

ARTIFICIAL FINGERNAIL PRODUCTS



A Guide to Chemical Exposures in the Nail Salon

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A Guide to Chemical Exposures in the Nail Salon

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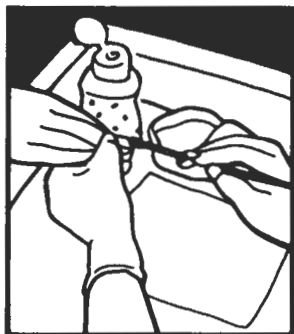
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INTRODUCTION



Without chemicals there would be no artificial fingernails. Some of the chemicals found in artificial nail products can be harmful to your health. However, you can still do nail work safely if you take steps to protect yourself.

This booklet tells you how to work safely with artificial nail products. It explains how to find out what chemicals are in the products you use and describes the typical chemical ingredients of the more common products. This booklet also lets you know how those ingredients can affect your health, and suggests some measures you can take to reduce your exposure.

HOW TO IDENTIFY HAZARDOUS CHEMICAL INGREDIENTS

The products you use as a manicurist or nail technician are made up of many different chemicals. Whether you do your artificial nail work as part of a large business, rent a station within a small shop, or work at home, you need to know the ingredients of the products you are using.

Getting information about the chemical contents of products can be difficult. The labels on bottles and jars don't always tell you much. The companies that make artificial nails don't have to publish the formulas they use. This information may be considered a "trade secret" and be carefully guarded so that no rival can get it. How can you find out what chemicals are in the products you use?

The California Hazard Communication Standard (*GISO 5194*) gives you the right to know the health and safety hazards of the products you use on the job. This standard requires chemical manufacturers and importers to provide hazard information to employers by means of Material Safety Data Sheets (MSDSs). It is the employer's responsibility to obtain the MSDSs from the manufacturer or the distributor and to make them readily available to employees. These laws are enforced by California's Division of Occupational Safety and Health (Cal/OSHA).

An MSDS should list the hazardous ingredients of a product, discuss any health and safety hazards, and suggest ways to use the product safely. The MSDS should also tell you about any fire and explosion hazards, first aid, and procedures for cleaning up leaks and spills.

If you think you are exposed to a chemical which might be affecting your health, ask your supervisor for the MSDS for that product. If you are self-employed or if you are an employer, ask your supplier or manufacturer for the MSDS. Appendix 5 provides an example of a

Your Right To Know

Material Safety Data Sheets



Worker Education Program

letter requesting MSDSs. Be sure to list the products you want MSDSs for.

Sometimes MSDSs can be hard to understand. They can also be incomplete or just plain wrong. If you have difficulty getting an MSDS, or come across an MSDS that you don't understand, or that you think may be wrong, contact your local Cal/OSHA office, listed on page 18.

In addition to an MSDS, employers are required to have an education program to tell employees how to work safely with toxic substances.

This pamphlet is an aid for worker training. It does not take the place of an MSDS or a written education program.

Trade Secrets

Under the Hazard Communication Standard, manufacturers can withhold certain ingredient information as trade secrets. This right sometimes prevents a product's user from learning exactly what the ingredients are. However, there is a limit to this right of the manufacturer. By law, the company must give a complete list of ingredients to any physician or other health professional who is calling in regard to a patient. In these circumstances, health professionals are required to keep the ingredient information confidential and cannot share it with you.

Kinds of Chemicals Present in Artificial Nail Products

The type of artificial nail product you use is a clue to the chemicals found in it. Most artificial nail products belong to a few product types: acrylics, gels, fiberglass, porcelain, tips, and wraps. Most brands within a specific product type are likely to contain similar chemicals and involve similar exposures.

Appendices 1 and 2 briefly describe the various types of artificial nail products and list many of the chemicals typically found in them. However, you still need to read the label and get an MSDS in order to be certain about the ingredients of the brands you use.

HOW CAN THE CHEMICALS IN ARTIFICIAL NAIL PRODUCTS ENTER AND AFFECT YOUR BODY?



