DOT Identification No:	None

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Aggregates (limestone, granite, traprock)* varies naturally -typically	Mixture	70-90	See section 6 *Composition
contains quartz (crystalline silica).	14808-60-7	>1	
Hydraulic (Portland) Cement	65997-15-1	5-8	
Water	7732-18-5	5-10	

3. PHYSICAL DATA

Appearance and Odor: Gray, granular mixture. Faint, characteristic cement odor.
Specific Gravity: 2.3 - 3.0, Boiling point (At 1 Atm.): N/A, Vapor Density in Air (Air = 1): N/A , Vapor Pressure (mmHg @ 20°C): Product: N/A Water: 17.5 %Volatile, By Volume (@ 100° F): <10%, Evaporation Rate (at lAtm. and 25°C; n-butyl acetate = 1): Similar to water Solubility in Water: N/A

4. REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Avoid contact with incompatible materials (see below).
Incompatibility (materials to avoid): Strong acids, as wet Portland cement is caustic (pH approximately 12). Limestone ignites on contact with fluorine and is incompatible with acids, alum, ammonium salts, and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.
Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated if hardened product is subjected to mechanical forces such as in demolition work and surface modification (sanding, grooving, chiseling, etc.).
Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used):	Not flammable
Flammable Limits in Air:	N/A
Extinguishing Agents:	None required
Unusual Fire and Explosion Hazards:	None known

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.) Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz. ABBREVIATIONS: TLV® = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL = permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.
Limestone (Calcium Carbonate): ACGIH TLV® = $10mg/m^3$; OSHA PEL =$15mg/m^3$ (total dust), OSHA PEL= $5mg/m^3$ (respirable fraction), MSHA PEL = $10mg/m^3$ (total dust).

Other Particulates: 2001 ACGIH TLV® = 10mg/m^3 (inhalable/total particulate, not otherwise specified), 2001 ACGIH TLV® = 3mg/m^3 (respirable particulate, not otherwise specified); OSHA PEL = 15mg/m^3 (total particulate, not otherwise regulated), OSHA PEL = 5mg/m^3 (respirable particulate, not otherwise regulated).
Portland Cement: ACGIH TLV® = 10mg/m^3; MSHA PEL= 10mg/m^3; OSHA PEL = 15mg/m^3 (total dust) and 5mg/m^3 (respirable fraction); OSHA Proposed PEL = 10mg/m^3 (total dust) and 5mg/m^3 (respirable).

Respirable Crystalline Silica (SiO_2 /quartz): ACGIH TLV® = 0.05mg/m^3; MSHA and OSHA PEL = 10 mg/m^3 ÷ (%SiO_2 + 2), for respirable dust containing crystalline silica.
Total dust, respirable and nonrespirable: 1973 ACGIH TLV® = 30mg/m^3 ÷ (%quartz + 3).
Total Dust: MSHA PEL = 10mg/m^3 (for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV® booklet).

Per ACGIH, adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure: Contact with wet cement may aggravate existing abnormal skin conditions. Inhaling dust may aggravate existing respiratory system disease(s) and/or dysfunctions. Dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure:
X Inhalation X Skin _Ingestion

Acute Toxicity - Note: This product is normally mixed, transported, and used only when wet. This reduces the potential for dust exposure. After the product has dried and hardened, further handling or processing may generate dust. Wet cement is caustic (pH approximately 12) and hygroscopic (absorbs and retains water).
EYE CONTACT: Contact may result in chemical (caustic) bums and eye injury. Concrete dust may be irritating.
SKIN CONTACT: Contact with wet cement may cause abrasion of the skin and contact dermatitis (cement dermatitis), the symptoms of which may include (but are not limited to) reddening, irritation, and rash. More severe effects, including chemical (caustic) burns and skin ulcers may occur. Concrete dust may be instating. Hydraulic (Portland) cement may contain trace amounts of hexavalent chromium. Hexavalent chromium has been associated in some individuals with causing allergic skin reactions which may be manifested as contact dermatitis and skin ulcerations.
Individuals who develop allergies to skin sensitizers, such as hexavalent chromium, may experience a reaction upon repeated contact with those compounds. The symptoms of allergic reactions may include (but are not limited to) reddening of the skin, rash, and irritation. Irritated or broken skin is more likely to develop further complications such as ulcers and infection.
SKIN ABSORPTION: Not expected to be a significant exposure route following short-tern exposure.
INGESTION: Direct contact with exposed tissues may result in severe irritation and chemical (alkali) burns.
INHALATION: Dusts may irritate the nose, throat, and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

First Aid
EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Seek medical attention at once and continue to flush eye(s) until a physician takes charge.
SKIN: Flush skin with clean water for at least 15 minutes. Remove and wash contaminated clothing. Contact a physician if irritation persists or later develops. Burns should be treated as caustic bums.
INGESTION: If person is conscious, give large quantity of water to dilute the stomach contents. Do not attempt to make person vomit unless directed by medical personnel. Get immediate medical attention.
INHALATION: Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

For emergencies, contact _____ (your company's designated person)

Chronic Toxicity

Chronic exposure to wet cement has caused chronic dermatitis, the symptoms of which may include reddening, irritation, and eczematous rashes. Drying, thickening, and cracking of the skin and nails may also occur.

The chronic toxicity effects described above have been associated with exposure to wet cement. If hardened product is subjected to mechanical forces (such as in demolition work) which generate dust particles, exposure to respirable crystalline silica-containing dust is possible.

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking.

Cement-Treated Base is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection

Ordinarily not required when product is wet. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1 mg/m^3, a NIOSH approved dust respirator is recommended. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5 mg/m^3, a NIOSH approved HEPA filter respirator is recommended. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5 mg/m^3 , a NIOSH approved positive pressure, full face respirator or equivalent is recommended. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation

Ordinarily not required when working with wet product. General or local exhaust ventilation as required to maintain exposures below appropriate exposure limits. Use product only in well-ventilated areas.

Skin Protection

Waterproof gloves, rubber boots, and clothing sufficient to protect the skin from contact with fresh cement should be worn. Clothing saturated from contact with wet cement should be removed promptly to prevent continued contact with skin.

Eye Protection
Safety glasses with side shields should be worn as minimum protection. Chemical safety goggles or face shields are strongly recommended to prevent eye contact with materials, particularly when splashing is possible. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated due to working with hardened product.

Hygiene
Skin should be kept free of wet cement. Wash hands thoroughly before eating, smoking, and using toilet facilities. After working with cement, workers should shower with soap and water. Laundering clothing between uses is recommended.

Other Control Measures
Ample clean water should always be readily available for skin and (emergency) eye washing. Respirable dust levels should be monitored regularly for activities, which generate dust from hardened product. Dust levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

Follow personal protection and controls set forth in Section 7 of this MSDS when handling this product. Every attempt should be made to avoid skin and eye contact with wet cement. Respirable crystalline silica-containing dust may be generated when hardened product is subjected to mechanical forces, such as in demolition work and surface treatment (sanding, grooving, chiseling, etc.).

Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

Steps to be Taken in Case Material is Released or Spilled
Persons involved in cleanup processes should first observe precautions defined in Section 7 of this MSDS. Wet product should be removed from roads or other surfaces where it may interfere with traffic.
Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact _____
(your company's designated emergency contact)

Waste Disposal Method
Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None
Placard Required: None
Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f)] and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

Material Safety Data Sheet
(Sandstone)

1. IDENTIFICATION

Chemical Name:	Sandstone	Chemical Formula:	N/A
Trade Name:	Sandstone	Molecular Weight:	N/A
Synonyms:		DOT Identification No:	None

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Sandstone*	None	100	See section 6
*Composition varies naturally – typically contains high levels of quartz (crystalline silica).	14808-60-7	>1	

3. PHYSICAL DATA

Appearance and Odor: Angular gray, white and tan particles ranging in size from powder to boulders. No odor.

Specific Gravity: 2.6 – 2.75

Boiling point (At 1 Atm.): N/A

Vapor Density in Air (Air = 1): N/A

Vapor Pressure (mmHg @ 20°C): N/A

% Volatile, By Volume (@ 100° F): 0%

Evaporation Rate (at 1Atm, and 25°C; n-butyl acetate = 1): 0

Solubility in Water: 0

4. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Avoid contact with incompatible materials (see below).

Incompatibility (materials to avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Silica dissolves in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated by handling. When heated, quartz is slowly transformed into tridyrmite (above 860EC / 1580EF) and cristobalite (above 1470EC / 2678EF). Both tridymite and cristobalite are considered more fibrogenic to the lungs than quartz.

Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not flammable

Flammable Limits in Air: Not Flammable

Extinguishing Agents: None required

Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.)

Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV® = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL = permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.

