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HEALTH HAZARDS IN A FOUNDRY.

BOOK II

MELTING AND POURING DEPARTMENT.

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Occupational health hazards in the melting and pouring areas of foundries are reviewed. Specific health hazards are described along with methods of hazard detection and control. Health problems discussed include those caused by metal dusts and fumes, mineral dusts, organic dusts, gases, vapors, noises and vibration, and radiant energy. Dust and fumes hazards in foundries which use aluminum (7429905), brass, bronze, iron (7439896), and magnesium (7439954) are described. Remedial actions also are reviewed including reporting of the problems, use of protective equipment and clothing, good workplace and personal hygiene, regular medical examinations, and engineering controls.

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BOOK II

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BOOK II

MELTING AND POURING

SO YOU WORK IN A FOUNDRY--

An easy job? Of course not. Is it an important job? You bet.

Pick any item that people use, and part of it is built with something produced in a foundry. Automobile engines, furnaces, washing machines, and lots of things most of us can't do without. Without you, these things can't be built and life would be tough and uncomfortable for all of us. You're darned right your job is important!

PART I

This book is about the things in the Melting and Pouring areas that may harm your health if you don't know what they are and how to watch out for them.

Today, management is responsible for providing a safe and healthful place for you to work. This responsibility is spelled out in the Occupational Safety and Health Administration (OSHA) Regulations. Businessmen, unions, people in government and workers in industry are working together and becoming aware of possible hazards on the job.

What can you, as a foundry worker, do to help get rid of health problems where you work?

FIRST - You should know what health problems may be in your area.

SECOND - You should know how to spot health problems.

THIRD - You should know the right action to take when you think you spot a health problem.

REMEMBER!! Under the Occupational Safety and Health Act, management must provide healthful working conditions and you should help management to meet this responsibility--you are in a better position to spot the hazards than almost anyone else and report them to management. And, it's your responsibility to follow proper procedures and wear protective equipment when required.

KNOW THE POSSIBLE HEALTH PROBLEMS IN YOUR AREA--

If you work in the melting and pouring areas, you can be exposed to possible health problems from metal dusts and fumes, other dusts, gases, vapors, noise, and radiant energy (heat, and infrared and ultraviolet radiation).

METAL DUSTS AND FUMES--

Health problems can occur from breathing or swallowing metal dusts and fumes. Different types of foundries produce different types of metal dust and fume exposures. For example, a brass foundry will have different metal exposures than an aluminum foundry (see Page 6).

The sources of fumes are:

1. Furnace and cupola operations.
2. Innoculating, skimming, and transporting the melt.
3. Pouring operations.
4. Freshly poured molds.

MINERAL DUSTS--

Operations that can cause harmful amounts of mineral dust in the air are usually not found in your area. Other foundry operations like shakeout and sand-handling have this kind of exposure.

ORGANIC DUSTS--

These are another group of dusts that can be found in your area. They are formed when grease, oil, or rubber on dirty metal scrap are fed into furnaces and burned. Organic dusts can also be formed during pouring.

GASES--

Carbon monoxide is the most common gas found in foundries. The gas is given off by furnaces, cupolas, ladle preheaters, salamanders, poured molds, and gasoline or propane-fueled industrial trucks.

Sulfur dioxide, nitrogen dioxide, chlorine, phosgene, hydrogen fluoride, and other gases may also be found at special processes in melting and pouring areas.

Pouring crews may have an overexposure to gas and vapor from the heat breakdown of resin-coated sands and core binders. Isocyanate vapors come from cold-box cores. If you become sensitized to isocyanates, you may have an illness similar to asthma, and continued exposure will make it worse. You may not recognize exposures to isocyanates. An industrial hygienist, using special equipment, will need to evaluate the air. Other gases and vapors given off during pouring are ammonia, formaldehyde and phenols which are usually recognized by their odor or by eye and nose irritation.

VAPORS--

You should not find harmful amounts of solvent vapors in the melting and pouring areas because solvents are not used here in large amounts. Most solvents used in your foundry will be in the pattern and core shops. Special melting or pouring operations may use carbon tetrachloride or ether (see Page 12). Be aware of these areas.

NOISE AND VIBRATION--

Some foundry equipment like furnaces, ladle preheaters, and jack hammers may produce hazardous noise levels. Compressors, ventilation systems, casting cleaning, and overhead cranes may also cause high noise levels.

NOTE: You could be exposed to a vibration hazard from working with air hammers and pneumatic rams during refractory relining.

RADIANT ENERGY--

Heat, infrared radiation and ultraviolet radiation are types of radiant energy you could be exposed to. Sources of radiant energy in the melting and pouring areas are:

1. Cupolas and melting furnaces.
2. Ladles.
3. Pouring.
4. Ladle preheaters.

Infrared and ultraviolet rays are the same type of radiant energy that can give you sunburn. In addition to causing burns, infrared and ultraviolet radiation can affect your eyes.

Overexposure to heat can cause problems like heat cramps, heat exhaustion, or heat stroke.

PART II

HOW TO SPOT POSSIBLE HEALTH HAZARDS IN YOUR AREA--

This part of the book is designed to help you spot the things in your work area that might be harmful to your health.

NOTE: Once you've found what you think is a health problem, notify your foreman or union representative to see that a qualified person checks the problem.

METAL DUSTS AND FUMES--

Metal dusts are small, solid particles in the air. Fumes are even smaller solid particles given off where molten metals are charging used. Skimming, stirring, tapping, pouring, or other operations which disturb the melt can cause large amounts of fume to be given off. Metal fumes are more of a hazard than breathing metal dusts because metal fume can enter the lungs easier.

Different foundries produce different metal dust and fume exposures because various base metals and alloy metals are used in them. The commonly found metal exposures in certain foundries are:

Aluminum Foundries--aluminum, copper and zinc. Some aluminum foundries use mercury for a special alloy. The furnace where mercury is added should always have local exhaust ventilation.

Brass Foundries-----copper, lead, and zinc. Certain brass alloys require aluminum, manganese, or tin.

