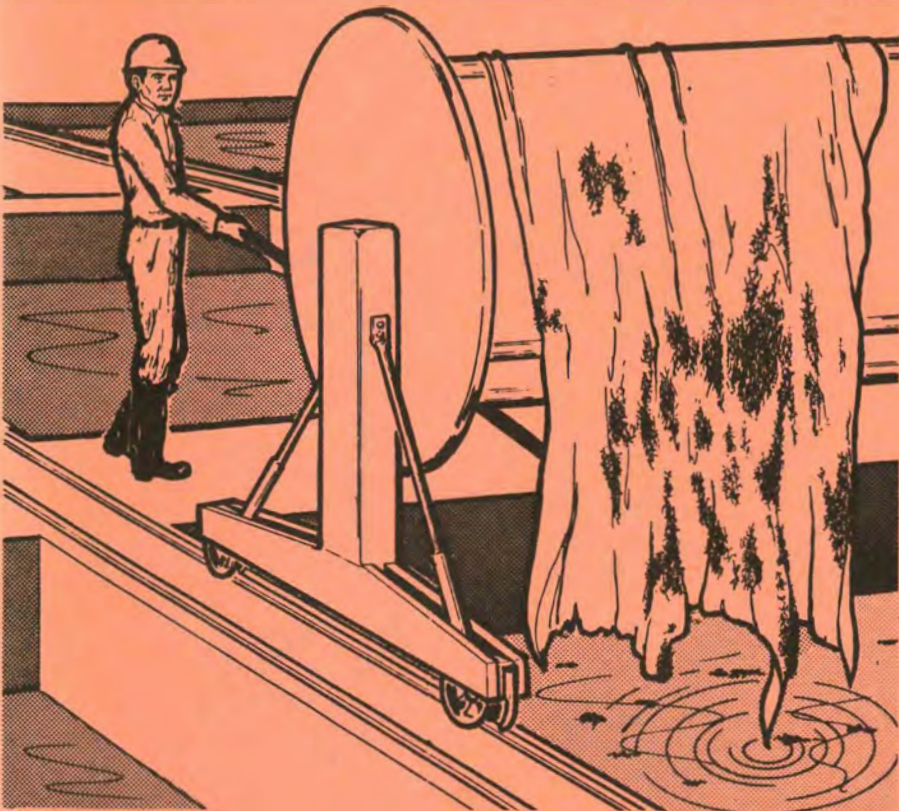


**GOOD WORK PRACTICES
FOR**

TANNERY WORKERS



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health

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Division of Technical Services
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INTRODUCTION

You are a tannery worker. Among other things this means that you work in an industry where the accident and illness rate is five times higher than the average for all other industries. This does not mean that you will be injured, but it does mean that you have to know the risks are there. Lost time means problems for your employer because of lost production, and it means suffering and loss of pay for you.

In an average year, one in every five tannery workers will be the victim of a work-related injury or illness. That "one" could be you — unless you follow safe and healthful work practices. There are government health and safety regulations which both you and your employer must follow. There are certain things which only management can do — but you must cooperate. Each year accidents in tanneries involve serious injuries to hands, feet, backs, eyes, or take a toll on health. **YOU** are the one who gets hurt. There are some conditions you can't do too much about — but there are other things which are directly up to you. **YOU** have a lot to do with whether you get hurt or not.

You should know what conditions or practices might affect your safety and health and what you can do to avoid injury or illness by following the correct procedures. Start by knowing the facts — that's what this book is about.

NOISE

If you are exposed to excessive noise levels you may permanently lose your hearing without even realizing that it's happening. If you have to raise your voice to speak to someone next to you, you may be exposed to enough noise to damage your hearing. And, in addition to hearing damage, noise can also cause stresses within you. It can be irritating and fatiguing and make you prone to have accidents. All without your knowing it.

The government has set standards for noise levels which state how much noise (how loud) you may be exposed to and for how long. The noise levels in your plant and in your work area should be checked by your employer. If noise levels are found to be above the standard, then your employer must eliminate the excessive noise.



Hard Hat with Ear Muffs



Ear Muffs



Ear Valves



Rubber Ear Plugs



Foam Plugs



Fiber Plugs



Wax Plugs

You may be required to wear some type of hearing protection such as ear plugs or ear muffs in the noisy areas. Each type has its advantages, and the type you wear should be what's most comfortable for you and still do the job.

Your hearing should also be checked regularly by the company if you work in an excessively noisy area. A hearing loss caused by excessive noise is permanent and without this check, called an audiometric hearing test, you may not realize you have a hearing loss until it's too late.