The chemicals in artificial nail products can enter your body through the air you breathe, through your skin, or through your digestive system if you accidentally swallow them. Whether they affect your health depends on several factors:

- ◆ The kinds of harm a specific chemical can cause;
- ◆ How the chemicals enter your body;
- ◆ The amount of the chemicals in the air or on your skin; and
- ◆ How often and how long you are exposed to the chemicals.

Chemicals can have either *local* or *systemic* effects. Local effects are effects which occur in the area of contact with a chemical. Irritation of the eyes, nose, throat, or skin is an example of a local effect. Systemic effects are effects which can occur if a chemical is absorbed into the bloodstream, so that it can reach and affect other parts of the body. The dizziness, headaches, and nausea caused by many solvents are examples of systemic effects.

The most common health effects caused by the chemicals in artificial nail products are described below. Some of the chemicals which can cause these effects are listed in Appendix 3.

Skin

Artificial nail products can irritate your skin and cause a rash called *irritant dermatitis* (usually just known as dermatitis). Symptoms of dermatitis include dryness, flaking, and cracking of the skin. If you have dermatitis, your skin is more likely to develop infections and to be penetrated by chemicals. Some of the chemicals which can cause dermatitis are acetone, toluene, ethyl ether, and methacrylic acid. Dermatitis gradually heals when exposure to the irritant stops.



If your skin comes into repeated contact with certain of the chemicals in nail products, you may develop *allergic contact dermatitis*. This allergic reaction is similar to the reaction caused by poison oak. It results in redness, itching, hives, and sometimes blisters. Products which contain the methacrylates, formaldehyde, or benzoyl peroxide are the ones most likely to cause allergic contact dermatitis.

Once you have developed an allergy to a chemical, exposure to even a tiny amount can cause an allergic reaction. It usually takes 6 to 24 hours for a rash to develop. If your allergic dermatitis is severe, you may no longer be able to work with the chemicals that caused it. A doctor can test you to see if you have allergic dermatitis. (See "Are there tests for possible health effects of exposure?" on page 10.)

Some products can cause an allergic reaction of the fingernail. This reaction is uncommon and is unlikely to occur unless you have your own nails done. The nail plate may thicken and separate from the nail bed. Some parts may become white and discolored. Bleeding may occur under the nail plate, showing up as dark areas as small as a pin-point or large enough to cover the nail bed. Although these effects usually heal completely, it may take weeks or months. In extreme cases, the natural nail may have to be removed.

Eyes

Eye contact with vapors and airborne dusts can cause irritation and redness, burning, itching, or discomfort. Your eyes may water and your vision may briefly become distorted. Once you stop being exposed, these effects usually go away fairly quickly. Chemicals which can cause these effects include acrylates (ethyl methacrylate, butyl methacrylate, isobutyl methacrylate, methacrylic acid, and ethyl cyanoacrylate), and many solvents, such as methyl ethyl ketone and acetone.

Nose, Throat, and Lungs

These same chemicals can also irritate your nose, throat, and lungs. Symptoms include irritation or soreness of the nose and throat, hoarseness, coughing, lung congestion, chest tightness, and shortness of breath. Cigarette smoking can worsen these symptoms. These effects are temporary and should disappear soon after exposure to an irritating vapor ends.

Chronic bronchitis can result from repeated exposure to irritant chemicals. Symptoms of this condition include lung congestion, cough with phlegm, difficulty in breathing, and greater susceptibility to respiratory infections.

Repeated exposure to certain chemicals found in some artificial nail products can cause allergic reactions in the respiratory tract. One type of allergy mainly affects the nose and throat, causing sneezing and other symptoms similar to hay fever. Another type of allergic reaction affects the lungs, causing asthma. Symptoms of asthma include difficulty breathing, wheezing, coughing, shortness of breath, and tightness in the chest. Once you have become sensitized to a chemical, very small amounts of that chemical can cause an allergic reaction.

Exposure to irritant chemicals that would not affect most people can provoke an asthma attack in a person who already has asthma.

Methyl methacrylate dust can cause asthma. All of the other acrylates (methacrylates and methacrylic acid) and ethyl cyanoacrylates can cause asthma.