Bronze Foundries-----copper and tin. Aluminum is sometimes added. A special problem is white phosphorus in phosphor-bronze alloys. Whenever possible, white phosphorus should be handled under water.

Iron Foundries------Iron. Aluminum, chromium, lead, magnesium, manganese, and zinc are common metals that could be added to treat the iron.

Magnesium Foundries-magnesium. Aluminum, manganese, and zinc are common additives to the base metal.

Other metals can be added to the melt for special purposes like degassing and grain refining, or for improving certain properties of the alloy like strength or ductility. These metals include:

Beryllium	Lithium molybdenum
Bismuth	Niobium (also called Columbium)
Boron	Selenium
Cadmium	Thallium
Chromium	Zirconium

High exposure to metal fumes, like cadmium, copper, magnesium, mercury, nickel, and zinc cause metal fume fever which resembles a bad case of flu. The symptoms are:

Chills	Muscular Pain
Fever	Headache
Nausea	Tiredness
Vomiting	Weakness

The illness lasts less than a day with no side affects, and may occur when you return to work after being away from your job for a few days. The above statement is not true with regard to acute exposure to cadmium.

The early symptoms of poisoning from overexposure to many metals are general and not easily recognized. These symptoms can include tiredness, weakness, loss of weight, loss of appetite, and pain in the abdomen. Metals that can cause such symptoms upon overexposure include:

Beryllium
Lead
Manganese
Mercury
Phosphorus

If you think you could have been overexposed to these metals or others, tell the doctor during your physical examination. Special tests to determine if you have an overexposure may be run. Remember! Tell your doctor about all the materials you work with; even the relatively harmless ones like iron. Breathing iron oxide fume over a long period of time causes a non-disabling condition (called siderosis). This condition can mask chest x-rays, and interfere with the diagnosis of other

lung disorders.

Beryllium and nickel can also produce skin disease (dermatitis), and skin contact with phosphorus can cause burns.

The clues that there may be too much metal dust and/or fume in the air are:

1. No ventilation on furnaces.
2. No ventilation at pouring.
3. Clouds of smoke escaping the ventilation system.
4. Skimming, stirring, or otherwise agitating molten metal without ventilation.
5. Visible haze in the air.
6. Transporting melt without covers.
7. Symptoms of metal fume fever.
8. White phosphorus handled dry.
9. Mercury spills not promptly recovered.

OTHER DUST HAZARDS--

Foundry sand contains silica. Breathing silica dust can cause a lung disease called silicosis, which takes five to twenty years of overexposure to develop. The silica dust particles that cause this disease are so small that you can't see them. One way to be sure you don't have a high exposure is by having it measured by an industrial hygienist. But, if you see a lot of airborne dust in your area, be suspicious. Ask if the dust level has been checked.

WATCH OUT! You can be exposed to high levels of silica dust when chipping old furnace or cupola refractories.

The symptoms of silicosis are general and not easily recognized. If you suspect you have been overexposed to silica dust, you should have a thorough examination by a lung specialist. The examination should include a chest x-ray. If you have silicosis, continued exposure to silica dust will make it worse.

WATCH OUT! The pouring crew could be exposed to hexachloroethane dust, which is used to improve the flow of nonferrous metals during pouring. It can affect your nervous system; the fumes cause nose and throat irritation.

Slag wool is formed when slag waste from the cupola hits the air. Slag wool will not cause silicosis. It is called a nuisance dust. Nuisance dusts cause eye, ear, and nose irritation, and a safety problem by cutting down visibility. One way to prevent slag wool is letting the slag fall into a container of water.

The clues that there may be too much silica dust in the air are:

1. Dust leaking from enclosures and ducts.
2. Buildup of settled dust on window sills, rafters, and equipment.
3. Dust escaping the effect of the ventilation system.
4. Large amounts of slag wool formed at the cupola.
5. Large amounts of black dust caught in your nose.
6. Lack of a daily housekeeping program.

GAS AND VAPOR HAZARDS--

GASES

Gases are quick-acting. You may notice effects within a short time. You may tell a gas by its odor, but don't trust your nose alone, since many gases have no odor and others dull your sense of smell. However, just because you smell a gas doesn't mean you'll be effected.

Carbon monoxide is colorless and odorless, and is given off from cupolas, furnaces, ladle preheaters, salamanders, poured molds, and gasoline and propane-fueled industrial trucks. Magnesium furnace operators can be exposed to carbon monoxide during desulfurization. Overexposure to carbon monoxide can cause headaches, dizziness, lightheadedness, queasy stomach, and blurred vision. At higher concentrations, it can cause death.

WATCH OUT! Contaminants can build up in confined spaces under furnaces. If you are working there, you may be overexposed.

Other gases can cause problems to some workers in melting areas. In addition to carbon monoxide, magnesium foundry melters can be exposed to sulfur dioxide, fluorides, and phosgene. Fluorine gas is given off from fluorides added to the furnaces for fluxing. Phosgene is given off when carbon tetrachloride, which may be added to refine the grain of aluminum-magnesium castings, breaks down from heat. Aluminum foundry workers may be exposed to chlorine

which is sometimes bubbled through aluminum melting furnaces.

Sulfur dioxide, phosgene, and chlorine gas can cause severe lung damage, even resulting in death, when high enough concentrations are breathed. (Phosgene was once used as a war gas.) Also, these gases are very irritating to the eyes, nose, and throat. Fluorides can cause lung irritation and sometimes bone problems.

Pouring operations can give off gases and vapors, like ammonia and formaldehyde, from the breakdown of resin-coated core sands. Ammonia has an odor that is very irritating to the eyes, nose, and throat. Formaldehyde has an odor too, but you'll notice its effects first by watery, burning eyes. Magnesium foundry pouring crews can also be exposed to fluorine gas from fluorides added to the molding or core sands.

VAPORS

Large amounts of solvents are not used in your area, so your chances of being overexposed are low. Solvents are usually found in the foundry pattern shop and core room. Commonly-used solvents in these areas are discussed in BOOK I of this series.