Other Particulates: 2001 ACGIH TLV® = $10mg/m^3$ (inhalable/total particulate, not otherwise specified), 2001 ACGIH TLV® = $3mg/m^3$ (respirable particulate, not otherwise specified); OSHA PEL = $15mg/m^3$ (total particulate, not otherwise regulated), OSHA PEL = $5mg/m^3$ (respirable particulate, not otherwise regulated). Respirable Crystalline Silica (SiO_2 quartz): ACGIH TLV® = $0.05mg/m^3$; MSHA and OSHA PEL = $10mg/m^3 \div (\%SiO_2 + 2)$, for respirable dust containing crystalline silica.
Total dust, respirable and nonrespirable: 1973 ACGIH TLV® = $30mg/m^3 \div (\%quartz + 3)$.
Total Dust: MSHA PEL = $10mg/m^3$, for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV® booklet. {Appendix E includes**:** alundum (Al_2O_3); calcium carbonate; cellulose (paper fiber); portland cement; corundum (Al_2O_3); emery; glass [fibrous (<5-7 μm in diameter) or dust]; glycerin mist; graphite (synthetic); gypsum; vegetable oil mists (except castor, cashew nut, or similar irritant oils); kaolin; limestone; magnesite; marble; pentaerythritol; plaster of Paris; rouge; silicon carbide; starch; sucrose; tin oxide; and titanium dioxide.}

Per ACGIH, adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure: Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure

X Inhalation _Skin _ Ingestion

Acute Toxicity
EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.
SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.
SKIN ABSORPTION: Not expected to be a significant exposure route.
INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.
INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

Use of sandstone for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

First Aid
EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.
SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.
INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.

INHALATION: Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

For emergencies, contact_____(your company's designated person)

Chronic Toxicity

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection. Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects.

Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking. Sandstone is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated crystalline silica as carcinogenic (Group 1). The NTP'S Report on Carcinogens, 9th edition, lists respirable crytalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection

For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1mg/m^3, a NIOSH approved dust respirator is recommended. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5mg/m^3, a NIOSH approved HEPA filter respirator is recommended. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5mg/m^3, a NIOSH approved positive pressure, full face respirator or equivalent is recommended. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation

Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

Skin Protection

See "Hygiene" section below.

Eye Protection

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Hygiene
Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

Other Control Measures
Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

This product is not intended or designed for use as an abrasive blasting material, and should not be used for abrasive blasting.

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. The personal protection and controls identified in Section 7 of the MSDS should be applied as appropriate.

Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

Steps to be Taken in Case Material is Released or Spilled
The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact _____
(your company's designated emergency contact)

Waste Disposal Method
Pick up and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None
Placard Required: None
Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f)] and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

MATERIAL SAFETY DATA SHEET
(Granite)

1. IDENTIFICATION

Chemical Name:	Granite	Chemical Formula:	N/A
Trade Name:	Crushed Stone	Molecular Weight:	N/A
Synonyms:	Aggregate, Manufactured Sand	DOT Identification No:	None

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Granite*	None	100	See section 6
*Composition varies naturally - typically contains quartz (crystalline silica).	14808-60-7	>1	

3. PHYSICAL DATA

Appearance and Odor: Angular particles, light salt and pepper colored, ranging in size from pebbles to boulders. No odor.
Specific Gravity: 2.6 - 2.81
Boiling point (At 1 Atm.): N/A
Vapor Density in Air (Air = 1): N/A
Vapor Pressure (mmHg @ 20°C): N/A
%Volatile, By Volume (@ 100° F): 0%
Evaporation Rate (at 1Atm. and 25°C; n-butyl acetate = 1): 0
Solubility in Water: Negligible

4. REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Avoid contact with incompatible materials (see below).
Incompatibility (materials to avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.
Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated by handling.
Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not flammable
Flammable Limits in Air: Not Flammable
Extinguishing Agents: None required
Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.)
Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.
ABBREVIATIONS: TLV® = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA);

mg/m^3 = milligrams of substance per cubic meter of air.

Other Particulates: 2001 ACGIH TLV® = $10mg/m^3$ (inhalable/total particulate, not otherwise specified), 2001 ACGIH TLV® = 3mg/m3 (respirable particulate, not otherwise specified); OSHA PEL = $15mg/m^3$ (total particulate, not otherwise regulated), OSHA PEL = $5mg/m^3$ (respirable particulate, not otherwise regulated).

Respirable Crystalline Silica (SiO_2/quartz): ACGIH TLV® = $0.05mg/m^3$; MSHA and OSHA PEL = $10\ mg/m^3 \div (\%SiO_2 + 2)$, for respirable dust containing crystalline silica.

Total dust, respirable and nonrespirable: 1973 ACGIH TLV® = $30mg/m^3 \div (\%quartz + 3)$.
Total Dust: MSHA PEL = $10mg/m^3$ for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV® booklet. {Appendix E includes: **alundum (Al_2O_3), calcium carbonate, cellulose (paper fiber), portland cement,** corundum (Al_2O_3); emery; glass [fibrous (<5-7 μm in diameter) or dust]; glycerin mist; graphite (synthetic); gypsum; vegetable oil mists (except castor, cashew nut, or similar irritant oils); kaolin; limestone; magnesite; marble; pentaerythritol; plaster of Paris; rouge; silicon carbide; starch; sucrose; tin oxide; and titanium dioxide.}

Per ACGIH, adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure: Inhaling respirable dust may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure:
X Inhalation Skin Ingestion

Acute Toxicity
EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.
SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion. SKIN ABSORPTION: Not expected to be a significant exposure route.
INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.
INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

Use of granite for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

First Aid
EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.
SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.
INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.

Chronic Toxicity

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath, difficulty breathing with or without exertion, coughing, diminished work capacity, diminished chest expansion, reduction of lung volume, right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica. There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidneys, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis, and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects.

Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking. Granite is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the Occupational Safety and Health Administration (OSHA). In October 16, an IARC working Group reassessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP's Report on Carcinogens, th edition lists respirable crystalline silica as a known human carcinogen. In year 2, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

CALIFORNIA PROPOSITION 65: WARNING: This product contains chemical(s) known to the state of California to cause cancer.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection

For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1mg/m^3, a NIOSH approved dust respirator is recommended. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5mg/m^3, a NIOSH approved HEPA filter respirator is recommended. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5mg/m^3, a NIOSH approved positive pressure, full face respirator or equivalent is recommended. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation

Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

Skin Protection

See Hygiene section below.

Eye Protection
Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Hygiene
Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

Other Control Measures
Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate.

Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

Steps to be Taken in Case Material is Released or Spilled
The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact _____
(your company's designated emergency contact)

Waste Disposal Method
Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None
Placard Required: None
Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f) and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

Hazcom Training

There are two major components to HazCom's training requirements: initial training, which must take place before HazCom's effective date for your mine size; and the subsequent training which must take place under MSHA's primary training rules, Parts 46 and 48.

After the effective date, when you hire new employees, you must train them about hazardous chemicals under "new miner" and "newly employed experienced miner" training before they first begin work at your mine.

You must train miners under "task" training whenever—

- you assign them a new task
- a new chemical hazard is introduced into their work area; and
- you discover, or a manufacturer notifies you about, significant new information.

HazCom is meant to work by anticipating risk. To reduce chemically-related injuries and illnesses, a miner must know about the hazards of the job and how to safely perform it before being left to work alone. The safety and health purpose of HazCom cannot be met if you delay the proper training until after an exposure has occurred.

When you provide effective training, miners will know about their right to information on the chemicals they are exposed to, how to read and understand labels and MSDSs, how to get chemical information, and how to use it. They will understand the risks of exposure to chemicals in their work areas, as well as the means of prevention and protection. You must develop and administer a training program that ensures that miners receive this vital information about chemical hazards.

HazCom Training Contents

You must instruct miners about —

- The physical and health hazards of the chemicals in the individual's work area;
- The requirements of HazCom;
- The mine's HazCom program (including an explanation of the labeling system, the MSDSs, and how they can get the information and use it;
- Where HazCom materials (labeling information, the list of chemicals, and the MSDSs) are kept and that they're available;
- The operations or areas of the mine where hazardous chemicals are present;
- How to tell if a chemical is present or if there's been an inadvertent release (smell, color, etc);
- What protective measures to take; and
- The work practices, engineering controls, emergency procedures, and use of personal protective equipment the mine uses to protect miners from hazardous chemical exposures.

What if I already conducted training that complies with OSHA's requirements?

Some operators conduct work in both OSHA and MSHA jurisdictions. Relevant training that meets OSHA standards will comply with HazCom. If you've already trained your miners about the chemical hazards at your mine to comply with Part 46, Part 48, or OSHA's HCS, you can apply the training to meet HazCom's requirements to the extent it's relevant. You shouldn't have to re-train them.

Do I have to hire a HazCom instructor with special qualifications?

No. Under existing standards, we require every mine to have an MSHA-approved instructor for Part 48 and a competent person designated by the operator for Part 46. These trainers teach diverse and complex mine-specific courses and we expect you'll use the trainers on your staff to train miners about chemical hazards. We recognize that you may have to obtain special training about chemical hazards for your trainer to conduct your HazCom training. We intend to make state grants and MSHA programs available to help.

Do I have to train miners on every chemical they can be exposed to even if the exposure's unlikely?