EYES

Your employer should decide if there are areas in the plant where eye protection is required. These are usually areas where you might be exposed to hazards such as dusts or flying chips, chemical splashes, moving machinery, and the like.



You may have to wear special protective glasses or "safety" glasses with side shields, goggles, and in some cases a face shield with or without safety glasses. Wear them. They will do you no good in your pocket or in your locker, or tilted up on your head.

If you handle acids, caustics, or other chemicals, then wear a face shield **and** safety glasses. This will reduce the chances of getting chemicals splashed in your eyes. Contact lenses should not be worn if you work with chemicals because they trap the hazardous material on the eye.



Keep eyelids open.

In case of a chemical splash to your eyes, **fast action** is important to prevent damage to the eyes or even blindness. Water must be applied immediately to the open eyes. Clean water from an eye wash fountain, hose, sink, or even a bucket may be used. Hold your eyelids open so that the whole surface of the eye can be washed. Keep the water flowing over the eye for **at least 15 minutes**. Then quickly get medical aid from a doctor or at a hospital. Tell the doctor the name of the chemical you splashed into the eye, or take the label from the container with you.



DERMATITIS

Dermatitis is a painful reddening, itching, or rash on the skin. It is rather common among tannery workers, especially those who handle raw hides or work in the wet end.

The best way to avoid dermatitis is to prevent these chemicals from directly touching your skin. That means wearing protective clothing that will not permit penetration of the chemical. Boots, gloves, and aprons should be worn to keep your skin or clothing from getting soaked with the chemicals or coming in contact with the hides.

Particular care should be taken to avoid contact with both the strong alkaline solutions in the beam house and with the chromic acid tanning chemicals which can cause severe cases of dermatitis. Chromic acid can be a real problem. If you do get some on you, wash it off immediately. Some tanneries keep a weak solution of "hypo" (hyposulphite) available in the yard just for this purpose.

ANTHRAX

Anthrax is a serious infection which can be fatal. It is not as common as it used to be, and is found mostly in imported hides. When you go for a checkup or if you do develop a skin rash be sure to tell the doctor you work in a tannery. It's hard for a doctor to know you have anthrax unless he knows you work in a tannery. The first signs of Anthrax are itching and a red spot which looks like a harmless flea bite. But this soon enlarges like a blister and the area around it becomes hard and swollen and the spot turns black.

It is very important for you or any other employee to report to your supervisor immediately if any sore, rash, boil, or pimple appears on the body. If caught early, the disease won't become fatal.

CHEMICAL BURNS

The chemicals used in both the beam house and the tan room can cause severe burns.

Acid burns are usually felt at once. Alkali or caustic burns take longer to be noticed or felt. All chemical burns should be **immediately** washed with plenty of water until the chemical is removed. Remove any clothing from the burned area while the water is being applied. Water applied over the acid-soaked clothing can build up intense heat and worsen the burn on the skin.

Do not remove eye goggles until after the head and face areas have been thoroughly washed. If there is a shower nearby, get under it, then remove your clothes. Don't forget shoes and socks if they've also become splashed.



Remove your clothing in the shower.

Safety showers should be located throughout the tannery in areas where chemicals are handled. Know their location. If a safety shower is not available you should use a water hose or buckets of clean water.

Act as quickly as possible. Time is very important. The faster you get the chemical washed off, the less chance there is of severe burn.

If you do get a chemical burn, get to a doctor or hospital. Tell the doctor the name and the type of chemical to which you were exposed. If possible bring the label with you.

Remember, chemical burns may be slow to heal. Thus, avoid splashes, mists, sprays, and dusts, or **any** direct contact with acids and caustics. Wear the protective clothing provided whenever you handle chemicals or work in an area where they are used.

LUNGS

Breathing some chemicals can harm the lungs. Some acids and other chemicals used in the tannery can be poisonous or corrosive to the lungs if you are exposed to excessive amounts of the fumes or dusts. Many of these give some warning, they smell, burn your nose or throat, cause you to sneeze, or your eyes to water — but some don't. **All** contact with chemicals should be avoided as much as possible. If you smell a strange or a sharp odor, the best thing to do is to assume it's dangerous, get to some fresh air, and report the odor to your supervisor.

You should do the same thing if you feel dizzy or lightheaded, or suddenly drowsy, because some of the most dangerous fumes have no odor at all.

In addition to the actual handling of chemicals, another problem comes from breathing the dusts of certain chemicals. While this may not have the sudden effect of vapor poisoning, it can slowly cause lung damage over a period of time.

