



**PROTECTION
FROM
HAZARDOUS
CHEMICALS**

Promoting
Health
and **Safety**
through
Education



Mission of the BBC

Ensuring the health and safety of California consumers by promoting ethical standards and by enforcing the laws of the barbering and beauty industry.

Protection from Hazardous Chemicals

When working with chemicals, safety precautions are just as important as health precautions. A fire, explosion, spill, leak, or other chemical accident can have tragic results for workers, co-workers, and clients. Accidents can happen quickly—in just a few seconds or a few minutes—so it is important to be prepared by knowing how to prevent chemical accidents and what to do if they occur.

Chemical Accidents

Some examples of chemical accidents include:

- Chemicals spilling or leaking.
- Chemicals catching fire or exploding.
- Chemicals accidentally mixing together, causing an unexpected reaction.
- Chemicals harming people or the environment if not disposed of correctly.

Flammable or Combustible Chemicals

Chemicals that are flammable and combustible catch fire and burn easily. They can ignite when they

are near a flame (like a candle), spark (like from an electric plug), or a hot object (like a curling iron). The difference between a flammable chemical and a combustible chemical is how easily the chemical catches fire. A flammable chemical will catch fire and burn faster and more easily than a combustible one, but both kinds will burn.

Some examples of fire hazards in a typical establishment are acetone, alcohol, nail polish, hairspray, styling gel, straightener solution, and aerosol cosmetics. In the past, establishment clients were severely burned after they had curl activator and aerosol products applied to their hair and went near candles, matches, or cigarettes. While manufacturers often change their formulas and ingredients, products used today still have dangerous chemicals in them that should be avoided or used with caution. If a product or any ingredient in it is a fire hazard, the product's label may provide the information, but do not just rely on the label. Always check the product's Safety Data Sheet (SDS).



Safety Precautions

There are many precautions licensees can take to work safely around chemicals that are flammable or combustible, including:

- Always be aware which chemicals used may be fire hazards.
- Avoid using flammable or combustible chemicals (use a safer chemical if possible).
- Do not allow a flammable or combustible chemical to come near a flame, spark, or hot object.
- Check all electrical equipment to make sure there are no broken or frayed cords that might spark or get hot.
- Do not try to warm up chemicals by putting them into a microwave or using a hot blow-dryer on them (never warm up any chemicals, even if they are not flammable or combustible).



Multipurpose extinguishers can be purchased in most hardware stores or from companies that sell safety equipment.

Be Prepared

Though chemical fires are preventable, there are several ways to prepare in case one does occur. First, make sure the establishment has a fire extinguisher available and ensure everyone in the establishment knows where it is and how to use it. If the establishment does not have a fire extinguisher, ask the employer to purchase and install one. Also, check the SDS before there is a fire to see if

there are any special firefighting instructions. Licensees should not use water on some kinds of chemical fires. Additionally, know how to call for emergency help and what to do until help arrives. Furthermore, have first-aid supplies available in the establishment at all times.

Fire Extinguishers

Portable fire extinguishers are classified according to the type of fire they are designed to fight. The label on the extinguisher indicates what kind of fire it should be used for. There are four classes of fires:

- Class A fires are ordinary combustibles; fires involving ordinary combustible materials like wood, cloth, and paper.
- Class B fires are flammable liquids; fires involving flammable liquids, gases, and greases.
- Class C fires are electrical equipment; fires involving energized electrical equipment and electrical wiring.
- Class D fires are combustible metal; fires involving combustible metals like magnesium, titanium, and zinc.

It is very important to use the correct extinguisher on a fire. For example, licensees should not use an extinguisher that is rated for Class A on a Class C fire. There is a fire extinguisher available that is effective against

Class A, B, and C fires—it is called a multipurpose extinguisher. A multipurpose extinguisher may be purchased in most hardware stores or from companies that sell safety equipment.