No. The same idea applies to training as applies to hazard determination. If a miner's exposure is not foreseeable or only remotely possible, you need not train the miner.

Do I have to re-train miners every time a new chemical is introduced to their work area?

No, unless the new chemical also introduces a new hazard. Introducing a new hazard is not the same as introducing a new hazardous chemical.

Example: A New Chemical Hazard

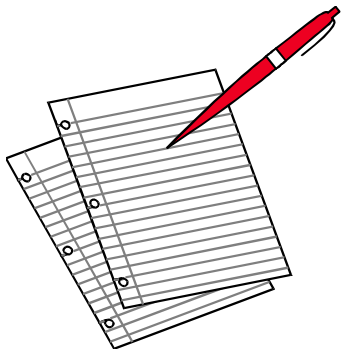
You trained your mechanic in the hazards of a solvent used at the mine. If you replace the solvent with a new solvent that presents the same hazards as the old, you are not required to conduct new training. If no new hazard is introduced, you need not train the mechanic.

If the new solvent poses a new hazard, you must train your mechanic about the new hazard. If you use the new solvent in a different location or process within a work area, you must inform the affected miners about this change and any hazards this new use implies.

If some chemicals that we use have the same hazards, do we have to have separate training for each chemical?

No. If miners are exposed to a small number of hazardous chemicals, you may want to conduct their training specifically on each chemical. If miners are exposed to a large number of hazardous chemicals, you may choose to conduct the training by categories of hazards. You can then refer miners to the substance-specific information on the labels and MSDSs and the locations or operations within their work areas where specific chemicals are used or produced.

What training records do I have to keep and how long do I have to keep them?



You don't have to make a record of the training conducted to comply with HazCom's initial training requirements. You must make a record of any subsequent training as you would for other training conducted under Parts 46 and 48. Part 46 requires documentation on a form that contains the information listed in Part 46.9(b), but does not prescribe a specific form. If HazCom training is conducted under Part 48, you must use our training certificate, MSHA Form 5000-23, or an approved alternate form, as a record of your training. A copy of Form 5000-23 is available from our website, www.msha.gov.

You must keep a copy of the training document for two years.

Basic Toxicology: How Toxic Substances Can Affect Miners' Health

Introduction

Miners are often exposed to toxic substances on the job. Some of these chemicals or chemical compounds have been well-studied, while others have very little information available. Nevertheless, all chemicals should be handled as if they are hazardous. Workers need to be told the name(s) of substances with which they are working, if there are any potential health hazards, and what control measures are available. This includes receiving general information about how chemicals enter and affect the body.

What is toxicology?

Toxicology is the study of the nature, effects, and detection of poisons in living organisms. The toxicity of a substance is its ability to cause harmful effects to a single cell, an organ or organ system, or to the entire body. Some effects may be easily seen—such as dizziness, nausea, shortness of breath, or skin irritation. Other toxic effects may not show up for many years. How toxic a substance is depends on:

- Its chemical makeup
- How well the substance is absorbed by the body
- The body's ability to make the substance less toxic (detoxification)
- How well the substance is eliminated from the body

Most information on these chemical effects is obtained from studies using laboratory animals. Studies of disease rates in a group of people (epidemiology) have also provided much of what we know about the hazards of workplace chemicals.

How much is too much?

One concept that helps explain how toxic substances work in the body is the dose-response relationship. Simply stated, the greater the amount (dose), the more likely you are to be adversely affected (response). The dose is influenced by the length of time you are exposed, how the substance enters your body, and how quickly the substance is removed from your body.

In laboratory animals, the dose-response relationship is measured and is part of the basis for setting workplace exposure limits. In the real world, however, the actual response is also affected by personal characteristics, such as your body weight, sex, state of health, heredity, age, and habits such as smoking. Also, workers are often exposed to a number of chemicals that interact with each other. Some act synergistically—that is, the combined effect of the chemicals is greater than separate exposures to each of the individual chemicals.

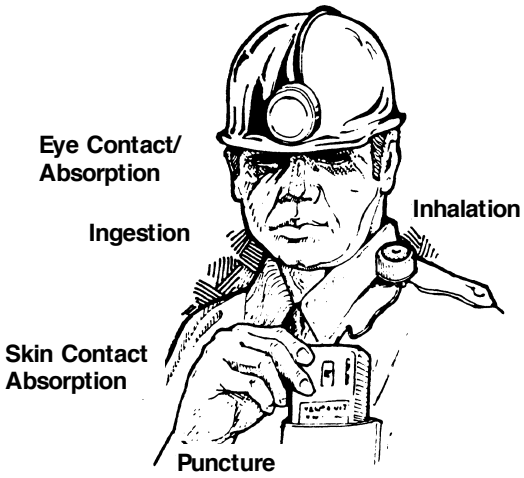
The toxicity of a substance is its potential to cause harm. The greater the toxicity, the less it takes to have a harmful effect. The dose absorbed by your body, your personal characteristics, and synergistic effects all contribute to the actual effects.

How do chemicals enter the body?

The routes of entry into the body for chemicals are:

- Inhalation (breathing)
- Skin contact/absorption
- Eye contact/absorption
- Ingestion (swallowing)
- Injection or puncture

The most common route of entry in the workplace is inhalation, but the skin is also an important route, particularly for many solvents which can enter through unbroken skin. The eyes can also be an exposure route and can be directly harmed by contact with a toxin. Hazardous amounts of chemicals can be swallowed if the chemical is on the hands, food items, or a cigarette. In some situations, accidental injection is a possible route of exposure, such as when providing health care or administering first aid. Substances can also enter the body through punctures, for example, from a nail or cutting tool.



Routes of Entry

Inhalation

During inhalation, materials pass through the major airways (the trachea and bronchi) into the lungs, ending at the air sacs (alveoli). Oxygen passes into the blood stream in the alveoli. Many chemicals can also dissolve in the lungs and pass into the blood stream at this point. Substances such as respirable silica and coal mine dust which don't move into the bloodstream may remain in the lungs or other parts of the respiratory tract and cause damage there.

The body has remarkable defense mechanisms to protect against disease and injury. Most dust particles are normally trapped in the defense system of the lungs and airways. The body's defenses include hairs in the nose, and mucus and cilia in the airways. On the cells of larger airways are cilia, tiny hair-like projections that move mucus and trapped particles back up the airways to the throat where they are swallowed or coughed out.

Respirable particles are too small to be seen with the naked eye. A human hair, for example, is about 50 μ (microns) in diameter, while respirable particles are 10 μ or less. Respirable particles, such as crystalline silica and coal mine dust, are able to lodge in the air sacs, causing scarring and lung disease.

Skin Contact and Absorption

The skin is the largest organ of the body and protects it from external hazards. Its tough outer layer (dermis) resists the wear and tear of daily life and prevents absorption of many materials. However, some chemicals, including many solvents and metals, cause an inflammation of the skin called dermatitis, or result in an allergic reaction (skin sensitization). Other chemicals, such as acids, may burn the skin. Substances can also enter the body through cut or cracked skin.

Some chemicals, such as solvents, dissolve the skin's protective oil barrier and pass into the blood supply through the small blood vessels or capillaries. A number of workplace chemicals, including arsenic and tar, have been linked to skin cancer.

Eye Contact

Chemicals or foreign particles are likely to irritate or burn the eyes. Some substances may also be absorbed through the eyes and cause problems elsewhere in the body.

Ingestion

If a worker smokes, eats, or drinks around chemical substances, the chemical may be swallowed. Materials such as asbestos fibers may also be swallowed after they are trapped by the mucus in the airways and moved by the cilia up to the back of the throat. In fact, asbestos workers have a higher rate of stomach and intestinal cancers than workers who haven't been exposed to asbestos.

Injection and Puncture

Injection is a major concern in health care or first aid settings, but punctures or cuts occur in many occupations. Bacteria, fungi, and chemicals may enter the body through a cut or puncture wound.

Acute and Chronic Health Effects

The length of time it takes for a disease to develop is important in determining the hazard of a particular substance. Some chemicals produce an acute reaction after short-term exposures, usually at fairly high concentrations.

Acute effects are usually readily apparent and short-lasting. They can, however, be fatal, as with exposure to high levels of silica in tunneling, quarrying, drilling, or bagging operations which can lead to irreversible disease resulting in premature death. Chemicals such as silica, which can cause acute reactions, can also produce chronic damage.

Chronic effects, usually a result of exposure to lower concentrations of a toxic substance over a longer period of time, may not be detected until long after the initial exposure. The period of time between the first exposure and the development of the disease is called the latency period. Latency periods can be as long as 20 to 40 years, making it difficult to link a disease with a particular exposure or workplace. Cancer, coal workers' pneumoconiosis (black lung), and silicosis are chronic diseases which usually become evident only in advanced stages.

Where does disease occur?

A chemical can cause local or systemic effects when it contacts the body. If a chemical causes harm at the point where it contacts the body, it is called a local effect. For example, if acid spills on your skin, the burns that occur are a local effect. A systemic effect occurs when the chemical moves through the body and harms another organ (target organ) or organ system. Lead, for example, causes damage primarily to the nervous system and bone marrow when it is carried through the body in the blood. A hazardous substance may produce both local and systemic effects.