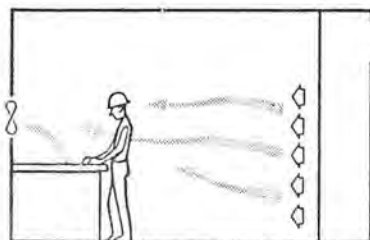
Dust inhalation can come from dyes, ground lime, chromic acid powder, or buffing operations. The best means to prevent breathing dusts is the use of a good exhaust system that draws away the dust particles. But this may not always do a complete job and you may also need to wear a respirator.

CHEMICALS

There are about 250 different chemicals used in tanneries such as acids, alkalis, solvents, oils, finishes, and dyes. These chemicals **are** safe when used carefully and properly, but many of them can be harmful when misused. Handle all chemicals with respect and wear the appropriate protective clothing and equipment. Don't become a statistic.

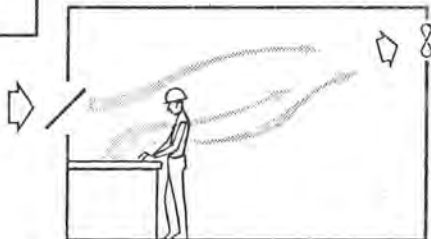


Protective gear is required for handling many chemicals.



Good system - fresh air carries fumes away from worker

Bad system - incoming air draws vapors past worker. Moving the work bench would help.



The best method for controlling exposure to harmful chemicals in the air is through the use of a ventilation system, which will draw the air away from you. Your employer must provide adequate ventilation to prevent exposure to harmful concentrations of chemicals in the air. It's up to you to use this equipment and to report to your supervisor if it's not working right. If a ventilation system is necessary but not practical to install, or while it is being installed, respirators are required.



Good



Poor

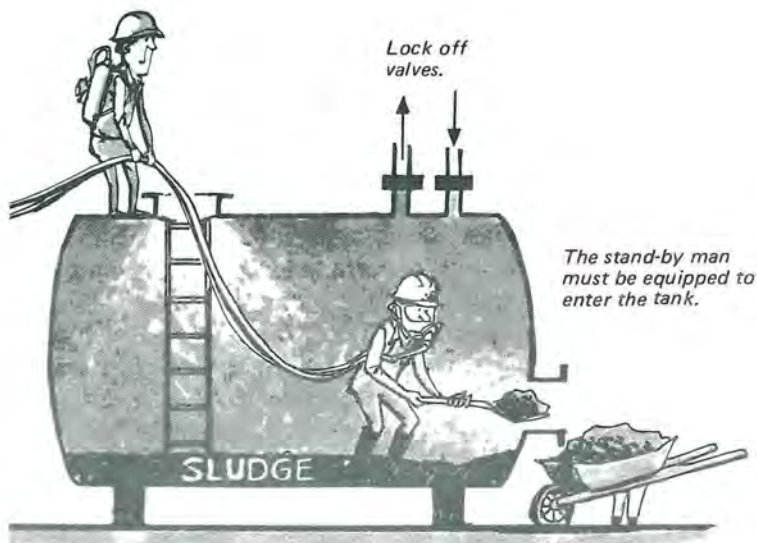


If respirators are used they must be NIOSH (National Institute for Occupational Safety and Health) or MESA (U.S. Bureau of Mines) approved. The box that the respirator comes in will be marked to show this approval and the actual chemicals that it can be used for.

Remember, just like ear protective devices, the mask must be fitted to **you**. It must be maintained in good working order and in a sanitized condition. Your employer must instruct you in how to use, clean, and care for your respirator. Know how to use your mask and what it is suitable for.

Here are facts you should know about some of the more common chemicals used in the tannery, and what you can do to avoid exposure.

HYDROGEN SULFIDE is the gas that everyone associates with rotten eggs because it is this gas that causes a rotten egg to smell so badly. But it doesn't always smell that bad, particularly when it's in the bottom of a pit, tank, or sewer. Then it may not smell much, if at all, but that's when it can kill — quickly. Never go down into a tannery pit, sewer, or unventilated basement unless it has been checked, so that it is free of harmful amounts of hydrogen sulfide. It doesn't take much hydrogen sulfide to kill you and it may not give you any warning.



When you must enter pits, or sewers, or tanks it is a good idea to have forced-air ventilation. You must wear an airline respirator and a safety line if hydrogen sulfide is present. There must also be a standby man, watching outside the tank, who is able to see you at all times. He also must be equipped with a self-contained respirator in case he has to go in after you.

ACETIC ACID is a colorless liquid with a sharp odor and taste. It burns the skin quickly on contact, raises blisters, and can be injurious to the eyes if it is splashed into them. Breathing the vapors can cause coughing, chest pain, and irritation of your nose and throat. Avoid breathing the vapors of the acid and always wear a face shield and safety glasses when transferring the acid.