Two chemicals that can be used in the melting and pouring areas that may cause vapor hazards are carbon tetrachloride (magnesium foundries), and ether, a solvent for hexachloroethane sprays. Since carbon tetrachloride is usually handled in a closed system, the chances of overexposure are low. Overexposure to carbon tetrachloride can cause liver and kidney damage. REMEMBER,

ether is very flammable, so keep it away from open flames.

Solvents can be taken into your body by breathing the vapors or by direct skin contact with the liquid. Continued skin contact can cause skin problems (dermatitis) like dry, cracked skin. Breathing high concentrations can cause problems to your nervous system with symptoms like:

Dizziness
Lightheadedness
Headaches
Nausea
Nose and Throat Irritation

The clues which might indicate a gas or vapor hazard are:

1. No ventilation at furnaces, cupolas, or pouring stations.
2. No afterburner on cupolas.
3. Clouds of smoke escaping the effect of the ventilation system.
4. Irritating odors.
5. Heavy use of gasoline or propane-fueled industrial trucks indoors.
6. Washing with solvents.
7. A haze in the workroom that gets worse as the shift goes on.
8. Salamanders used in confined space.

NOISE AND VIBRATION HAZARDS--

NOISE

Furnaces, ladle preheaters, and air hammers can be sources of high noise. Other sources could be compressors, ventilation systems, casting cleaning, and overhead cranes.

Noise may become a problem when:

"YOU CAN'T HEAR YOUR BUDDY TALKING IN A NORMAL VOICE AT ARM'S LENGTH."

And, like other hazards, you must be exposed to a certain amount of loudness (loudness is measured in decibels) over a certain amount of time to have an effect. Too much noise over a long period of time will cause a hearing loss--people will have to talk louder to you and you won't be able to understand every sound you hear!! The first sign of permanent hearing loss is that you will not be able to hear as well for a time after leaving a noisy area.

temporary threshold shift?

VIBRATION

Work with vibrating equipment like pneumatic hammers can cause vibration problems. Symptoms of vibration illness include numbness in the hands and fingers. Balanced tools help protect against vibration illness.

Clues that there may be a noise or vibration problem are:

1. Temporary loss in hearing.
2. Ringing in your ears.
3. Can't hear your buddy talking in a normal voice at arm's length.
4. Poorly balanced vibrating tools.
5. Numbness in the hands and fingers.

RADIANT ENERGY

Heat, infrared radiation, and ultraviolet radiation are types of radiant energy you could be exposed to in the melting and pouring areas. Sources of radiant energy include:

1. Melting furnaces and cupolas.
2. Tapping of furnaces and transporting the melt.
3. Ladle preheaters.
4. Pouring.

Infrared radiation and ultraviolet radiation can cause skin burns and eye problems. Mild exposures to infrared may cause eye fatigue and headaches. Eye protection with tinted lenses should be used to stop radiant energy.

NOTE: Innoculating the melt in iron foundries when making nodular iron is a big source of these types of radiant energy.

X-rays might be used to inspect large castings in the cleaning shop. X-rays can cause skin burns, eye problems, and other disorders.

Some operations, especially in melting areas, may give off a lot of heat. When you first start working in hot areas, it is best to gradually get used to working around heat. Too much heat can cause illnesses like heat cramps, heat exhaustion and heat stroke. This problem is increased in the summer months. During exposure to high heat, drink plenty of water and use fans if they are provided.

WATCH OUT! Make sure the fan doesn't blow contaminants away from the ventilation hood or into your face.

Clues to spot radiant energy problems include:

1. No ventilation at cupolas or furnaces.
2. Skin burns.
3. Heat-related illnesses.

You've done your part now in spotting what may be a health hazard by noticing symptoms of what might be overexposure in yourself, and by observing machines and equipment in the melting and pouring areas. The industrial hygienist can now answer the question, "Is there an unhealthy condition the foundry worker is exposed to?" He'll ask you and your co-workers to wear air sampling equipment. You've spotted the possible hazards; he will evaluate them in a scientific way. Cooperate with him; he has YOUR interests in mind.

PART III

ACTIONS YOU SHOULD TAKE IF YOU THINK A HEALTH HAZARD EXISTS IN YOUR AREA--

This book is written to help you spot exposures in your work area. This book cannot tell you if the exposures are too high -- only a qualified person with special training and instruments can determine that.

Following are actions you should take:

1. Report the Problem

   If you think you have a health problem in your area, it is in your best interest to report it to your foreman and/or union representative.

2. Wear Protective Equipment Where Required

   RESPIRATORS--sometimes respirators aren't comfortable, and they can be hard to breathe through. But, they do protect your health and it is your responsibility to wear them:

   a. during brief exposures to high concentrations of contaminants when ventilation is not feasible,
   b. until effective engineering controls--local exhaust ventilation--can be installed.

All approved respirators will have a NIOSH/MESA seal on the side of the box which explains what the respirator will filter out. Most respirators will only filter out specific chemicals and not all of the chemicals you are exposed to.

IF YOU ARE EXPOSED TO	YOU SHOULD WEAR
Dust	An approved dust respirator--mechanical filter.
Metal Fume	An approved dust and fume respirator--mechanical filter.
Dust and Metal Fume	An approved dust and fume respirator--mechanical filter.
Gases and Vapors	A chemical cartridge or chemical canister respirator approved for the particular type of gas.

REMEMBER

- The cartridges must be changed periodically or when you begin to taste or smell the vapor or gas, or have difficulty breathing through them.
- The respirators must be stored in a clean area.
- They must be disinfected regularly, especially when you have a cold.
- Respirators must fit properly. Beards and mustaches may make them leak.
- You must be trained in the proper use and care of the devices.

plus possible others in Book # 3 p. 19.

IMPORTANT

Mechanical filter and chemical cartridge respirators cannot be used in a low oxygen (less than 19%) area. Air line respirators or self-contained breathing equipment are used at special operations or areas where oxygen levels are low.