Specific Diseases

When chemicals contact or enter the body, they produce a variety of harmful effects. The following table describes classes of chemical effects.

Health Effects of Chemical Hazards

Allergens	Materials which affect the body's immune system causing reactions such as wheezing or dermatitis. Exposure to even a small amount of the substance may cause a reaction in a sensitized person.
Asphyxiants (simple)	Materials such as carbon dioxide or acetylene which displace oxygen in the air.
Carcinogens	Substances which act on the genetic material of cells, causing uncontrolled cell growth (cancer).
Irritants	Substances that cause pain and reddening of the exposed area, usually the skin and respiratory system. Their effects are usually seen immediately.
Mutagens	Materials that change the genetic material of cells, including germ cells (sperm and eggs).
Neurotoxicants	Materials that damage the nervous system.
Teratogens	Materials that affect a developing embryo, resulting in a birth defect.

Every organ and system in the body is a possible site for occupational disease. However, the routes of transport through the body are the most likely parts to be affected:

- Portals of entry (skin and lungs)
- The blood, which carries the chemicals throughout the body
- The organs of exit (kidney, liver, bladder)

Lung Diseases

The respiratory system, which includes the lungs, has a good defense system, but these defenses may break down or be of little use against some chemicals. Most gases, for example, pass through the lungs and into the blood stream very quickly. Possible responses to chemical exposure are:

- **Irritation or damage to the airways**. For example, acid mists and vehicle exhaust can cause the airways to over-produce mucus, leading to chronic bronchitis (inflammation of the bronchi).
- **Allergic reactions**. For example, epoxy resins, formaldehyde, and isocyanates may cause an allergic reaction resulting in wheezing and breathing difficulties on exposure.
- **Tumor formation**. For example, asbestos, cadmium, and certain forms of chromium are known to cause lung cancer.
- **Fibrosis** (scarring and thickening of lung tissue). For example, respirable coal mine dust causes coal miners' pneumoconiosis, and silica causes silicosis.
- **Emphysema** (destruction of the air sacs). For example, nitrogen and sulfur oxides, cigarette smoke, and cadmium oxide can lead to this condition, which causes shortness of breath and strain on the heart.
- **Pulmonary edema** (filling of the lungs with fluid). For example, acute exposure to chlorine, hydrogen fluoride, and nickel compounds can cause this condition.

Skin Diseases

One of the most common occupational diseases is dermatitis, which is hardly surprising since the skin is our largest organ and is in constant contact with the outside world. This inflammation of the skin can produce a number of symptoms including itching, redness, or scaling. The two major types of dermatitis are primary irritant dermatitis and allergic contact dermatitis.

Irritant dermatitis can occur after only a short exposure to certain chemicals, causing the skin to dry out, become tender, redden, and crack. This type of dermatitis is commonly caused by solvents, corrosive substances, detergents, coolants, and cutting fluids. Lubricants used in metal cutting and milling may clog the oil glands producing acne, a form of dermatitis. Once contact with the substance that caused the irritation has stopped, the skin can heal. The healing process may take many weeks or months, and during this time the skin is often more sensitive than usual.

Allergic contact dermatitis affects the immune system of those workers who have become sensitized. An allergic reaction is similar to a normal immune response, but is excessive, causing damage to the tissues. If sensitization occurs, exposure to very small quantities of the substance produces a reaction. Some common causes of contact dermatitis are epoxy resins, metal salts such as chromates, and formaldehyde.

Blood and Circulatory System Diseases

Chemicals may affect the heart, the blood, and the marrow in the long bones of the body which produces blood cells. The immune system may also be affected because the blood plasma is part of this system.

Examples of conditions linked to chemical exposures include:

- **Heart attack** (due to death of part of the heart itself)—linked to chronic exposures to carbon disulfide and methylene chloride
- **Anemia** (low red blood cell count)— linked to benzene and lead
- **Hemolysis** (breaking of red blood cells—linked to arsine, butyl cellosolve and naphthalene
- **Leukemia** (cancer of certain white blood cells)—linked to benzene.

Liver Diseases

The liver is the chemical plant of the body. It generally makes chemicals less toxic and changes a chemical so that it can be excreted in the urine. The liver can be overwhelmed after long-term exposure to a number of chemicals. For example, chronic exposure to substances such as solvents or alcohol can cause cirrhosis of the liver. Acute exposure to some solvents and pesticides may cause liver failure and death.

Substances Which Damage the Liver

Category	Examples
Solvents	Benzene Alcohol Gasoline Methylene Chloride
Pesticides	Aldrin Chlordane DDT
Others	PCBs Dioxin (Agent Orange)

Kidney and Bladder Diseases

The kidneys filter out substances the body doesn't need and they control water levels in the body. After filtering, they return necessary nutrients such as glucose to the body. A number of substances are known to damage the kidneys. These include: cadmium, lead, mercury, solvents, and uranium.

The bladder stores urine, so it may be in contact with toxic substances for long periods. A number of dyes, including benzidine and other aromatic amines, are known to damage the bladder.

Nervous System Diseases

The nervous system is not involved in the transfer or excretion of substances that enter the body, but it is an important site for toxic effects of chemicals. Both the central nervous system (brain and spinal cord) and peripheral nervous system (all other nerves) may be affected.

Some systemic poisons, such as carbon monoxide, affect the oxygen-carrying ability of the blood, while other chemicals, such as carbon dioxide and many gases, cause asphyxiation by lowering the oxygen content of the air. The end result is that less oxygen gets to the brain. Other chemical groups (including solvents, pesticides, and heavy metals such as lead and mercury) may damage the central nervous system, affecting all of the functions controlled by the brain and spinal cord.

Effects on the peripheral nervous system include numbness and tingling of the hands and feet, tremors, and muscular weakness.

Types of Hazardous Substances

We often use the broad term "chemical" when referring to a hazardous material, but chemicals occur in different states. Knowing the chemical's form and physical properties, particularly for materials that are inhaled, helps in choosing the best control measures. Gases, vapors, and aerosols (solid particles or liquid droplets suspended in the air) are described below.

Gases and Vapors

The term gas describes a substance which is formless. Vapors are the gaseous form of substances that are usually liquid or solid at room temperature. Because they are formless, gases and vapors can go just about anywhere.

Some gases, such as ammonia, have a sharp odor and are irritating to the eyes, nose, and throat, which can warn workers of exposure. Others, such as carbon monoxide, are colorless and odorless and therefore potentially more dangerous. Gases can affect the skin, throat, and lungs in some of the following ways:

- Form acids in contact with body moisture causing damage to the eyes, nose, throat, and lungs. An example is chlorine which warns workers of exposure by its odor and/or respiratory irritating properties. Over time, however, workers get used to the odor as their sense of smell is dulled. This is true for a number of gases, such as hydrogen sulfide, and increases the risk of overexposure.
- Cause breathing difficulties, pulmonary edema, bronchitis, or emphysema
- Deprive the body of oxygen by affecting the blood's ability to carry oxygen, as with carbon monoxide, or by displacing oxygen in air, as with carbon dioxide or acetylene
- Pass through the alveoli into the blood stream to cause damage elsewhere

Vapors may irritate the eyes, nose, throat, airways, or lungs. Many vapors, and the substances from which they are evaporated (such as liquid solvents), can also irritate the skin and eyes. Like gases, vapors easily pass from the lungs into the blood to cause damage in other parts of the body.

Aerosols

Dust is a type of aerosol in which solid particles of varying sizes are suspended in air. They are produced by operations such as drilling, crushing, grinding, sawing, sanding, or cutting. Dusts may irritate the skin and eyes, and they can seriously affect the lungs. The size of the particle determines how deep into the lungs it may go. The most damaging dusts are respirable—that is, they are small enough to reach the deep lungs.

Coal mine dust, asbestos, and crystalline silica are dusts encountered daily by miners. The respirable portion of these dusts can produce pneumoconiosis (lung disease caused by dust), usually with chronic exposure. Exposure to asbestos can also cause lung cancer, stomach cancer, cancer of the bowel, cancer of the throat, and mesothelioma, a rare form of cancer that occurs almost exclusively in persons with a history of exposure to asbestos.

Miners can also encounter tobacco smoke at work. It is a mixture of particles and gases that contains many chemical compounds including ammonia, formaldehyde, nitrogen oxides, nicotine, and toluene. A number of the components are known or suspected carcinogens.

Fumes are a very small-sized aerosol formed when metal is melted (such as in welding or soldering), vaporizes into the atmosphere, and then condenses into solid, airborne particles. Fumes may irritate the skin and eyes, but they are most dangerous when inhaled. In the lungs, fumes can cause irritation or dissolve in lung fluids, passing from there into the blood and traveling throughout the body.

Metal fumes such as zinc oxide and copper oxide can cause metal fume fever. This acute condition often occurs when materials are being cut or welded. It mainly affects newly exposed workers or those who have been away from this type of work for awhile, causing chills, fever, and general weakness.