Chemical Storage

To maintain health and safety while storing chemicals, make it a practice to follow these guidelines:

- Always store chemical products in their original labeled containers. It could be dangerous if someone does not know what product is in a container. For example, what if a licensee decided to store bleach in a plastic water bottle? The licensee could get thirsty and forget that bleach is in the bottle, resulting in accidental ingestion and health problems. This guideline also ensures that the chemical is stored in the proper kind of container. For example, acetone should not be kept in certain kinds of plastic bottles, as it will melt them.
- Always check the label and the SDS for any special storage instructions. This will be a clear indicator of proper storing measures.
- Store chemical products out of direct sunlight in a cool, dark place with good ventilation. Chemicals can react or change with heat, so a storage room or cabinet is best.
- Make sure chemical containers are in good condition. Check that the containers do not have any holes as this will cause leaks and spills.
- Never store chemical products near food or near areas where food will be consumed. This can cause contamination and accidental ingestion.
- Store all chemicals, especially flammables and combustibles, away from flames, sparks, heat, and hot objects. Consider purchasing fireproof metal cabinets for storing highly flammable chemicals.
- After using a product, close the container tightly. This helps prevent spills and keeps vapors from getting into the air.
- Store chemicals in a secure place where the containers will not fall and spill. Use guards along the front of shelves to keep containers from falling.
- Do not store large or heavy containers on high shelves where licensees will have to reach awkwardly to get them. The container could be dropped, or it might break or spill.
- Do not store chemicals that contain acids near chemicals with bases. These are called incompatible chemicals. They can mix if their containers break, leak, or spill and cause a dangerous reaction.



Always check the label and the SDS for any special storage instructions.

DID YOU KNOW?

Hazardous waste is waste that is dangerous or potentially harmful to our health and the environment.

Improper disposal of hazardous wastes can harm the health of humans, as well as animals and plant life. It can also contaminate soil and the local water supply and pollute the air.

Prevention

The most important rule for spills and leaks is to ensure their prevention. But, if a chemical does spill or leak, first check the SDS for any special cleanup instructions. Remember that cleanup procedures may be different for different chemicals. Once the proper cleanup instructions are known and the appropriate cleanup supplies have been gathered, the spill should be cleaned up immediately. If a hazardous chemical were to get on clothes, on the skin, or in the eyes, remove the affected clothing and flush the skin or eye with water for at least 15 minutes. It is a good idea to have an emergency eye wash station in the establishment. Depending on the chemical, licensees may also need medical help.

Chemical Disposal

It is important to know how a chemical should be disposed of when licensees are done with the chemical. Read the product's label and SDS for disposal instructions. Be especially careful when disposing of certain products. For example, there are some chemicals that should never be poured down the drain or thrown into the trash. It is important to remember that chemicals could hurt people outside the establishment or harm the environment.

If a licensee does not know the proper way to discard the chemical being used in the establishment, the Board of Barbering and Cosmetology suggests the following:

- Read and follow the disposal instructions printed on the label of the product.
- Call or check online for instruction on how to properly dispose of hazardous waste through your local business/small generator program.
- Call or check online for your county's Environmental Health Department.
- Call or check online for your local or county Hazardous Waste Department.

Contact the California Department of Toxic Substances Control for advice by calling (800) 728-6942 or emailing RAO@dtsc.ca.gov. Licensees should be prepared to explain what chemical and how much of the chemical is being discarded.

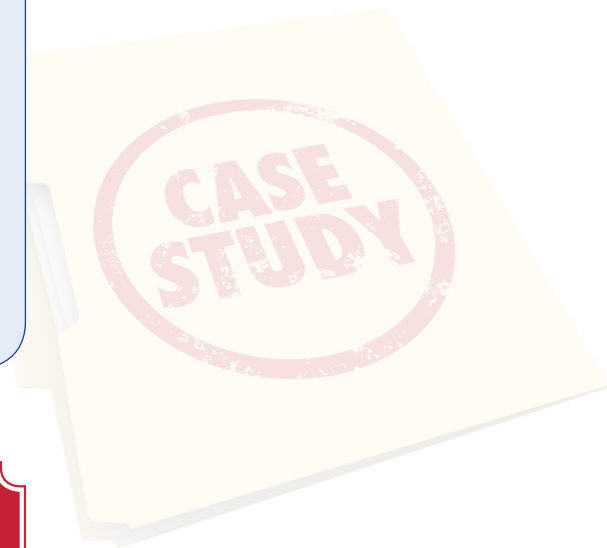
Case Study

Read the following case study that reflects a real-life problem a licensee might run into when working in an establishment. Do your best to answer the questions presented.

One day you go into your establishment's storeroom to have lunch. The table where workers eat is next to a rack of open metal shelves. On the shelves are many bottles with different chemical products. You notice three old brown bottles on one shelf that have no markings or labels, but inside there is a liquid. You wonder what it is. You also see some other bottles on a high shelf. They are big and heavy, and very close to the edge. You worry that they might fall. It's a warm day, and the storeroom is hot and stuffy. You change your mind and decide to go outdoors to eat your lunch.

What rules for chemical storage are being broken in this establishment?