In the foundry, these operations or areas could include work in confined spaces or work in special inert atmospheres (other than normal air) on exotic metals. Another worker should be stationed outside the low oxygen area in a spot where he can see everything that is going on in that area. This worker can provide emergency rescue, if necessary. Air line respirators should have a carbon monoxide filter and warning device on the supply line. A safety harness or safety lines should also be worn for pulling a worker out of a low oxygen area in case of emergency.

FACE SHIELDS AND GOGGLES--face shields and tinted goggles should be used at operations where radiant energy can be given off. The lenses of goggles are tinted to stop radiation from passing through to your eyes. Face shields are important where molten metal can splatter. Make sure your face shield fits correctly.

GLOVES AND BARRIER CREAMS--these can be used to protect the skin from contact with chemicals that can cause dermatitis.

EAR PLUGS AND EAR MUFFS--these prevent loss of hearing from high noise levels.

NOTE: Some workers say they can't hear warning bells or other workers when they are wearing hearing protection. You can actually hear better with hearing protection since most of the noise around you is masked out. You may find hearing protectors uncomfortable at first, but after a few days you will get used to them. You may then find noise in your area to be uncomfortable when protectors are not worn.

REMEMBER

- Ear plugs must be properly fitted since one size does not fit everyone.
- Plugs must be washed frequently with warm, soapy water.
- Don't use plain cotton.
- Keep your ears clean.
- The side frames of glasses may prevent ear muffs from giving proper protection. You may have to get glasses with special side frames.

PROTECTIVE CLOTHINGS (GLOVES, APRONS, LEGGINGS)--for exposure to high levels of radiant energy or from molten metal splattering, heat-resistant gloves, aprons, and leggings can be used. Gloves should be long enough to protect hands and arms.

Full protective suits could be required at special operations involving toxic metals. You should receive thorough training in the use and care of these suits, and in emergency procedures.

For protection from vibration, padded mittens should be worn.

3. Housekeeping

Housekeeping in foundries is important! Dust that settles on pipes, rafters, floors and equipment can be blown into the air by passing vehicles, drafts from open windows and doors, sweeping, and fans. The better job YOU do of keeping this dust cleaned up, the better chance you will have of keeping the air you breathe safe.

Naturally, it's best to vacuum, but if you must sweep, do so carefully. Never blow dust off equipment with compressed air. Other housekeeping you should be aware of includes:

a. Have slag waste from cupola fall into a container of water.
b. Skim ladles under furnace ventilation.
c. Handle white phosphorus under water. Don't leave it exposed to the air.
d. Cover the melt during transport of ladles.
e. Recover spills of mercury promptly.

4. Personal Hygiene

It's tough to stay clean in a foundry, but personal hygiene is more than just staying clean. It's a way to protect yourself against exposures to metals by breathing or swallowing, and skin problems, and overcome to Lead. Poorly worded

See booklet #2 P. 18

REMEMBER

- Wash before eating, drinking, or smoking.
- Eat, drink, or smoke ONLY in permitted areas.
- Carry smoking materials in a closed case.
- Never heat lunches on furnaces.
- Don't wear contaminated work clothes home.
- Launder contaminated work clothes separate from family wash.
- Never wash with solvents.
- In hot areas, drink a lot of water to replace liquids your body loses.
- In hot areas, increase your daily salt intake (except if on a low-salt diet). Try salting your food a little more than usual.

5. Medical Examinations

In addition to your recognition of a hazard and the industrial hygiene studies, another way of determining excessive exposure to contaminants is through periodic medical examination, by

your company doctor or family physician.

Tell your doctor everything, such as how you feel on and off the job, any health problems, and symptoms, and how long you've had them. Be sure he knows the things you work with. The more he knows, the better he will be able to help you.

A full-size chest x-ray every two or three years will show if silicosis is developing. Tell your doctor if you work in an iron foundry, because your chest x-rays could be masked because of breathing iron oxide fume. The doctor might also ask you to take a breathing test. This will tell how much air your lungs can hold.

Blood and urine tests are used to measure your exposure to organic vapors like phenol or to metals like lead, copper and mercury. The doctor may x-ray your jaw if you work with phosphorus to make sure a problem called jaw necrosis isn't developing. If you work in noisy areas, a hearing test (audiometric test) might be given to you.

Don't be afraid of these examinations. They are meant to be an early warning for any health problems--a good preventive medical program.

6. Engineering Controls

Engineering controls include local exhaust ventilation systems, noise control devices, vacuum systems, and special production

equipment. The selection of these controls will be made by management as a result of engineering plant studies.

REMEMBER, YOUR INPUT is important! There are many indications of a possible need for engineering controls or of present controls which don't seem to work right. Ways to tell if ventilation is needed are:

a. Eye, nose and throat irritation.
b. Dust and smoke clouds rising from operations.
c. Dust settling over equipment, floors, and other surfaces.
d. Visible haze in the air.
e. Strong solvent or gas odor.

Indications of inadequate ventilation are:

a. All of the above.
b. Drafts in doorways - not enough make-up air.
c. Dust of smoke clouds not drawn into hoods.
d. Poor location of vent hoods.

   NOTE: The hood should be located to pull the air contaminants away from you.

e. Vent system in poor repair, leaking, corroded, or stopped-up ducts.
f. Exhaust stack of ventilation systems located so that dirty air is returned through windows and other openings.
g. Hoods not pulling as well as when initially installed.

DO'S AND DON'TS FOR A HEALTHY WORK ENVIRONMENT IN THE MELTING AND POURING AREAS OF THE FOUNDRY--

DO'S!

1. Make sure the ventilation system is turned on and operating properly.

   Things which may go wrong include:

   a. Motor is turning, but belt to fan is disconnected.
   b. Fan is reversed; air is blowing out from hood, not in.
   c. Fans are blowing contaminant away from hood.
   d. Hood is too far from source of contaminant.
   e. Hoods and ducts are clogged, restricting air flow.
   f. Supply air ducts on the roof are drawing air from exhaust ducts.