Mists are liquid droplets suspended in the air. They can be formed or released by splashing, foaming, or spraying. Mists can form above containers of acids and bases used in chemical reactions or in cleaning processes. Oil mists and mists from paint spraying are also common in many workplaces.

Mists may cause damage if they contact the eyes, skin, or breathing passages. They can bypass the body's defense systems and get deep into the lungs. Here they pass easily into the bloodstream and travel to other parts of the body.

Summary Sheet: How Toxic Substances Can Affect Miners' Health

Toxicology is the study of the nature, effects, and detection of poisons in living organisms.

Dose-response is a major concept in toxicology. Simply stated, the more of a substance that gets into your body (**dose**), the more likely you are to have a **response**.

The **routes of entry** for chemicals into the body are: **inhalation**, **absorption** through the skin, **skin and eye contact, ingestion**, and **injection** or **puncture**.

Acute reactions occur after short exposures, usually at fairly high concentrations. **Chronic** effects, usually a result of exposure to lower concentrations, often take some time to become apparent.

A **local effect** takes place at the point of contact, while a **systemic effect** occurs at some other place when the chemical spreads through the body.

Chemicals may be classified by their effects. These include: allergens, asphyxiants, carcinogens, irritants, mutagens, and teratogens.

The lungs are a major route of entry for toxic substances. Chemical exposures may cause: irritation, allergic reactions, tumor formation, fibrosis, emphysema, and pulmonary edema.

The major type of injury to the skin is **dermatitis**.

Both the **central nervous system** and **peripheral nervous system** may be affected.

Chemicals occur in a number of forms. Knowing the chemical's form and physical properties, particularly for chemicals that are inhaled, helps in choosing the best control measures.

HazCom Contacts for Metal/Nonmetal Mines

State	EFS Contact	EFS Phone Number	District Contact	District Phone Number	State Contact	State Phone Number
Alabama	Ronny Jones	205-384-8381	Judith Etterer	205-290-7294	Rene Williams	205-648-3271
Alaska	Emmit Sullivan	206-553-0126	Jaime Alvarez	707-447-9844	Dennis Steffy	907-262-2788
Arizona	Hilario Palacios	480-649-5452	Ronald Renowden	303-231-5465	Doug Martin	602-542-5971
Arkansas	David Weaver	573-364-0879	Bruce Palmer	214-767-8401	Bonita Stocks	501-682-4520
California	Isabel Williams	909-799-6718	Jaime Alvarez	707-447-9844	Duane Niesen	530-895-6938
Colorado	Barbara Renowden	303-231-5434	Ronald Renowden	303-231-5465	Bill York-Feirn	303-866-3650
Connecticut	William Slusser	570-826-6412	Larry Macken	724-772-2333	Stuart Bennett	860-832-1835
Delaware	William Slusser	570-826-6412	Larry Macken	724-772-2333	*None*	*None*
Florida	Terry Phillips	205-290-7294	Judith Etterer	205-290-7294	Ben Hart	850-413-8192
Georgia	Wayne Maxwell	478-752-7707	Judith Etterer	205-290-7294	Anthony Whitworth	706-253-4520
Hawaii	Isabel Williams	909-799-6718	Jaime Alvarez	707-447-9844	*None*	*None*
Idaho	John Kathman	208-321-2982	Jaime Alvarez	707-447-9844	Mike Weaver	208-885-4351
Illinois	Leland Payne	812-882-7617	George Schorr	218-720-5448	Kim Underwood	217-782-7676
Indiana	Ronnie Deaton	606-546-5123	George Schorr	218-720-5448	Harold Wortman	812-877-3616
Iowa	David Couillard	218-720-5448	George Schorr	218-720-5448	Karen Poole	515-281-3671
Kansas	Barbara Renowden	303-231-5434	Ronald Renowden	303-231-5465	Lee Graham	620-665-4991
Kentucky	Ronnie Deaton	606-546-5123	Judith Etterer	205-290-7294	Phillip Johnson	502-573-0140
Louisiana	Laman Lankford	210-979-7443	Bruce Palmer	214-767-8401	*None*	*None*
Maine	Jon Montgomery	518-489-0780	Larry Macken	724-772-2333	Adrien Polky	207-624-6400
Maryland	Paul Bizich	724-772-3316	Larry Macken	724-772-2333	*None*	*None*
Massachusetts	Jon Montgomery	518-489-0780	Larry Macken	724-772-2333	Ernie Kelley	413-448-8746
Michigan	Jon Montgomery	518-489-0780	George Schorr	218-720-5448	Dave Carlson	906-487-2453
Minnesota	David Couillard	218-720-5448	George Schorr	218-720-5448	Don Beckering	651-649-5411
Mississippi	Terry Phillips	205-290-7294	Judith Etterer	205-290-7294	Ken McCarley	601-961-5515
Missouri	David Weaver	573-364-0879	Bruce Palmer	214-767-8401	Steve Dunn	573-751-3403
Montana	Anita Goodman	970-874-2684	Ronald Renowden	303-231-5465	Jon Maloney	406-444-6401
Nebraska	Steve Miller	303-231-5434	Ronald Renowden	303-231-5465	Rod Jobman	308-865-8638
Nevada	Cathy Matchett	702-293-6049	Ronald Renowden	303-231-5465	E.P. Skip Flanagan	775-684-7085
New Hampshire	Jon Montgomery	518-489-0780	Larry Macken	724-772-2333	Denise Rickey	603-271-6850
New Jersey	William Slusser	570-826-6412	Larry Macken	724-772-2333	Peter Slaton	609-633-2587
New Mexico	Elsa Roman	505-254-2540	Bruce Palmer	214-767-8401	Paul Pierce	505-835-5460
New York	Jon Montgomery	518-489-0780	Larry Macken	724-772-2333	Marino Franchini	518-457-1638
North Carolina	James Hackworth	276-679-0230	Judith Etterer	205-290-7294	James Turner	919-807-2790
North Dakota	David Couillard	218-720-5448	Ronald Renowden	303-231-5465	Brandon Herda	701-223-6372
Ohio	Paul Bizich	724-772-3316	George Schorr	218-720-5448	Jerry Stewart	614-265-6910
Oklahoma	Judy Tate	214-767-8423	Bruce Palmer	214-767-8401	Ron Cunningham	918-465-2361
Oregon	John Kathman	208-321-2982	Jaime Alvarez	707-447-9844	Ed Sinner	541-962-3783
Pennsylvania	Paul Bizich	724-772-3316	Larry Macken	724-772-2333	Matthew Bertovich	724-439-7469
Rhode Island	William Slusser	570-826-6412	Larry Macken	724-772-2333	*None*	*None*
South Carolina	Wayne Maxwell	478-752-7707	Judith Etterer	205-290-7294	Elaine Reese	803-593-9954
South Dakota	Steve Miller	303-231-5434	Ronald Renowden	303-231-5465	*None*	*None*
Tennessee	Thomas Morgan	423-562-4265	Judith Etterer	205-290-7294	Tom Taylor	423-566-9709
Texas	Judy Tate	214-767-8423	Bruce Palmer	214-767-8401	Bob Novello	512-232-2330
Utah	Anita Goodman	970-874-2684	Ronald Renowden	303-231-5465	Larry Patrick	801-530-6872
Vermont	Jon Montgomery	518-489-0780	Larry Macken	724-772-2333	Richard Wobby	802-223-2374
Virginia	James Hackworth	276-679-0230	Larry Macken	724-772-2333	Carroll Green	276-523-8232
Washington	Emmit Sullivan	206-553-0126	Jaime Alvarez	707-447-9844	Michael Brozska	509-359-7026
West Virginia	Wanda Vanhoose	304-256-3509	Larry Macken	724-772-2333	Charles Johnson	304-558-1425
Wisconsin	David Couillard	218-720-5448	George Schorr	218-720-5448	Dave Vriezen	608-261-2503
Wyoming	Steve Miller	303-231-5434	Ronald Renowden	303-231-5465	Don Stauffenberg	304-362-5222