Nervous System



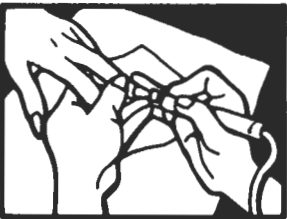
Breathing in the vapors of certain chemicals can affect your brain the same way as drinking too much alcohol does. The technical term for this intoxication is central nervous system (CNS) depression. Overexposure to these vapors can cause headaches, nausea, and dizziness as well as making you feel irritable, confused, or drunk. These feelings should go away soon after you stop working with the chemicals.

Can These Chemicals Cause Cancer?

Many of the chemicals which cause these effects are organic solvents. Some organic solvents often found in nail products are methyl ethyl ketone, acetone, toluene, xylene, and ethyl ether. Large amounts of vapors from the methacrylates can also cause the same problems.

Most of the substances used in artificial nail products have not been adequately tested to see whether they can cause cancer. Methylene chloride and formaldehyde, two chemicals occasionally found in artificial nail products, cause cancer in test animals. It is not known whether they can cause cancer in people. Products that contain these substances should be avoided.

Benzoyl peroxide, a common ingredient of acrylic and porcelain products, causes cancer when large doses are painted on the skin of laboratory animals. It is not known whether it can cause cancer in people. However, the amount of benzoyl peroxide in nail products is very small, and very little of the chemical comes into contact with the skin. It is not expected to be a health problem.



Fiberglass *dust* is created when you file or grind wraps made of fiberglass. Some recent studies have suggested that fiberglass *fibers* can cause lung cancer. However, the *dust* from grinding fiberglass wraps probably does not contain many fiberglass *fibers*, and is probably not dangerous.

Reproductive System

Most of the chemicals found in artificial nail products have not been adequately tested to find out whether they could harm a developing baby or affect the fertility of either men or women. The little information that is available is largely based on studies of test animals. There is almost no information from studies of humans.

Here are some of the facts that are known:

Solvents: Organic solvents are used in artificial nail products to keep them in liquid form. These chemicals can be absorbed into the body of the mother by inhalation of their vapors or by skin contact with the liquid. Once absorbed, most organic solvents can reach the fetus or enter breast milk.

Organic solvents can probably affect the fetus or the nursing infant in much the same way as they affect the woman. The solvents used in artificial nails can affect the brain (see "Nervous System," page 7). Levels of exposure that affect the mother are also likely to similarly affect the fetus. We recommend that pregnant and nursing women minimize their exposure to organic solvents, just as they should minimize their exposure to alcohol, tobacco, and other drugs. Some specific solvents you should know about are:

Glycol ethers: Certain glycol ethers cause birth defects in test animals. They also damage the testes of male laboratory animals. Recent studies of exposed workers indicate that glycol ethers can reduce sperm counts in men. These effects can occur at low exposure levels that have no other health effects, so you can be exposed to harmful levels of the glycol ethers without any immediate warning symptoms.

Glycol ethers are occasionally found in artificial nail products. Appendix 4 on page 26 lists the glycol ethers for which there is evidence of effects on human or animal reproduction. Not all glycol ether compounds have been adequately tested. **Do not use products which contain the glycol ethers listed in Appendix 4.**

Ethyl alcohol: This is the alcohol found in liquor. Ethyl alcohol has caused birth defects and nervous system damage in children of women who drank only moderately during pregnancy. However, it is very unlikely that the levels of alcohol vapors that you are exposed to at work are high enough to harm an unborn child.

Toluene: Toluene has been reported to cause birth defects and nervous system damage in the children of mothers who abused toluene by glue-sniffing during their pregnancy. However, such effects are not likely to occur unless exposures are high enough to make the mother feel dizzy or sick.

Acetonitrile: Many artificial nail *removers* are almost pure acetonitrile, a very toxic chemical. Acetonitrile can cause birth defects in animals exposed to large amounts. It is absorbed very quickly through human skin. For your own health and for the health of your customers, you should try to avoid using nail removers made of acetonitrile.

Methacrylates: Exposures high enough to cause sickness or death in lab animals also cause birth defects. The effects in human beings are not known, but we do not expect harm to pregnancy at levels likely to be found in cosmetology shops.