2. Pour where the ventilation is. Skim and innoculate melt under ventilation.
3. Tell your supervisor of any irritation, discomfort, or rash caused by foundry contaminants.
4. Clean dust off surfaces and equipment above your head. (Remember, vacuuming does a better job than sweeping.)
5. Cover the melt during transport with lids.
6. Handle phosphorus under water.
7. Wear personal protective equipment when needed:
   a. Dust and fume respirators for dusts and metal fumes.
   b. Chemical cartridge respirator for gases and vapors.

c. Ear muffs or ear plugs for noise.

d. Padded mittens for vibration.

e. Face shields and tinted goggles for nonionizing radiation.

f. Gloves, aprons, leggings for heat.

8. Practice good personal hygiene.

9. Prevent slag wool from forming by having the slag fall into a container of water.

10. See your doctor or the company doctor for your periodic physical examinations and tests.

11. Discuss industrial hygiene hazards at your safety meetings, and ways to correct them.

12. Clean up spills of solvents or chemicals quickly.

DON'TS!

1. Don't use fans if they interfere with the ventilation systems.

2. Don't disconnect parts of ventilation systems or block exhaust hoods or ducts.

3. Don't wash with solvents.

4. Don't eat, drink, or smoke in areas of airborne contaminants.

5. Don't heat food in the work area.

6. Don't misuse personal protective equipment. eq.?

7. Don't allow dust to accumulate in aisles, overhead surfaces, or equipment.

8. Don't enter confined spaces or atmospheres other than normal air unless you're equipped with:
   a. self-contained breathing equipment.
   b. a life line.
   c. an observation man to help in an emergency.

FIRST AID--

In foundries, the word is FAST--FAST AID!

If something is splashed into your eyes, send someone for medical help and immediately flush the eyes with clean water. Hold lids open with your fingers to make sure water washes away all of the material.

Extreme overexposure to solvent vapors, carbon monoxide, or heat may cause foundry workers to unexpectedly and suddenly become unconscious. Immediately remove worker to fresh air, loosen clothing, and have someone go for medical help. If you know how to give artifical respiration, you might be able to revive someone who is unconscious and stopped breathing.

This could prevent death or brain damage.

"KNOW WHO THE TRAINED FIRST AIDER IS ON YOUR SHIFT"

If splattered by molten metal, immediately flood the burn with water, and send for medical help. Cover the burn with a clean bandage and keep it moist.

NOTE: Make sure emergency telephone numbers are posted.

Emergency numbers should include:

Doctor

Ambulance

Hospital

Police Department

Fire Department

SO YOU'VE FINISHED READING THE BOOK - NOW WHAT ARE YOU GOING TO DO?--

Getting rid of the health problems in your foundry may be a tough job, but for every health problem that exists in a foundry there is at least one way to control or eliminate it.

It isn't the health problems that are difficult, it's the people problems. It takes people working together to solve health problems.

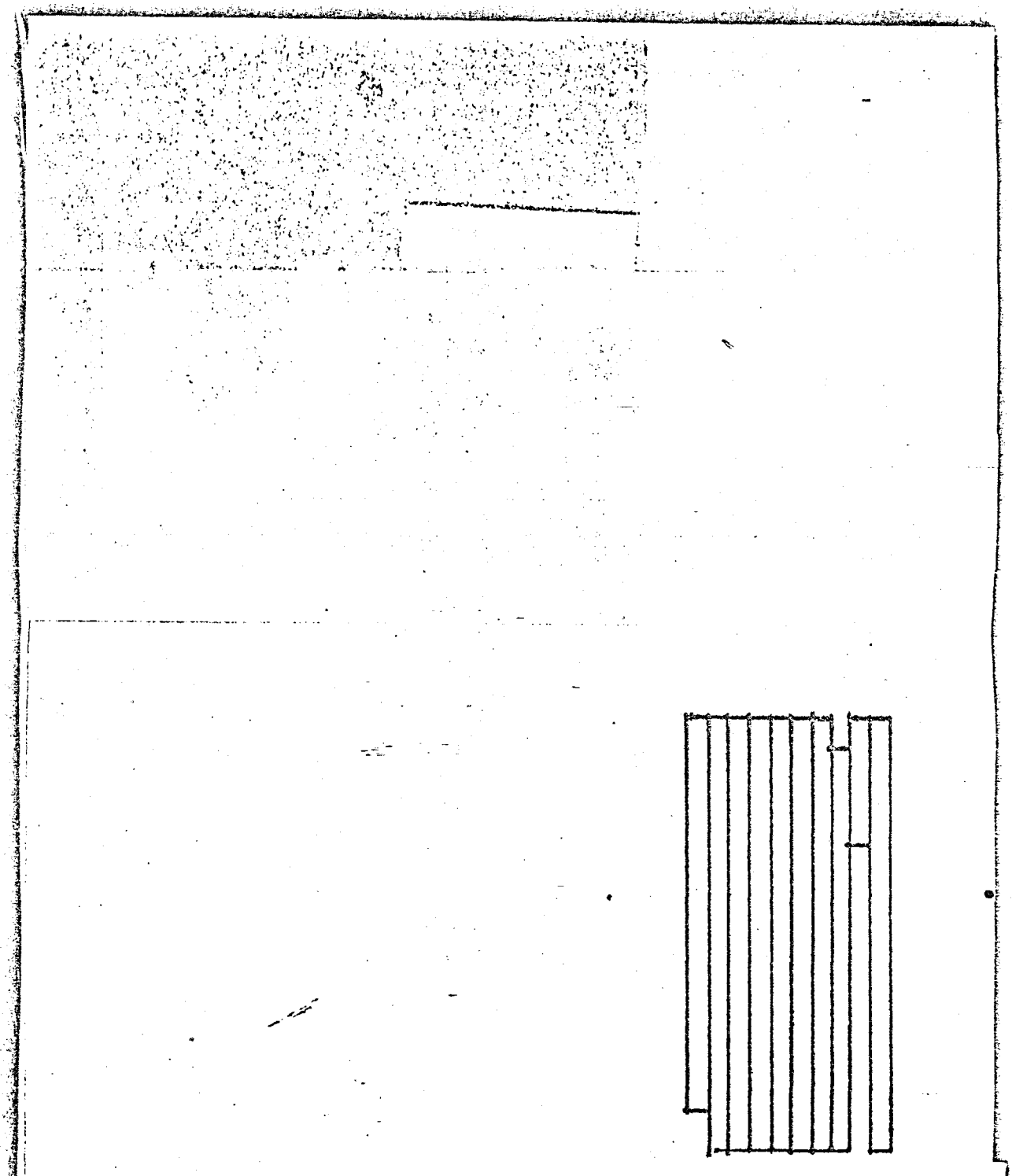
Someone should attend meetings of the safety committee. Someone might suggest that people get together to inform your union and employer about health problems that may be present where you work. Someone must tell the company nurse or doctor where the health problems are, who may be exposed, and how to control them.