HazCom Contacts for Coal Mines

State	EFS Contact	EFS Phone Number	District Contact	District Phone Number	State Contact	State Phone Number
Alabama	Ronny Jones	205-384-8381	Judy McCormick	205-290-7302	Rene Williams	205-648-3271
Alaska	Emmit Sullivan	206-553-0126	Mike Horbatko	303-231-5458	Dennis Steffy	907-262-2788
Arkansas	Hilario Palacios	480-649-5452	Mike Horbatko	303-231-5458	Bonita Stocks	501-682-4520
Arkansas	Hilario Palacios	480-649-5452	Mike Horbatko	303-231-5458	Bonita Stocks	501-682-4520
Colorado	David Weaver	573-364-0879	Mike Horbatko	303-231-5458	Bill York-Feim	303-866-3650
Illinois	Isabel Williams	909-799-6718	Charles Weilbaker	812-882-7617	Kim Underwood	217-782-7676
Indiana	Ronnie Deaton	606-546-5123	Charles Weilbaker	812-882-7617	Harold Wortman	812-877-3616
Kentucky D6	Ronnie Deaton	606-546-5123	Frankie Mullins	606-432-0944	Phillip Johnson	502-573-0140
Kentucky D6	Ronnie Deaton	606-546-5123	Robert Newberry	606-432-0943	Phillip Johnson	502-573-0140
Kentucky D7	Ronnie Deaton	606-546-5123	Randy Kline	606-546-5123	Phillip Johnson	502-573-0140
Kentucky D10	Ronnie Deaton	606-546-5123	Robert Smith	270-821-4180	Phillip Johnson	502-573-0140
Maryland	Paul Bizich	724-772-3316	Greg Fetty	304-291-4277		
Missouri	David Weaver	573-364-0879	Mike Horbatko	303-231-5458	Steve Dunn	573-751-3403
Montana	Anita Goodman	970-874-2684	Mike Horbatko	303-231-5458	John Maloney	406-444-6401
New Mexico	Steve Miller	303-231-5434	Mike Horbatko	303-231-5458	Paul Pierce	505-835-5460
Ohio	Paul Bizich	724-772-3316	Greg Fetty	304-291-4277	Jerry Stewart	614-265-6910
Oklahoma	Judy Tate	214-767-8423	Mike Horbatko	303-231-5458	Ron Cunningham	918-465-2361
Pennsylvania D1	Paul Bizich	724-772-3316	Chuck Moore	570-826-6321	Matthew Bertovich	724-439-7469
Pennsylvania D2	Paul Bizich	724-772-3316	Tom Todd	724-925-5150	Matthew Bertovich	724-439-7469
South Dakota	Steve Miller	303-231-5434	Mike Horbatko	303-231-5458	Matthew Bertovich	724-439-7469
Tennessee	Thomas Morgan	423-562-4265	Randy Kline	606-546-5123	Tom Taylor	423-566-9709
Texas	Judy Tate	214-767-8423	Mike Horbatko	303-231-5458	Bob Novello	615-741-6642
Utah	Anita Goodman	970-874-2684	Mike Horbatko	303-231-5458	Larry Patrck	801-530-6872
Virginia	James Hackworth	276-679-0230	Bill Strength	276-679-0230	Carroll Green	276-523-8232
West Virginia D3	Paul Bizich	724-772-3316	Greg Fetty	304-291-4277	Charles Johnson	304-558-1425
West Virginia D4	Wanda Vanhoose	304-256-3509	Mike Dickerson	304-369-1502	Charles Johnson	304-558-1425
Wyoming	Steve Miller	303-231-5434	Mike Horbatko	303-231-5458	Don Stauffenberg	307-362-5222

HazCom Standard

(30 CFR Part 47)

Part 47—HAZARD COMMUNICATION (HazCom)

Sec.

Subpart H—Making HazCom Information Available

Subpart I—Trade Secret Hazardous Chemical

Subpart J—Exemptions

Authority: 30 U.S.C. 811, 825.

Subpart A—Purpose, Scope, Applicability, and Initial Miner Training

§ 47.1 Purpose of a HazCom standard; applicability.

The purpose of this part is to reduce injuries and illnesses by ensuring that each operator—

(a) Identifies the chemicals at the mine,

(b) Determines which chemicals are hazardous,

(c) Establishes a HazCom program, and

(d) Informs each miner who can be exposed, and other on-site operators whose miners can be exposed, about chemical hazards and appropriate protective measures.

(e) As of [Insert date 3 months from date of publication in the FEDERAL REGISTER] all mines employing six or more miners are required to comply with this part.

(f) As of [Insert date 9 months from date of publication in the FEDERAL REGISTER] all mines employing five or fewer miners are required to comply with this part.

§ 47.2 Operators and chemicals covered; initial miner training.

(a) This part applies to any operator producing or using a hazardous chemical to which a miner can be exposed under normal conditions of use or in a foreseeable emergency. (Subpart J of this part lists exemptions from coverage.)

(b) Operators of mines which employ six or more miners must instruct each miner with information about the physical and health hazards of chemicals in the miner's work area, the protective measures a miner can take against these hazards, and the contents of the mine's HazCom program by [Insert date 3 months from the date of publication of this final rule in the FEDERAL REGISTER]. Operators of mines that employ five or fewer miners must instruct each miner with information about the physical and health hazards of chemicals in the miner's work area, the protective measures a miner can take against these hazards, and the contents of the mine's HazCom program by [Insert date 9 months from the date of publication of this final rule in the FEDERAL REGISTER].

Subpart B—Definitions

§ 47.11 Definitions of terms used in this part.

The definitions in Table 47.11 apply in this part as follows:

Table 47.11—Definitions

TERM	DEFINITION FOR PURPOSES OF HAZCOM
Access	The right to examine and copy records.
Article	A manufactured item, other than a fluid or particle, that— (1) Is formed to a specific shape or design during manufacture, and (2) Has end-use functions dependent on its shape or design.
Chemical	Any element, chemical compound, or mixture of these.
Chemical name	(1) The scientific designation of a chemical in accordance with the nomenclature system of either the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS), or (2) A name that will clearly identify the chemical for the purpose of conducting a hazard evaluation.
Common name	Any designation or identification (such as a code name, code number, trade name, brand name, or generic name) used to identify a chemical other than by its chemical name.
Consumer product	A product or component of a product that is packaged, labeled, and distributed in the same form and concentration as it is sold for use by the general public.
Container	(1) Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like. (2) The following are not considered to be containers for the purpose of compliance with this part: (i) Pipes or piping systems; (ii) Conveyors; and (iii) Engines, fuel tanks, or other operating systems or parts in a vehicle.

Cosmetics and drugs	(1) Cosmetics are any article applied to the human body for cleansing, beautifying, promoting attractiveness, or altering appearance. (2) Drugs are any article used to affect the structure or any function of the body of humans or other animals.
CPSC	The U.S. Consumer Product Safety Commission.
Designated representative	(1) Any individual or organization to whom a miner gives written authorization to exercise the miner's rights under this part, or (2) A representative of miners under part 40 of this chapter.
EPA	The U.S. Environmental Protection Agency.
Exposed	Subjected, or potentially subjected, to a physical or health hazard in the course of employment. "Subjected," in terms of health hazards, includes any route of entry, such as through the lungs (inhalation), the stomach (ingestion), or the skin (skin absorption).
Foreseeable emergency	Any potential occurrence that could result in an uncontrolled release of a hazardous chemical into the mine.
Hazard warning	Any words, pictures, or symbols, appearing on a label or other form of warning, that convey the specific physical and health hazards of the chemical. (See the definitions for physical hazard and health hazard for examples of the hazards that the warning must convey.)
Hazardous chemical	Any chemical that can present a physical or health hazard.
Hazardous substance	Regulated by CPSC under the Federal Hazardous Substances Act or EPA under the Comprehensive Environmental Response, Compensation, and Liability Act.
Hazardous waste	Chemicals regulated by EPA under the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act.
Health hazard	A chemical for which there is statistically significant evidence that it can cause acute or chronic health effects in exposed persons. Health hazard includes chemicals which— (1) Cause cancer; (2) Damage the reproductive system or cause birth defects; (3) Are irritants, corrosives, or sensitizers; (4) Damage the liver; (5) Damage the kidneys; (6) Damage the nervous system; (7) Damage the blood or lymphatic systems; (8) Damage the stomach or intestines; (9) Damage the lungs, skin, eyes, or mucous membranes; or (10) Are toxic or highly toxic agents.
Health professional	A physician, physician's assistant, nurse, emergency medical technician, or other person qualified to provide medical or occupational health services.
Identity	A chemical's common name or chemical name.

Label	Any written, printed, or graphic material displayed on or affixed to a container to identify its contents and convey other relevant information.
Material safety data sheet (MSDS)	Written or printed material concerning a hazardous chemical which— (1) An operator prepares in accordance with Table 47.52—Contents of MSDS; or (2) An employer prepares in accordance with 29 CFR 1910.1200, 1915.1200, 1917.28, 1918.90, 1926.59, or 1928.21 (OSHA Hazard Communication regulations); or (3) An independent source prepares which contains equivalent information, such as International Chemical Safety Cards (ICSC) and Workplace Hazardous Material Information Sheets (WHMIS).
Mixture	Any combination of two or more chemicals which is not the result of a chemical reaction.
Ordinary consumer use	Household, family, school, recreation, or other personal use or enjoyment, as opposed to business use.
OSHA	The Occupational Safety and Health Administration, U.S. Department of Labor.