Can You Work Safely During Pregnancy?

In general, if you feel well while you are working with artificial nail products and you are not experiencing any symptoms related to their use, there is no reason to think that your workplace exposures will harm your baby. However, the surest way to prevent chemicals from harming you or your unborn children is to minimize your exposure. You should read the section “How can your exposure be controlled?” beginning on page 13, and take steps to keep your exposure low.

If you have symptoms that suggest that your use of artificial nail products is affecting your health, you need to take steps to reduce your exposure, for your baby’s sake as well as your own. These steps are described in the section “How can your exposure be controlled?”

ARE THERE TESTS FOR POSSIBLE HEALTH EFFECTS OF EXPOSURE?

The chemicals found in artificial nail products do not stay in your body very long. There is no test that can determine the overall amount of "chemicals" that your body has absorbed. There are tests for only a few of the *specific* chemicals to which you may be exposed. We do not recommend that these tests be used on a routine basis.

If you think you may have allergic dermatitis or asthma, see your doctor. The specific chemical to which you are allergic needs to be identified so that you can avoid products which contain it. Dermatologists and allergists can do patch testing to identify the chemicals to which your skin is allergic. This test involves placing patches containing the suspected materials on the skin and watching for signs of an allergic reaction. Inhalation challenge testing can be performed by a pulmonary specialist to diagnose occupational asthma and identify the chemicals which caused it.



WHAT ARE THE LEGAL EXPOSURE LIMITS?



Cal/OSHA regulates exposure to chemicals in the workplace. Cal/OSHA sets Permissible Exposure Limits (PELs) — eight-hour average air concentrations up to which a worker can be legally exposed. There are PELs for many of the chemicals found in artificial nail products. Some of these PELs are listed in Table 1, on page 12.

Your employer is required to protect you from being exposed to levels of any chemical above its PEL. If you are self-employed and have no employees, you are not covered by these regulations. However, for the sake of your own health, it would be wise to follow them.

If you think that you may be overexposed, talk to your employer. Your employer should have an industrial hygienist or other knowledgeable person measure the levels of the chemicals in your workplace air. If you are self-employed, these measurements are your responsibility. Information on how these measurements are done may be available from your local Cal/OSHA Consultation office. The phone numbers are given on page 19.

If your employer tests the air in your workplace for chemicals, Cal/OSHA regulation *GISO 3204* gives you the right to see and copy the results of those measurements. You also have the right to see and copy your medical records or to file a complaint against your employer for any violations of Cal/OSHA health and safety regulations.

Table 1
Cal/OSHA Permissible Exposure Limits for Some
Chemicals Found in Artificial Nail Products

<u>Chemical</u>	<u>Cal/OSHA</u> <u>Permissible Exposure Limit</u>
acetone	750 ppm
acetonitrile	40 ppm
benzoyl peroxide	5 mg/m ³
ethyl acetate	400 ppm
ethyl ether	400 ppm
hydroquinone	2 mg/m ³
methacrylic acid	20 ppm
4-methoxyphenol	5 mg/m ³
methylene chloride	25 ppm
methyl ethyl ketone	200 ppm
titanium dioxide	10 mg/m ³
toluene	50 ppm
1,1,2-trichloro-1,2,2-trifluoroethane	1000 ppm

Chemicals found in artificial nail products for which there are no PELs include:

butyl methacrylate
 dimethyl *p*-toluidine
 ethyl cyanoacrylate
 ethyl methacrylate
 ethylene glycol dimethacrylate
 isobutyl methacrylate

Note: One ppm is one part of chemical per million parts of air, by volume.

One mg/m³ is one milligram (mg) of chemical per cubic meter (m³) of air. An adult inhales about one cubic meter of air in an hour.

HOW CAN YOUR EXPOSURE BE CONTROLLED?