ONE THING'S FOR SURE--THE BOOK CAN'T DO IT ALONE!

See if you can't get the ball rolling. Be responsible. Start caring--for your health and the health of others.

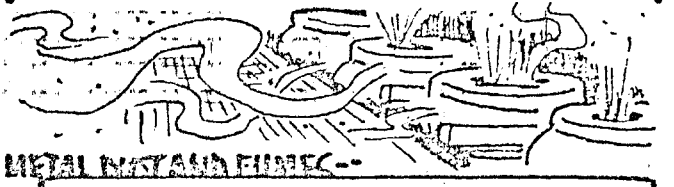
SO YOU WORK in a FOUNDRY

MELTING AND POURING



SO YOU WORK in a FOUNDRY

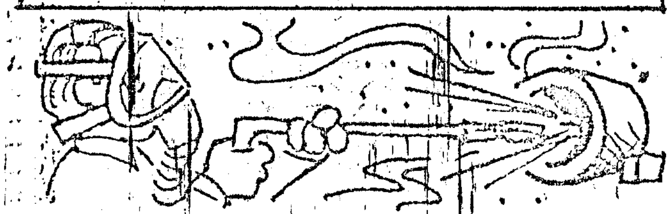
part 1



METAL DUST AND FUMES--

MINERAL DUSTS--

GASES--



VAPORS--

NOISE AND VIBRATIONS--

NOTE:

RADIANT ENERGY--

part 2

[illegible]

NOTE:

METAL DUSTS AND FUMES--

Aluminum Foundries--

Brass Foundries--

Bronze Foundries--

Iron Foundries--

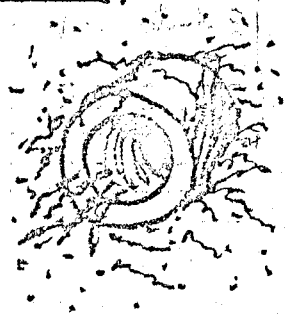
Magnesium Foundries--

TIZOC

AHUIZOTL

WATCH OUT

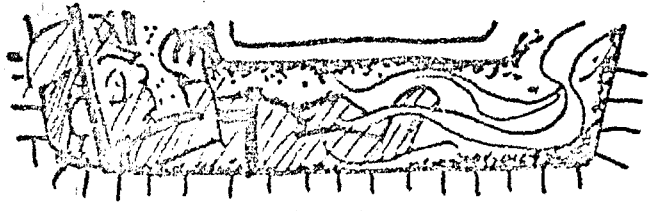
WATCH OUT!



1.
2.
3.
4.
5.

ZOMBIE VIRUS HAZARDS:

CASES



VAPORS

WATCH OUT!

1.

2.

3.

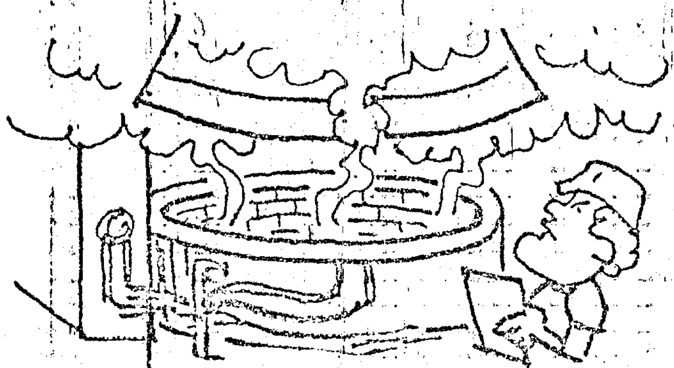
4.

5.

6.

7.

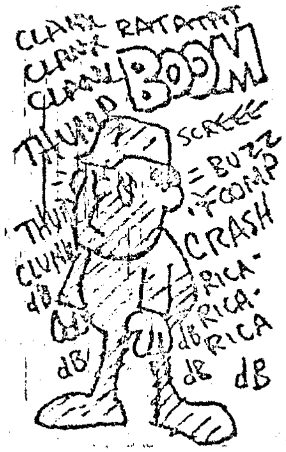
8.



NOISE AND VIBRATION HAZARDS---

NOISE

"YOU CAN'T HEAR YOUR [illegible] NORMAL VOICE AT ARM'S LENGTH"



VIBRATION

Panel

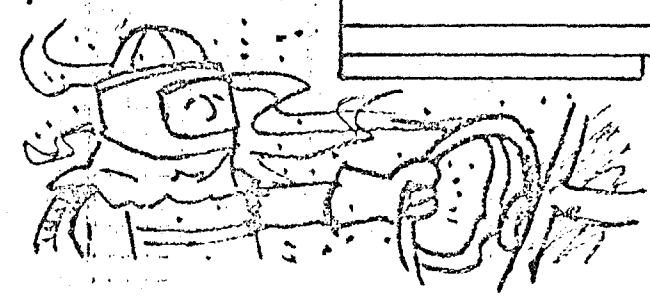
Panel

Part 3

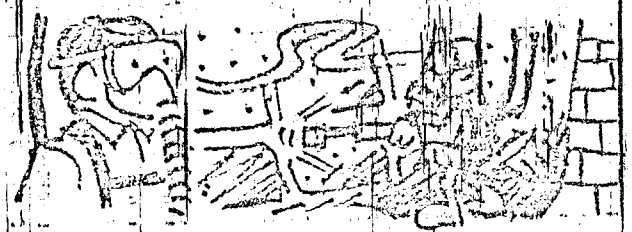
1. Repeat the Problem

a.