Physical hazard	A chemical for which there is scientifically valid evidence that it is— (1) Combustible liquid: (i) A liquid having a flash point at or above 100EF (37.8EC) and below 200oF (93.3oC); or (ii) A liquid mixture having components with flashpoints of 200oF (93.3oC) or higher, the total volume of which make up 99% or more of the mixture. (2) Compressed gas: (i) A contained gas or mixture of gases with an absolute pressure exceeding: (A) 40 psi (276 kPa) at 70EF (21.1EC); or (B) 104 psi (717 kPa) at 130EF (54.4EC) regardless of pressure at 70EF. (ii) A liquid having a vapor pressure exceeding 40 psi (276 kPa) at 100EF (37.8EC) as determined by ASTM D-323-82. (3) Explosive: A chemical that undergoes a rapid chemical change causing a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature. (4) Flammable: A chemical that will readily ignite and, when ignited, will burn persistently at ambient temperature and pressure in the normal concentration of oxygen in the air. (5) Organic peroxide: An explosive, shock sensitive, organic compound or an oxide that contains a high proportion of oxygen-superoxide. (6) Oxidizer: A chemical, other than an explosive, that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases. (7) Pyrophoric: Capable of igniting spontaneously in air at a temperature of 130oF (54.4oC) or below. (8) Unstable (reactive): A chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or become self-reactive under conditions of shock, pressure, or temperature. (9) Water-reactive: A chemical that reacts with water to release a gas that is either flammable or a health hazard.
Produce	To manufacture, process, formulate, generate, or repackage.
Raw material	Ore, valuable minerals, worthless material or gangue, overburden, or a combination of these, that is removed from natural deposits by mining or is upgraded through milling.
Trade secret	Any confidential formula, pattern, process, device, information, or compilation of information that is used by the operator and that gives the operator an opportunity to obtain an advantage over competitors who do not know about it or use it.
Use	To package, handle, react, or transfer.
Work area	Any place in or about a mine where a miner works.

Subpart C—Hazard Determination

§ 47.21 Identifying hazardous chemicals.

The operator must evaluate each chemical brought on mine property and each chemical produced on mine property to determine if it is hazardous as specified in Table 47.21 as follows:

Table 47.21—Identifying Hazardous Chemicals	
CATEGORY	BASIS FOR DETERMINING IF A CHEMICAL IS HAZARDOUS
(a) Chemical brought to the mine	The chemical is hazardous when its MSDS or container label indicates it is a physical or health hazard; or the operator may choose to evaluate the chemical using the criteria in paragraphs (b) and (c) of this table.
(b) Chemical produced at the mine	The chemical is hazardous if any one of the following indicates that it is a hazard: (1) Available evidence concerning its physical or health hazards. (2) MSHA standards in 30 CFR chapter I. (3) Occupational Safety and Health Administration (OSHA), 29 CFR part 1910, subpart Z, Toxic and Hazardous Substances. (4) American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices (2001). (5) U.S. Department of Health and Human Services, National Toxicology Program (NTP), Ninth Annual Report on Carcinogens, January 2001. (6) International Agency for Research on Cancer (IARC), Monographs and related supplements, Volumes 1 through 77.
(c) Mixture produced at the mine	(1) If a mixture has been tested as a whole to determine its hazards, use the results of that testing. (2) If a mixture has not been tested as a whole to determine its hazards— (i) Use available, scientifically valid evidence to determine its physical hazard potential; (ii) Assume that it presents the same health hazard as a non-carcinogenic component that makes up 1% or more (by weight or volume) of the mixture; and (iii) Assume that it presents a carcinogenic health hazard if a component considered carcinogenic by NTP or IARC makes up 0.1% or more (by weight or volume) of the mixture. (3) If evidence indicates that a component could be released from a mixture in a concentration that could present a health risk to miners, assume that the mixture presents the same hazard.

Subpart D—HazCom Program

§ 47.31 Requirement for a HazCom program.

Each operator must—

(a) Develop and implement a written HazCom program,

(b) Maintain it for as long as a hazardous chemical is known to be at the mine, and

(c) Share relevant HazCom information with other on-site operators whose miners can be affected.

§ 47.32 HazCom program contents.

The HazCom program must include the following:

(a) How this part is put into practice at the mine through the use of—

(1) Hazard determination,

(2) Labels and other forms of warning,

(3) Material safety data sheets (MSDSs), and

(4) Miner training.

(b) A list or other record identifying all hazardous chemicals known to be at the mine. The list must—

(1) Use a chemical identity that permits cross-referencing between the list, a chemical's label, and its MSDS; and

(2) Be compiled for the whole mine or by individual work areas.

(c) At mines with more than one operator, the methods for—

(1) Providing other operators with access to MSDSs, and

(2) Informing other operators about—

(i) Hazardous chemicals to which their miners can be exposed,

(ii) The labeling system on the containers of these chemicals, and

(iii) Appropriate protective measures.

Subpart E—Container Labels and Other Forms of Warning

§ 47.41 Requirement for container labels.

(a) The operator must ensure that each container of a hazardous chemical has a label. If a container is tagged or marked with the appropriate information, it is labeled.

(1) The operator must replace a container label immediately if it is missing or if the hazard information on the label is unreadable.

(2) The operator must not remove or deface existing labels on containers of hazardous chemicals.

(b) For each hazardous chemical produced at the mine, the operator must prepare a container label and update this label with any significant, new information about the chemical's hazards within 3 months of becoming aware of this information.

(c) For each hazardous chemical brought to the mine, the operator must replace an outdated label when a revised label is received from the chemical's manufacturer or supplier. The operator is not responsible for an inaccurate label obtained from the chemical's manufacturer or supplier.

§ 47.42 Label contents.

When an operator must make a label, the label must—

(a) Be prominently displayed, legible, accurate, and in English;

(b) Display appropriate hazard warnings;

(c) Use a chemical identity that permits cross-referencing between the list of hazardous chemicals, a chemical's label, and its MSDS; and

(d) Include the name and address of the operator or another responsible party who can provide additional information about the hazardous chemical.

§ 47.43 Label alternatives.

The operator may use signs, placards, process sheets, batch tickets, operating procedures, or other label alternatives for individual, stationary process containers, provided that the alternative—

(a) Identifies the container to which it applies,

(b) Communicates the same information as required on the label, and

(c) Is readily available throughout each work shift to miners in the work area.

§ 47.44 Temporary, portable containers.

(a) The operator does not have to label a temporary, portable container if he or she ensures that the miner using the portable container—

(1) Knows the identity of the chemical, its hazards, and any protective measures needed, and

(2) Leaves the container empty at the end of the shift.

(b) Otherwise, the operator must mark the temporary, portable container with at least the common name of its contents.

Subpart F—Material Safety Data Sheets (MSDS)

§ 47.51 Requirement for an MSDS.

Operators must have an MSDS for each hazardous chemical which they produce or use. The MSDS may be in any medium, such as paper or electronic, that does not restrict availability.

(a) For each hazardous chemical produced at the mine, the operator must prepare an MSDS, and update it with significant, new information about the chemical's hazards or protective measures within 3 months of becoming aware of this information.

(b) For each hazardous chemical brought to the mine, the operator must rely on the MSDS received from the chemical manufacturer or supplier, develop their own MSDS, or obtain one from another source.

(c) Although the operator is not responsible for an inaccurate MSDS obtained from the chemical's manufacturer, supplier, or other source, the operator must—

(1) Replace an outdated MSDS upon receipt of an updated revision, and

(2) Obtain an accurate MSDS as soon as possible after becoming aware of an inaccuracy.

(d) The operator is not required to prepare an MSDS for an intermediate chemical or by-product resulting from mining or milling if its hazards are already addressed on the MSDS of the source chemical.

§ 47.52 MSDS contents.

When an operator must prepare an MSDS for a hazardous chemical produced at the mine, the MSDS must—

(a) Be legible, accurate, and in English;

(b) Use a chemical identity that permits cross-referencing between the list of hazardous chemicals, the chemical's label, and its MSDS; and

(c) Contain information, or indicate if no information is available, for the categories listed in Table 47.52 as follows:

Table 47.52—Contents of MSDS

CATEGORY	REQUIREMENTS, DESCRIPTIONS, AND EXCEPTIONS
(1) Identity	The identity of the chemical or, if the chemical is a mixture, the identities of all hazardous ingredients. See § 47.21 (Identifying hazardous chemicals).
(2) Properties	The physical and chemical characteristics of the chemical, such as vapor pressure and solubility in water.
(3) Physical hazards	The physical hazards of the chemical including the potential for fire, explosion, and reactivity.
(4) Health hazards	The health hazards of the chemical including— (i) Signs and symptoms of exposure, (ii) Any medical conditions which are generally recognized as being aggravated by exposure to the chemical, and (iii) The primary routes of entry for the chemical, such as lungs, stomach, or skin.
(5) Exposure limits	For the chemical or the ingredients of a mixture— (i) The MSHA or OSHA permissible limit, if there is one, and (ii) Any other exposure limit recommended by the preparer of the MSDS.
(6) Carcinogenicity	Whether the chemical or an ingredient in the mixture is a carcinogen or potential carcinogen. See the sources specified in § 47.21 (Identifying hazardous chemicals).