What suggestions would you make to improve this situation?



PROTECTION FROM CHEMICALS

Think about equipment and methods a licensee can use to protect themselves from both health and safety hazards while working with chemicals.

These may include:

- Gloves
- Respirator
- Dust mask
- Safety glasses
- Storage cabinet
- Using safer chemicals
- Apron
- Ventilation
- Goggles
- Fire extinguisher
- Training

The best way licensees can protect themselves is to stop the exposure to the dangerous chemical and the hazard, or to reduce the exposure as much as possible.

Five Key Ways to Reduce Chemical Hazards

There are different methods to help stop or reduce exposure; usually these methods are grouped into five categories:

- **Avoid harmful chemicals**
- **Isolate the work process**
- **Use good ventilation**
- **Work in a safe way**
- **Use personal protective equipment**

1. Avoid Harmful Chemicals

First, avoid harmful chemicals by using a safer product or safer process. For example, if a licensee were to stop using nail polish with formaldehyde and use formaldehyde-free nail polish instead, they would avoid exposing themselves and clients to that dangerous chemical. However, licensees should make sure that the formaldehyde-free nail polish does not contain other harmful chemicals like toluene and dibutyl phthalate. It would be pointless to switch from using a product with one chemical to another that is just as dangerous or more

dangerous than the original one. To avoid hazardous chemicals, many establishments across America are “going green” by choosing safer products that are free from harmful chemicals. In addition to using safer products, licensees should look for ways to improve work processes. For example, a safe process is using tongs or gloves instead of bare hands to remove disinfected tools from the disinfectant solution. This process is required by the California Code of Regulations. Every service performed, and every product used in an establishment has a different health or safety risk, so licensees must determine which route is best for them.

2. Isolate the Work Process

A second way to reduce chemical hazards is to isolate the work process—in other words, work away from other people. For example, licensees could mix developer and hair color in a separate room with good ventilation so co-workers and clients in the main service area will not be exposed to the fumes while they are being mixed. Another example is doing artificial nails in a separate area of the establishment to minimize exposure of vapors and dusts.

3. Use Good Ventilation

The third way to reduce chemical hazards is to use a good ventilation system. Ventilation is a system that either removes harmful chemicals from the air before individuals can breathe them in or supplies enough fresh air to dilute the harmful chemicals in the air. There are two main types of ventilation: local exhaust ventilation and general dilution ventilation.

Local Exhaust Ventilation

Local exhaust ventilation is the most effective type of ventilation as it removes harmful chemicals from the air at the place where they are being used. It pulls chemical vapors away before they spread into the room and into the breathing space. A local exhaust ventilation system consists of hoods, ducts, and fans to move the air, and sometimes an air cleaner.

One type of local exhaust ventilation system used in an establishment is the vented manicure table. These tables are used when working on a client's nails because many nail processes create chemical vapors and nail dust. Local exhaust ventilation is built into the table and protects both workers and clients. An internal fan creates suction that pulls chemical vapors and dust

away from the client's hand and out through a duct. Whenever possible, a system like this should be set up to vent the vapors outdoors. It should not exhaust them back inside the establishment. Sometimes all that is needed is to run the duct through a window.

A special type of vented table is able to circulate the air back into the establishment safely. It contains filters that clean the air before it is re-circulated. Separate filters located under the table are used to capture vapors (charcoal filters) and nail dust (dust filters). Both charcoal filters and dust filters must be changed on a regular basis as they can fill with vapor and dust, and then stop working.

Another example of a local exhaust ventilation system is a fume hood. This can be used when mixing chemicals as it pulls vapors away right at the point where the mixing is done. Fume hoods are sold at safety supply stores and must be installed by a health and safety professional.

Sometimes the mixing area and fume hoods are in a separate room away from the main service area, so the establishment is using two kinds of protection—isolating the process as well as ventilation.



Mix developer and hair color in a separate room with good ventilation so co-workers and clients in the main service area will not be exposed to the fumes.

How can a licensee decide where to place a local exhaust ventilation system? Here are some helpful hints:

- Place the system so it captures vapors and dust close to the point where they are produced.
- Place it so it draws the vapors and dust away from clients and workers.
- Do not place the system near a door or where there is a lot of foot traffic because individuals passing by can disturb the air currents and interfere with the system.
- Never place a general-purpose fan in a position where it blows air across the local exhaust ventilation system as that could ruin the ability of the system to capture chemicals.
- Consult an industrial hygienist (a health and safety specialist) or a ventilation engineer before purchasing, installing, or deciding how to position a local exhaust ventilation system.