HYDROCHLORIC ACID causes severe burns when splashed into the eyes or onto the skin. The acid in vapor or gas form is irritating to the lungs, nose, and throat. Protective clothing and glasses, and perhaps respirators must be worn when transferring this acid.

OXALIC ACID looks like lump sugar. It is a strong poison when swallowed and can cause severe burns to the eyes, skin, and nasal passages. Wear goggles and gloves when handling oxalic acid.

PHENOL (CARBOLIC ACID) is highly poisonous and attacks the skin and eyes without your feeling it. It can cause liver damage. If a large amount gets into your body it can affect both your brain and your heart. Avoid breathing the vapors — proper ventilation is the best control.

SULFURIC ACID can cause severe burns when it contacts the skin or the eyes. It also gives off suffocating fumes which makes the use of good ventilation essential when you handle this acid. When it contacts combustible materials it can cause a fire. Keep covers on containers of sulfuric acid. Appropriate protective clothing (gloves, aprons, leggings) and a face shield and safety glasses must be worn when handling sulfuric acid.

AMMONIA vapors are harmful to the eyes and lungs. Ammonia rapidly burns the skin. Good ventilation is important even when there is only a small amount of ammonia present.

SODA ASH is relatively harmless to the skin, but it can burn your eyes and lungs. When you work with this chemical you should wear goggles and have good ventilation.

SODIUM HYDROXIDE (CAUSTIC SODA, LYE) is the most dangerous of all alkalis to handle. In any form, it attacks the skin and eyes, and also regular clothing and leather. Unpacking or emptying the containers of lye is dangerous. For protection against contact you must wear eye and face protection, rubber gloves, rubber apron, and rubber boots or leggings, and have good ventilation or wear a respirator.

SODIUM SULFIDE is like caustic soda. It is commonly used for the unhairing process. It can also cause severe skin and eye burns. Its dust is also irritating. It is especially dangerous if mixed with acids because it can form hydrogen sulfide gas which is both flammable and poisonous. All acids must be kept away from sodium

sulfide. Rubber boots, gloves, and protective goggles should be worn by all who handle or work around this material. Good ventilation is required. After any contact with the skin or eyes, wash the area immediately with water and see a doctor.

CHROMIC ACID burns are known as "chrome holes" or "chrome sores". Chromic acid on your skin must be quickly and thoroughly washed off with water. Those who work with this material should wear goggles and rubber gloves. Washing your hands after working with chromic acid and other chemicals is a recommended practice. You may be required to have a periodic physical examination if you work with chromic acid.

FORMIC ACID is mostly found in the coloring department. It can cause burns and severe skin irritation. Vapors may be irritating to breathe, and may cause nausea and vomiting.

Tannery chemicals can be harmful to your health. But what can you do? **PROTECT YOURSELF.** How? Wear protective clothing and equipment and have good personal hygiene habits.

. . . If you work with acids, alkalis, caustics, or chromates, wear protective clothing and equipment such as chemical goggles, chemical-resistant gloves, aprons, and boots. If you handle any chemicals or solvents you should wear the right type of eye protection and gloves. If you handle hides, in order to prevent burns, you should wear leather or cotton gloves, depending on whether the hides are wet or dry.

. . . Change clothes and shower before leaving the plant each day. Avoid working in wet clothes, especially if the wetness is from chemicals. You should have separate lockers for your work clothes and your street clothes. Work clothes should be washed frequently — but separately from your family's wash.

. . . Thoroughly wash your hands and face before



eating. Do not eat in or around any area where chemicals are stored or handled.

. . . Wear your respirator where required because of inadequate ventilation. Keep it cleaned and properly maintained.

MACHINERY

Working in a tannery means working around machinery which can be dangerous, particularly if you get careless. Your employer is responsible for providing the following:

1. Shields, guards, or railings must cover all belts, pulleys, gears, chains, sprockets, sheaves, jams, clutches, cranks, keys, shafts, and nip/pinch points where you may be injured.
2. A means within easy reaching distance of each operator for instant shutting off power machinery in an emergency. Do you know where it is located?
3. Clutches with locking devices to prevent accidental starting.
4. Guards, two-handed closing buttons, or other safety devices on most of the machinery in the wet end of the tannery — the unhairing machine, the fleshing machine, wringers, and setouts.
5. A guard that will shut off the feed roll on splitters if your hand gets near the knife.
6. Embossing or plating presses must be equipped with guards or two-handed trip controls so the head won't come down on your hand. For your own safety be sure to test the guard every time the press is started. The foot bar should not be able to override the safety guard.