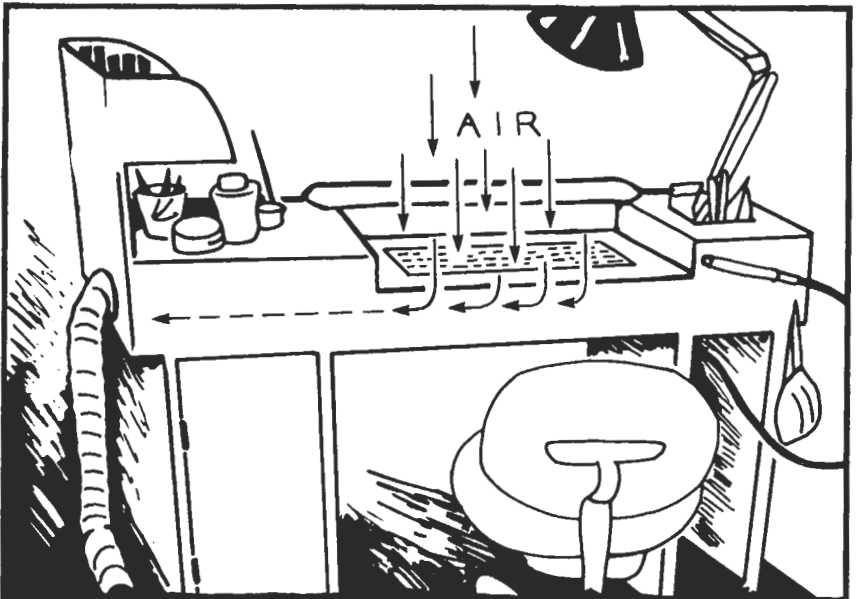
There are many ways to reduce or eliminate exposures.

Substitution

Replace products containing harmful chemicals with safer ones. The wide variety of artificial nail products on the market today gives you many choices. Try to find a product that does not produce irritating vapors or damage your skin. Avoid products that contain glycol ethers. Look for a nail remover that does not contain acetonitrile.

Engineering Controls

Install ventilation systems which keep the air you breathe clean of contaminants. When properly designed and installed, local exhaust systems (such as vented table systems) capture and remove contaminants before they reach the air you breathe. The ventilation system should be designed to vent contaminated air to the *outside*, not inside the shop; otherwise, the system should have a charcoal filter *and* a dust filter which should both be changed frequently. Ordinary dust filters do not remove toxic vapors from the air.



If local exhaust systems are not in place, it is especially important to have good room ventilation systems which bring in fresh, outside air. Table-top fans which simply blow vapors and dusts around a room are not adequate.

Work Practices

Keep containers closed when not in use. Special dispensers are available which let you wet brushes without overexposing yourself.

Personal Protective Equipment

If using a local exhaust system is not practical, wear a dust mask to reduce your inhalation of the different dusts created by filing and sanding nails made of fiberglass, acrylates, and other materials. However, dust masks do not protect against vapors. It would require a vapor cartridge respirator or "gas mask" to provide protection from vapors.



WHAT IS THE CONCERN ABOUT METHYL METHACRYLATE?



The Food and Drug Administration banned the use of methyl methacrylate (MMA) in artificial nail products in 1974. MMA was banned because it caused severe irritation and allergic dermatitis in both customers and manicurists.

Despite the ban, MMA is still in use illegally. A 1982 study found that MMA was used in eight of 29 artificial nail products. A 1986 study still found MMA in the air of some nail salons. Because MMA is approved for use in dental manufacturing, it can still be found.

Do not use MMA instead of the liquid in your acrylic products. Prolonged skin contact with MMA can cause tingling, numbness, and whitening of the fingers. It causes skin allergy in *many* people. An allergy to MMA can make you allergic to the other methacrylates as well. If you develop a severe skin allergy, you may have to stop working with artificial nail products.

Protect your career, your health, and the health of your clients by using only the materials supplied by the manufacturers of your products. And remember to check any product you use to be sure it doesn't contain methyl methacrylate.

HOW CAN ULTRAVIOLET (UV) LAMPS BE USED SAFELY?



The lamps used in UV-gel systems generate UV-A light. The type of ultraviolet light especially associated with sunburn, premature aging of the skin, skin cancer, and eye damage is UV-B light. Exposure to UV-A light is generally much less hazardous. If used correctly, UV-A lamps are generally considered safe.