General Dilution Ventilation

A general dilution ventilation system works by bringing fresh air into a room to keep harmful substances thinned out (diluted). This method lowers the concentration of chemical vapors in the air and it is used in most establishments. Dilution ventilation can be either mechanical or natural.

A mechanical system uses fans and vents to remove stale air and supply replacement air, while a natural system provides fresh air by opening windows or doors. The natural system cannot always be used, such as when it is too cold, raining, or the windows and doors are not placed in the right position to bring fresh air inside. Since dilution ventilation does not actually remove chemicals from the air, this method does not really protect individuals against chemical hazards. It is only intended as a way to control temperature, humidity, and mild odors. With chemicals that are less harmful, however, dilution ventilation is better than no ventilation. Local exhaust ventilation, when it can be used, is a better way to be protected from chemical hazards.

4. Work in a Safe Way

The fourth way to reduce chemical hazards is to work in a safe way. Working safely with chemicals means that all licensees should follow certain guidelines, sometimes called safe work practices. It is a good idea for the establishment to set up a written list of do's and don'ts for every process that uses chemicals. All licensees should then have a copy of these guidelines and understand them to protect themselves and their clients. To get you started, the board has provided examples of some recommended safe practice guidelines individuals may see in an establishment's plan:

Chemical Storage

Do:

- Store chemicals in their original labeled containers.
- Close containers securely when storing them.
- Use a fireproof metal cabinet for extremely flammable chemicals.

Do Not:

- Store chemicals where they will be exposed to heat or sunlight.
- Store chemicals where containers can fall and spill.
- Store flammable chemicals near sparks, open flames, or other possible sources of ignition.
- Store chemicals near food or eating areas.
- Store incompatible chemicals near each other (they can react with each other if mixed).



Close containers securely when storing them.

Chemical Disposal

(Depends upon the particular chemical, but generally)

Do:

- Check the SDS for specific disposal instructions.
- Check with the California Department of Toxic Control Substances if you have questions regarding the disposal of hazardous substances.

Do Not:

- Pour dangerous chemicals down the sink drain.
- Throw dangerous chemicals in the regular trash.



Chemicals used for hair treatments.

Chemical Mixing

Do:

- Set up a special area just for chemical mixing.
- Make sure the mixing area has good ventilation.
- Make sure the mixing area has protective equipment like aprons, gloves, and goggles or other eye protection available.
- Make sure the mixing area has an emergency eye wash and a place nearby to wash your hands.

Do Not:

- Mix chemicals near food or near eating areas.

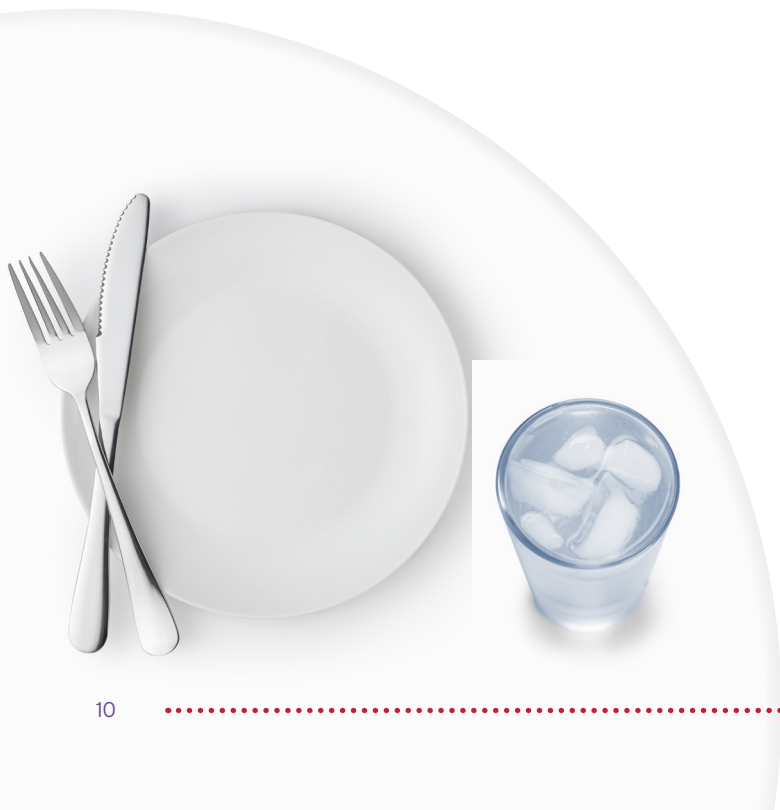
Eating/Drinking

Do:

- Have a separate area available for eating and drinking.