THE TANNERY

We've talked about the direct actions you can take to protect yourself, but what about conditions in the entire tannery? Here are some suggestions that you can use to check on safety and health conditions. Remember, you may not be able to repair the conditions yourself, and maybe you shouldn't even try, but you **can** report them to your supervisor.

FLOORS — A large number of accidents happen because of floor defects such as loose boards, splinters, nails, holes, clutter, and wetness, accumulation of grease and oil, and uneven boards — all of which create slipping or tripping hazards. Secure, level, and clean flooring and good housekeeping practices are essential for safety.

DOORS, STAIRWAYS, AISLES, RAMPS — Where there is traffic — people or vehicles — there are safety hazards at doors, stairways, ramps, aisles, and platforms. Leave doorways and exits free. Don't leave materials blocking aisles or exits.

ELECTRICAL EQUIPMENT — Faulty electrical equipment or careless attention to it can cause fires, burns, shock, and other damage. Check the machinery you work around for dangerous conditions. Is the machine grounded?

Remember, report, don't repair.

FIRE PREVENTION

In the average tannery there are certain locations and materials which are fire hazards. Common-sense precautions and careful observing of the plant's "No Smoking" rules can keep these fire-safe.



The biggest cause of tannery fires is careless house-keeping. Don't allow things like oily rags, paint-covered clothing, waste, scrap, shavings, and trash to pile up. Sweeping it into a corner isn't removing the fire hazard. Use the metal barrels (with lids) provided for trash disposal. The barrels should be emptied at least once each day.

Do you know what to do and where to go in case of fire?

Class	Type of Fire	Type of Extinguisher	Symbol
A	Wood, paper, rubbish	Water or dry chemicals.	
B	Oils, grease, solvents	Dry chemical, carbon dioxide foam, or water fog.	
C	Electrical	Never use foam or water. Use dry or chemical extinguisher.	

You should know where the fire extinguishers are located and how to use them. Do you block the way to the fire extinguishers with piles of materials? Don't. Do you let trash and scrap pile up? Don't.

Here are some good practices for you to follow:

1. Practice good housekeeping and personal hygiene.
2. Follow all plant safety rules.
3. Report all hazards you observe to your foreman.
4. Wear all protective clothing and equipment required.
5. Always use ventilation systems if they are provided.
6. Keep all tools and protective equipment in good condition.
7. Know the emergency procedures to follow in case of an accident.
8. Know the location of safety switches.
9. Know the location of emergency eye wash fountains and showers and first aid supplies.

After an injury it's too late to think about being careful. Do it now. Follow good practices and work safely. Don't become a "one in five". Your safety is up to you.

CHEMICAL

Acetic Acid

Ammonia

Chromic Acid

Formic Acid

Hydrochloric Acid

Hydrogen Sulfide

Oxalic Acid

Phenol
(Carbolic Acid)

Soda Ash

Sodium Hydroxide
(Lye)

Sodium Sulfide

Sulfuric Acid

HAZARD

Burns of skin and eyes. Breathing vapors causes coughing, chest pain, irritation of nose and throat.

Rapidly burns the skin. Vapors are harmful to eyes and lungs.

Causes burns to skin ("chrome holes") and inflammation of nose and mouth.

Burns and skin irritation. Vapors may cause nausea and vomiting.

Vapors are irritating to the nose and throat. Skin contact causes burns.

"Rotten egg" odor. Small amounts of this gas can be fatal.

Internal poisoning. Can cause burns to eyes, skin, and nasal passages.

Rapidly absorbed through the skin. Can damage internal organs.

Can cause burns to eyes and lungs.

Causes dermatitis or burns to the skin and eyes. Attacks regular clothing and leather.

Causes burns similar to lye. Mixing with acids may create Hydrogen Sulfide gas.

Severe burns to skin and eyes. Fumes irritate nasal passages and lungs. Can cause fires if in contact with combustible materials.

CONTROL

Wear face shield and eye protection. Avoid breathing vapors.

Use adequate ventilation. Wear protective equipment: gloves, eye protection.

Wear impervious gloves, goggles. Use ventilation. Shower after the shift.

Avoid breathing vapors and contact with skin. Wear gloves and use ventilation.

Wear gloves and goggles. Use ventilation system or respirator.

Proper procedures for entry into confined spaces.

Wear goggles and gloves.

Use proper ventilation, goggles, gloves.

Wear goggles, have adequate ventilation.

Wear eye and face protection, rubber gloves, apron, boots, or leggings. Use ventilation.

Keep away from all acids. Follow precautions for handling lye.

Keep containers covered. Wear gloves, apron, face shield and glasses. Use adequate ventilation.

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