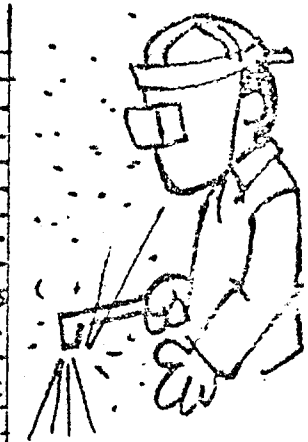
b.



REMEMBER!



IMPORTANT!

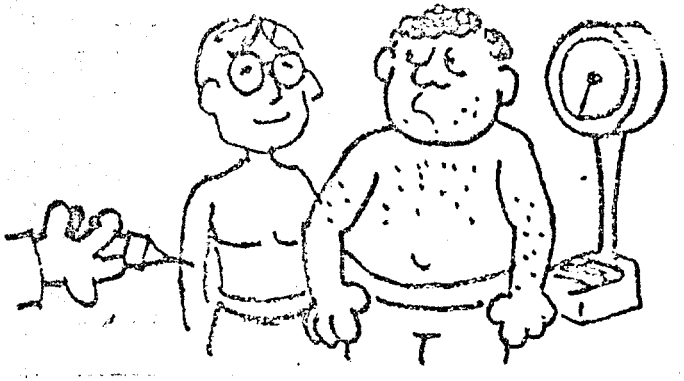


Reproduced from best available copy.

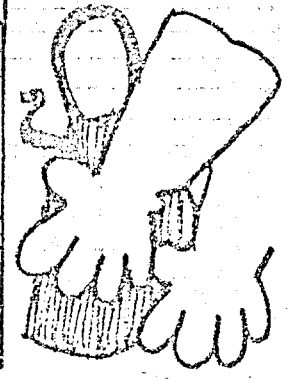
REMEMBER!

a.
b.
c.
d.
e.

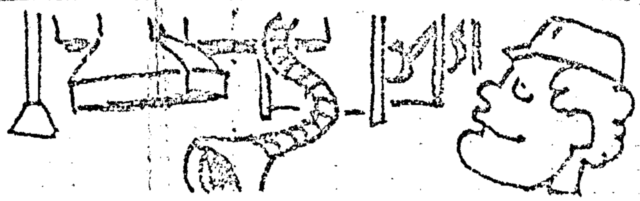
4. Medical Examinations



3. House Keeping



2. Engineering Controls



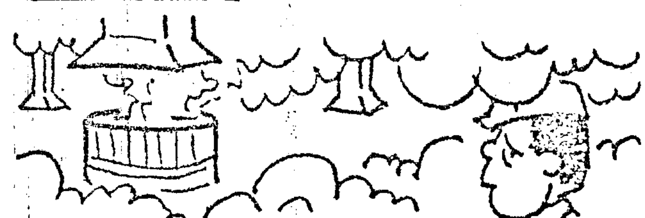
[illegible]

a.

b.
c.
d.
e.
a.
b.
c.
d.

NOTE:

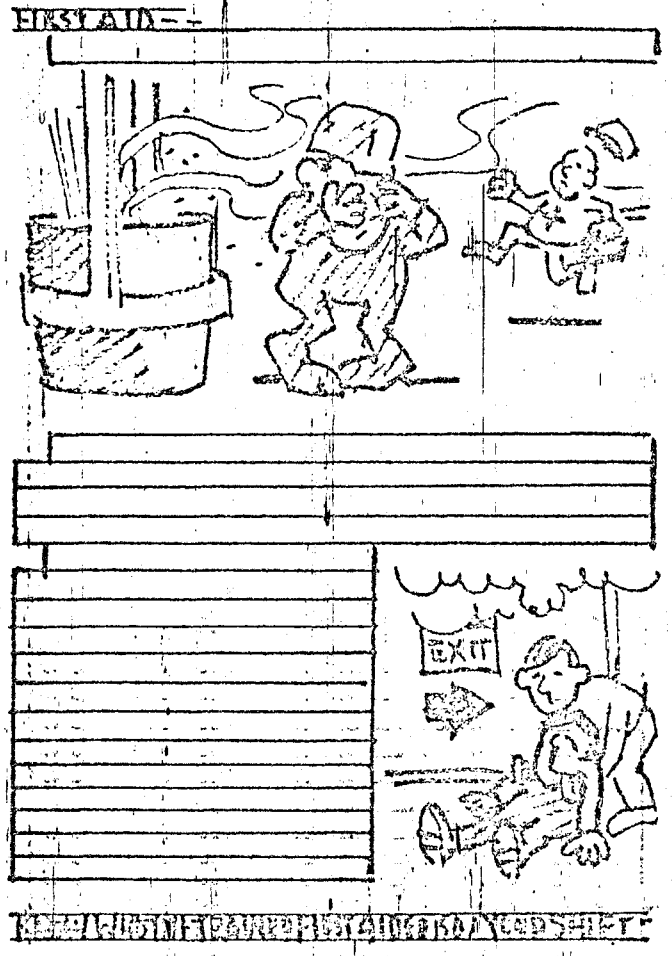
e.
f.
g.