Do Not:

- Eat or drink around chemicals.



Good Housekeeping

Do:

- Keep areas where chemicals are used clean, neat, and dry.
- Clean up all spills right away.
- Use proper cleanup methods as listed on the SDS.
- Keep all safety equipment in good working order.
- Test ventilation equipment regularly to make sure it is working properly.

Work Scheduling

Space out chemical services (like perms) throughout the day so licensees and clients will not be exposed to the same chemical continuously. The establishment's schedule should not require anyone to do the same process all day long.

Chemical Inventory

Employers and independent contractors are required by law to have certain information about chemicals on hand:

- An inventory that lists all hazardous chemicals used in the establishment.
- An SDS for each hazardous chemical.



Emergency Preparedness Plan

Establishments should have an emergency preparedness policy plan. This policy is a plan of action to be conducted in response to an emergency event, such as a fire in the establishment. This plan should be prepared by the establishment owner. The board recommends this action plan states that every employee has a right to get information and training about the hazards at work. In fact, this training is guaranteed by law. Training should include:

- What specific hazards there are in the establishment.
- How licensees can protect themselves.
- Where SDSs are kept and how to read them.
- What health and safety rules should be followed in the establishment.
- What health and safety rights licensees have under the law.
- Signs indicating where fire exits are located.
- Notices stating evacuation procedure and assembly points.

This information should be given in a way that everyone can understand. If necessary, training materials and classes might need to be translated into different languages. To get you started, the board has provided an example of some recommended emergency plan guidelines you may see in an establishment's plan:



Emergency Planning

Do:

- Keep emergency equipment in the establishment, like fire extinguishers, eye washes, and first-aid kits.
- Know what to do in an emergency. Read all directions and warnings printed on chemical products before there is an accident.
- In the event a hazardous chemical gets on an individual's skin or clothing, remove the affected clothing, flush the affected skin with water for 15 minutes, and get medical attention, if necessary.
- Check the SDS for information on handling emergencies.

Do Not:

- Try to fight a chemical fire unless it is known how that chemical reacts.
- Try to fight a chemical fire unless the right kind of fire extinguisher for that chemical is available.
- Try to clean up a large chemical spill unless the proper way to clean up that chemical is known.

5. Use Personal Protective Equipment

The last of the five key ways to reduce chemical hazards is personal protective equipment. Personal protective equipment, sometimes called PPE, is any piece of equipment that is designed to protect a licensee from chemicals by placing a barrier between the licensee and the chemical. SDSs should be consulted to determine what kind of PPE should be used when handling a chemical product.

Unlike some of the other methods of protection, PPE does not remove the hazard from the establishment—it only shields a licensee from the hazard. It is always better to get rid of the hazard altogether. Besides being less effective, some PPE can also be uncomfortable and awkward to use. While PPE is not the best way for a licensee to protect themselves from chemicals, it is better than no protection at all. In many establishments, PPE may be the only protection available.



Use the right type of gloves for the chemical being used.

Gloves

To protect hands and forearms when working with chemicals, gloves specifically designed for chemicals should be used. There are different types of gloves for different chemicals, so use the right glove for the chemical being used. For example, if working with a hair relaxer that contains sodium hydroxide, use gloves designed to keep out sodium hydroxide. The gloves' package should indicate which chemicals the gloves are designed for. Nitrile gloves are superior to latex or vinyl in terms of protection from chemicals. They are also more resistant to punctures and tears. Keep in mind that gloves only keep chemicals out for a limited time—after that, they break down and the chemical can get through. The length of time the glove will work well is called the breakthrough time. When the breakthrough time is up, throw the gloves away and use a new pair. Look for the breakthrough time on the package or check with the manufacturer. Many gloves are designed to be disposable, so they should only be used once. Never wash or reuse disposable gloves. After use, the chemical could start to get through the glove and this may go undetected, potentially causing harm. The California State Board of Barbering and Cosmetology requires licensees



Safety glasses offer the best protection against flying particles like nail fragments or nail dust.

to dispose of gloves immediately after use. Also, always wash your hands after using gloves or when changing gloves.

Goggles or Safety Glasses

To protect the eye area, wear chemical splash goggles or safety glasses. Chemical splash goggles protect against chemical splashes as they form a seal around the eye area. Some types have side vents to prevent them from fogging up, but they are designed so splashing chemicals cannot get through. Safety glasses offer the best protection against flying particles like nail fragments or nail dust. These have side shields to prevent particles from the side to reach the eye area, something prescription glasses or sunglasses don't do.