(7) Safe use	Precautions for safe handling and use including— (i) Appropriate hygienic practices, (ii) Protective measures during repair and maintenance of contaminated equipment, and (iii) Procedures for clean-up of spills and leaks.
(8) Control measures	Generally applicable control measures such as engineering controls, work practices, and personal protective equipment.
(9) Emergency information	(i) Emergency medical and first-aid procedures; and (ii) The name, address, and telephone number of the operator or other responsible party who can provide additional information on the hazardous chemical and appropriate emergency procedures.
(10) Date prepared	The date the MSDS was prepared or last changed.

§ 47.53 Alternative for hazardous waste.

If the mine produces or uses hazardous waste, the operator must provide potentially exposed miners and designated representatives access to available information for the hazardous waste that—

(a) Identifies its hazardous chemical components,

(b) Describes its physical or health hazards, or

(c) Specifies appropriate protective measures.

§ 47.54 Availability of an MSDS.

The operator must make MSDSs accessible to miners during each work shift for each hazardous chemical to which they may be exposed either—

(a) At each work area where the hazardous chemical is produced or used, or

(b) At an alternative location, provided that the MSDS is readily available to miners in an emergency.

§ 47.55 Retaining an MSDS.

The operator must—

(a) Retain its MSDS for as long as the hazardous chemical is known to be at the mine, and

(b) Notify miners at least 3 months before disposing of the MSDS.

Subpart G—Reserved

Subpart H—Making HazCom Information Available

§ 47.71 Access to HazCom materials.

Upon request, the operator must provide access to all HazCom materials required by this part to miners and designated representatives, except as provided in § 47.81 through § 47.87 (provisions for trade secrets).

§ 47.72 Cost for copies.

(a) The operator must provide the first copy and each revision of the HazCom material without cost.

(b) Fees for a subsequent copy of the HazCom material must be non-discriminatory and reasonable.

§ 47.73 Providing labels and MSDSs to customers.

For a hazardous chemical produced at the mine, the operator must provide customers, upon request, with the chemical's label or a copy of the label information, and the chemical's MSDS.

Subpart I—Trade Secret Hazardous Chemical

§ 47.81 Provisions for withholding trade secrets.

(a) Operators may withhold the identity of a trade secret chemical, including the name and other specific identification, from the written list of hazardous chemicals, the label, and the MSDS, provided that the operator—

(1) Can support the claim that the chemical's identity is a trade secret,

(2) Identifies the chemical in a way that it can be referred to without disclosing the secret,

(3) Indicates in the MSDS that the chemical's identity is withheld as a trade secret, and

(4) Discloses in the MSDS information on the properties and effects of the hazardous chemical.

(b) The operator must make the chemical's identity available to miners, designated representatives, and health professionals in accordance with the provisions of this subpart.

(c) This subpart does not require the operator to disclose process or percentage of mixture information, which is a trade secret, under any circumstances.

§ 47.82 Disclosure of information to MSHA.

(a) Even if the operator has a trade secret claim, the operator must disclose to MSHA, upon request, any information which this subpart requires the operator to make available.

(b) The operator must make a trade secret claim, no later than at the time the information is provided to MSHA, so that MSHA can determine the trade secret status and implement the necessary protection.

§ 47.83 Disclosure in a medical emergency.

(a) Upon request and regardless of the existence of a written statement of need or a confidentiality agreement, the operator must immediately disclose the identity of a trade secret chemical to the treating health professional when that person determines that—

(1) A medical emergency exists, and

(2) The identity of the hazardous chemical is necessary for emergency or first-aid treatment.

(b) The operator may require a written statement of need and confidentiality agreement in accordance with the provisions of § 47.84 and § 47.85 as soon as circumstances permit.

§ 47.84 Non-emergency disclosure.

Upon request, the operator must disclose the identity of a trade secret chemical in a non-emergency situation to an exposed miner, the miner's designated representative, or a health professional providing services to the miner, if the following conditions are met.

(a) The request is in writing.

(b) The request describes in reasonable detail an occupational health need for the information, as follows:

(1) To assess the chemical hazards to which the miner will be exposed.

(2) To conduct or assess health sampling to determine the miner's exposure levels.

(3) To conduct reassignment or periodic medical surveillance of the exposed miner.

(4) To provide medical treatment to the exposed miner.

(5) To select or assess appropriate personal protective equipment for the exposed miner.

(6) To design or assess engineering controls or other protective measures for the exposed miner.

(7) To conduct studies to determine the health effects of exposure.

(c) The request explains in detail why the disclosure of the following information would not satisfy the purpose described in paragraph (b) of this section:

(1) The properties and effects of the chemical.

(2) Measures for controlling the miner's exposure to the chemical.

(3) Methods of monitoring and analyzing the miner's exposure to the chemical.

(4) Methods of diagnosing and treating harmful exposures to the chemical.

(d) The request describes the procedures to be used to maintain the confidentiality of the disclosed information.

(e) The person making the request enters a written confidentiality agreement that he or she will not use the information for any purpose other than the health needs asserted and agrees not to release the information under any circumstances, except as authorized by § 47.85, by the terms of the agreement, or by the operator.

§ 47.85 Confidentiality agreement and remedies.

(a) The confidentiality agreement authorized by § 47.84—

(1) May restrict the use of the trade secret chemical identity to the health purposes indicated in the written statement of need;

(2) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages;

(3) Must allow the exposed miner, the miner's designated representative, or the health professional to disclose the trade secret chemical identity to MSHA;

(4) May provide that the exposed miner, the miner's designated representative, or the health professional inform the operator who provided the trade secret chemical identity prior to or at the same time as its disclosure to MSHA; and

(5) May not include requirements for the posting of a penalty bond.

(b) Nothing in this subpart precludes the parties from pursuing non-contractual remedies to the extent permitted by law.

§ 47.86 Denial of a written request for disclosure.

To deny a written request for disclosure of the identity of a trade secret chemical, the operator must—

(a) Put the denial in writing,

(1) Including evidence to substantiate the claim that the chemical's identity is a trade secret,

(2) Stating the specific reasons why the request is being denied, and

(3) Explaining how alternative information will satisfy the specific medical or occupational health need without revealing the chemical's identity.

(b) Provide the denial to the health professional, miner, or designated representative within 30 days of the request.

§ 47.87 Review of denial.

(a) The health professional, miner, or designated representative may refer the written denial to MSHA for review. The request for review must include a copy of—

(1) The request for disclosure of the identity of the trade secret chemical,

(2) The confidentiality agreement, and

(3) The operator's written denial.

(b) If MSHA determines that the identity of the trade secret chemical should have been disclosed, the operator will be subject to citation by MSHA.

(c) If MSHA determines that the confidentiality agreement would not sufficiently protect against unauthorized disclosure of the trade secret, MSHA may impose additional conditions to ensure that the occupational health services are provided without an undue risk of harm to the operator.

(d) If the operator contests a citation for a failure to release the identity of a trade secret chemical, the matter will be adjudicated by the Federal Mine Safety and Health Review Commission. The Administrative Law Judge may review the citation and supporting documentation "in camera" or issue appropriate orders to protect the trade secret.

Subpart J—Exemptions

§ 47.91 Exemptions from the HazCom standard.

A hazardous chemical is exempt from this part under the conditions described in Table 47.91 as follows:

Table 47.91—Chemicals and Products Exempt from this HazCom Standard	
EXEMPTION	**CONDITIONS FOR EXEMPTION**
Article	If, under normal conditions of use, it— (1) Releases no more than insignificant amounts of a hazardous chemical, and (2) Poses no physical or health risk to exposed miners.
Biological hazards	All biological hazards, such as poisonous plants, insects, and micro-organisms.
Consumer product or hazardous substance regulated by CPSC	(1) If the miner uses it for the purpose the manufacturer intended; and (2) Such use does not expose the miner more often and for longer periods than ordinary consumer use.
Cosmetics, drugs, food, food additive, color additive, drinks, alcoholic beverages, tobacco and tobacco products, or medical or veterinary device or product, including materials intended for use as ingredients in such products (such as flavors and fragrances)	When intended for personal consumption or use.
Radiation	All ionizing or non-ionizing radiation, such as alpha or gamma, microwaves, or x-rays.
Wood or wood products, including lumber	If they do not release or otherwise result in exposure to a hazardous chemical under normal conditions of use. For example, wood is not exempt if it is treated with a hazardous chemical or if it will be subsequently cut or sanded.

§ 47.92 Exemptions from labeling.

A hazardous chemical is exempt from subpart E of this part under the conditions described in Table 47.92 as follows:

Table 47.92—Hazardous Chemicals Exempt from Labeling

EXEMPTION	CONDITIONS FOR EXEMPTION
Chemical substance, consumer product, hazardous substance, or pesticide	When kept in its manufacturer's or supplier's original packaging labeled under other federal labeling requirements.
Hazardous substances	When the subject of remedial or removal action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in accordance with EPA regulations.
Hazardous waste	When regulated by EPA under the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act.
Raw material being mined or processed	While on mine property, except when the container holds a mixture of the raw material and another hazardous chemical and the mixture is found to be hazardous under § 47.21—Identifying hazardous chemicals.
Wood or wood products, including lumber	Wood or wood products are always exempt from labeling.