To use your UV lamps safely, follow the manufacturer's guidelines. Some lamps come with special filters to block out the UV rays that can harm your eyes or skin. Check to make sure the filters are properly placed. Do not look directly at the UV lamps when they are turned on, and discourage your clients from doing so.

UV-gel systems require 5-20 minutes of ultraviolet light exposure to activate the curing process that turns the gel to a solid nail. The brief and intermittent nature of this exposure further reduces any health hazard.

In some UV-gel systems, only the nails are exposed to the curing light, so that there is practically no exposure except of the hand itself.

Photosensitivity

Some creams, medications, or other preparations can cause a person to become photosensitive. People who are photosensitive may suffer a severe "sunburn" from even a brief exposure to UV light. If you are using a medication that is a photosensitizer, see your doctor before using UV gels.

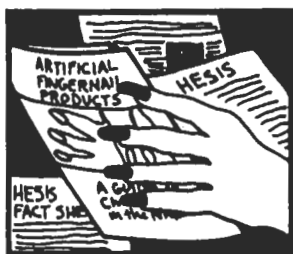
IS A CHEMICAL'S ODOR A GOOD WARNING OF HAZARD?



No. Many chemicals used in artificial nail products have a strong smell at levels well below those which cause harm. Other chemicals have very little smell. Measuring the amount of a substance in the air is the only reliable way to determine an exposure level and the degree of hazard.

A strong smell by itself can cause headaches or nausea, even if the substance is not dangerous. It is very difficult to distinguish between a headache caused by central nervous system effects and one caused simply by odor. Pregnant women are sometimes especially sensitive to odor.

WHERE CAN YOU GET MORE INFORMATION?



Rquest our publications. HESIS publishes booklets and fact sheets which are available free. Some publications are available in Spanish or other languages. For copies of any of our publications or our publications list, call our publications message service at 866/624-1586 and leave your name, address, phone number, and the names of the publications you want to receive.

Ask us a question. This booklet contains information on the chemicals commonly found in artificial nails products. If you have questions not covered in this booklet, call us for more information. Please phone HESIS toll free at 866/282-5516.

Contact Cal/OSHA. Employees who need information or assistance concerning workplace health and safety regulations, or who want to file a complaint, can contact the nearest office of Cal/OSHA:

Anaheim	San Bernardino
Chico	San Diego
Concord	San Francisco
Eureka	San Jose
Fresno	San Mateo
Los Angeles	Santa Rosa
Modesto	Torrance
Oakland	Van Nuys
Pico Rivera	Ventura
Redding	West Covina
Sacramento	

For the address and telephone number of the Cal/OSHA office nearest you, look in the government section near the front of the telephone book, under "California, Department of Industrial Relations, Division of Occupational Safety and Health."

Use the Cal/OSHA Consultation Service. Employers who want free assistance to evaluate and improve workplace health and safety may contact the Cal/OSHA Consultation Service at 1-800-963-9424 or:

Anaheim	714/935-2750
Fresno	209/454-1295
Oakland	510/622-2891
Sacramento	916/263-2855
San Bernardino	909/383-4567
San Diego	619/467-4048
Santa Fe Springs	562/944-9366
Van Nuys	818/901-5754

In a Medical Emergency: Dial 9-1-1. Always keep Material Safety Data Sheets handy. The person taking your call will need to know the chemical ingredients. MSDSs also frequently have emergency numbers so that emergency personnel can contact the manufacturer if they need more information.

Appendix 1

Types Of Artificial Nail Products



Arificial nails products can be grouped into five main types, which are described below. Appendix 2 lists some of their typical chemical ingredients.

Acrylic Systems

In acrylic systems, powdered polymer and liquid monomer are mixed together. The powder and liquid react to form a plastic paste. This paste is smoothed onto the nail, where it “cures,” or hardens, at room temperature. Sometimes benzoyl peroxide is included to make the plastic harden faster.

A tiny amount (1% to 2%) of the liquid monomer remains unreacted after curing. In sensitized individuals, this remaining monomer can cause the allergic reaction of the fingernail described on page 5.