Protective Clothing

To protect skin from chemicals, wear a long-sleeved shirt and an apron or smock. If performing nail services, long-sleeved shirts prevent acrylic dust from touching your skin and getting on clothes. It is best to use an apron or smock made of plastic or some other liquid-resistant material that will keep chemicals off. Cloth will not do the job since it absorbs chemicals. Remember, do not to wear a plastic apron or smock during thermal processes, as hot equipment can melt the plastic apron.

Dust Masks

To protect the nose and mouth area from dust, wear a dust mask. They may look like medical masks used in hospitals, but they are specifically designed to keep licensees from inhaling particles. It is best to use a round dust mask with a metal strip that can be adjusted to fit the bridge of the nose. Wearing the wrong mask or a mask that does not fit or not changing the mask (when soiled) can be bad for a licensee's health. The best mask to protect against particles, such as acrylic powder, is a NIOSH-approved N95 mask. "N95" should be printed on the mask. Since dust masks only protect licensees from particles, licensees can still be exposed to chemical vapors.

To be protected from chemical vapors, wear a NIOSH-certified chemical cartridge respirator. These are masks with special cartridges in them to capture chemical vapors and clean the air as a licensee breathes. These are hardly used by licensees as they are bulky, must be individually fitted to a person's face,

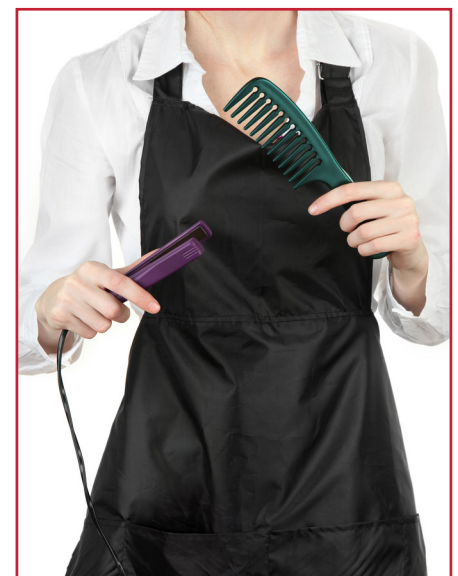
individuals must receive special training on how to use and maintain them, and a written respiratory protection program must be implemented.

Owner Responsibility

Cal/OSHA rules say that the employer is responsible for supplying all necessary protective equipment. Employers should have protective equipment available for all employees. Independent contractors should provide their own equipment. Employers and independent contractors can buy equipment from stores, catalogs, or websites. Employers and independent contractors should make sure that any equipment they are considering purchasing is both comfortable to the wearer and practical for use. There are many different manufacturers and companies, so find something that works for the licensee using the equipment. After purchasing PPE, remember to keep an adequate supply on hand at all times. PPE may be an extra cost and unattractive to wear but safety should be the top priority.



It is best to use a round dust mask with a metal strip that can be adjusted to fit the bridge of the nose.



To protect your skin from chemicals, wear a long-sleeved shirt and an apron or smock.

Safety Fact Sheets

The board has created Licensee Safety Fact Sheets on common products used in the establishment. These fact sheets will serve as a reminder on how these specific chemicals get into the body, how the body is affected by the exposure, what chemicals are contained in the product, and how an individual can protect themselves from the product. Take a moment to review the fact sheets. These can be found on the board's website at: https://www.barbercosmo.ca.gov/consumers/salon_sense.shtml.

Print the Licensee Safety Fact Sheets out and keep them close by for easy access for reviewing.



Activity

What's Wrong with This Picture?

The following picture shows a typical work situation in an establishment. In the picture, there are several things wrong: There are chemical hazards and licensees are not taking proper precautions.

Using what you have learned, identify what is wrong in the picture, and think of what protective measures would make the situation safe.





California Board of Barbering and Cosmetology

2420 Del Paso Road, Suite 100

Sacramento, CA 95834

www.barbercosmo.ca.gov

(800) 952-5210

Email: barbercosmo@dca.ca.gov



Please note that the materials provided in this publication are not comprehensive.

PUBLISHING INFORMATION

This publication may be copied if:

1. The meaning of the text is not changed or misrepresented.
2. Credit is given to the California Board of Barbering and Cosmetology.
3. All copies are distributed free of charge.

In other situations, written permission is required.