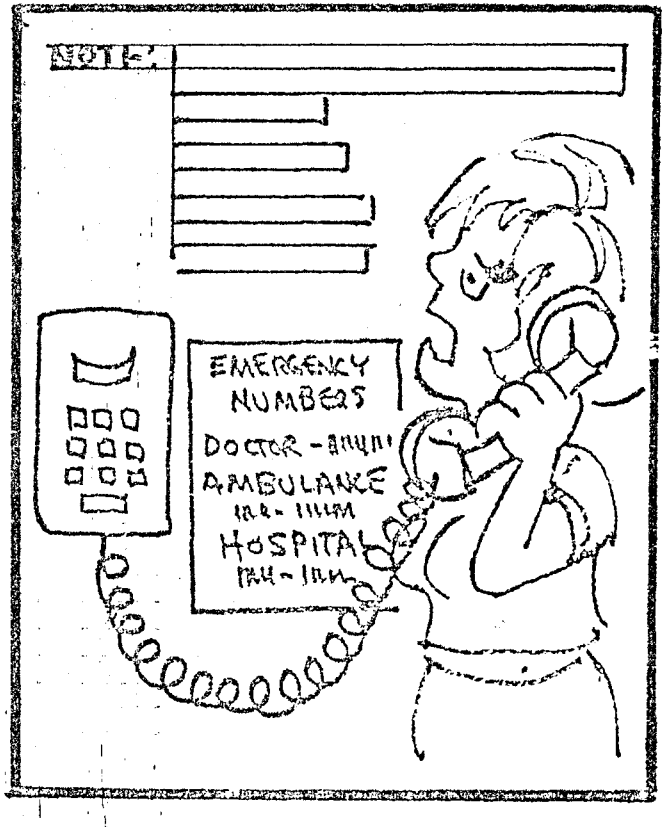


DOS AND DONTS FOR A HEALTHY WORK ENVIRONMENT IN THE [illegible] AND [illegible] AREAS OF THE [illegible] FOUNDRY

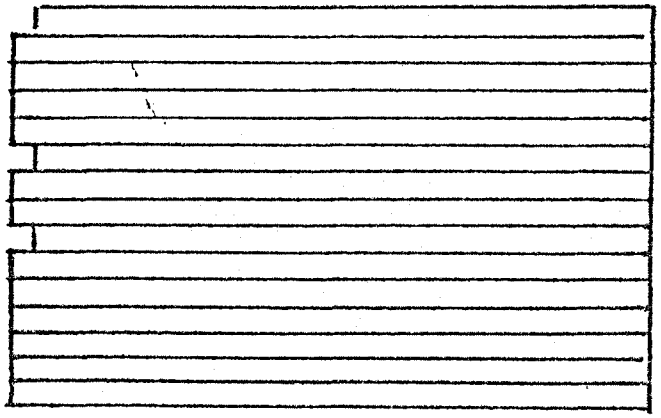
DOS!

1.

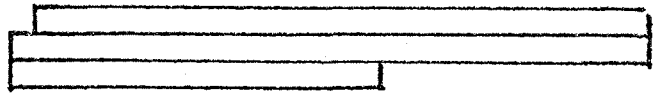

EXIT


EMERGENCY
NUMBERS
DOCTOR -
AMBULANCE
HOSPITAL

SO YOU'VE FINISHED READING THE BOOK - NOW
WHAT ARE YOU GOING TO DO? - -



ANYTHING FOR SALE - THE BOOK DOESN'T PLEASE



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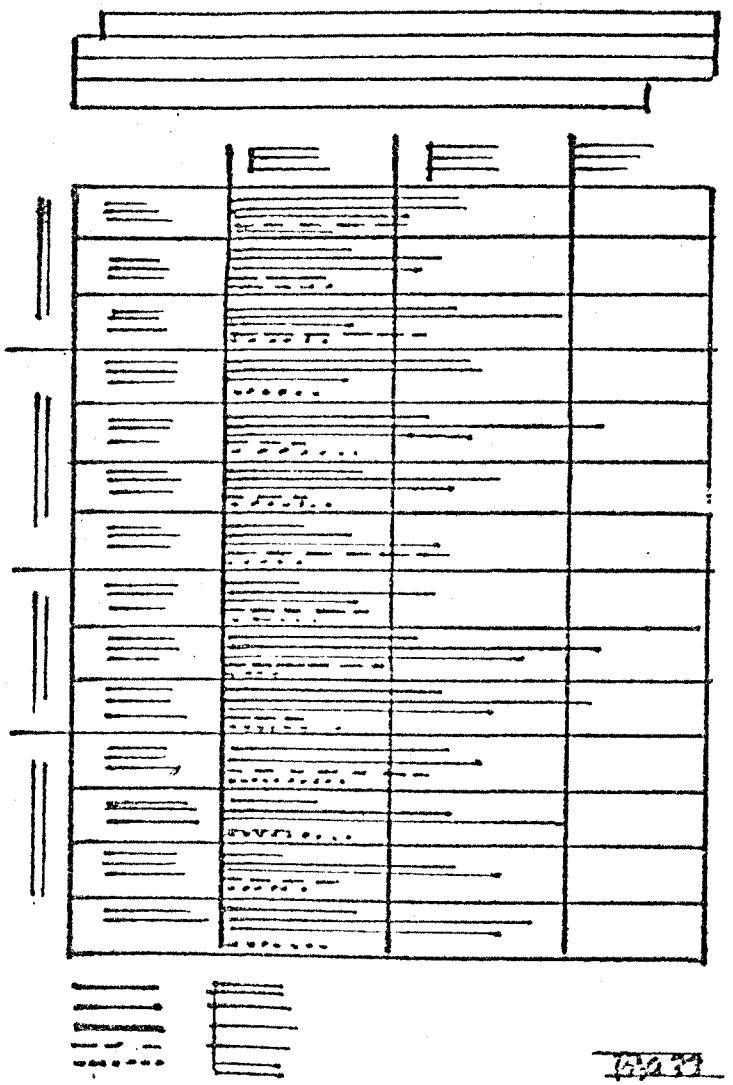

PAGE

Athens Emergency Numbers
Fire
Police
Ambulance
Tourist Police
Pharmacy