“Porcelain” Nails

Porcelain nails are like acrylic nails, except that they use a finely ground, glass-like material in the powder.

Porcelain nails were popular many years ago, but became “illegal” when methyl methacrylate, a chemical then used as an ingredient, was banned by the Food and Drug Administration. (See “What is the concern about methyl methacrylate?” on page 15.)

Since then, new formulas without methyl methacrylate have been designed, and porcelain nails are regaining popularity.

Gel Systems

In gel systems, layers of resin are applied to the nail; these layers combine to form a solid nail. There are several different kinds of gels; all of them harden when exposed to light. The original formulas were hardened with ultraviolet light; newer ones harden under ordinary room lighting (called “white light”). Some gel systems use layers of different resins, while others use layers of a single resin.

Wraps

Fiberglass, linen, and silk wraps are all based upon the same process. A fabric mesh is fixed in place with an adhesive; then a sealant is applied to help keep out moisture and discourage lifting.

Tips

Nails can be extended by applying plastic nail shapes of varying lengths to the natural nail plate. These extensions are called "tips." Sometimes they cover the nail from the cuticle to the end, but, more frequently, they are applied midway down the nail plate. A cyanoacrylate glue is used to adhere the plastic shape to the nail. Acrylics, gels, or wraps may then be applied to smooth and strengthen the final form. The entire shape is then sanded and filed to the desired shape and length.

Appendix 2 Nail Products, Components, and Chemicals



See Appendix 3 for a description of the health effects of the chemicals listed below.

<u>Nail Product</u>	<u>Component</u>	<u>Chemical</u>
ACRYLICS	◇ liquid	ethyl methacrylate
		butyl methacrylate
		isobutyl methacrylate
		ethylene glycol dimethacrylate
		4-methoxyphenol
		dimethyl <i>p</i> -toluidine
	◇ powder	poly(ethyl/methyl)methacrylate
		benzoyl peroxide
		titanium dioxide
◇ primer	methacrylic acid	
	(2-methyl-2-propenoic acid)	
	methyl ethyl ketone (MEK)	
	hydroquinone (HQ)	
	4-methoxyphenol	
TIPS	◇ adhesive	ethyl cyanoacrylate
		ethylene glycol dimethacrylate
	◇ adhesive remover	acetone
	ethyl ether	
	1,1,2-trichloro-1,2,2-trifluoroethane	
PORCELAIN	◇ liquid	ethyl methacrylate
		butyl methacrylate
	◇ powder	poly(ethyl/methyl)methacrylate
		glass-like “porcelain” material (silica)
	◇ primer	methacrylic acid
		hydroquinone (HQ)

WHITE-LIGHT GELS	gel	acrylic oligomers acrylic monomers modified cellulose photo-initiators amine co-initiators titanium dioxide
WRAPS		
fiberglass	◇ fabric overlay	fiberglass
	◇ adhesive	information not available
silk/linen	◇ fabric	silk fibers linen fibers cotton fibers nylon fibers
	◇ adhesive	ethyl cyanoacrylate
snakeskin	◇ adhesive	ethyl cyanoacrylate
SOLID GOLD NAILS	◇ adhesive	neoprene ethyl acetate toluene methylene chloride
	◇ adhesive remover	acetone ethyl ether 1,1,2-trichloro-1,2,2-trifluoroethane

Appendix 3 Nail Product Ingredients And Their Health Effects



Each chemical found in an artificial nail product can affect your health differently if you are over-exposed to it. If you work with a chemical listed below, use this table to find out some of its more important potential health effects.

ENT = Eye, Nose, and Throat

CNS (Central Nervous System) depression = headache, nausea, dizziness, and drowsiness, similar to alcohol intoxication

<u>Chemical</u>	<u>Health Effects</u>
acetone	ENT irritation CNS depression dermatitis
acetonitrile	reproductive
benzoyl peroxide	allergic dermatitis cancer in animals
butyl methacrylate	ENT irritation CNS depression allergic dermatitis
dimethyl <i>p</i> -toluidine	ENT irritation
ethyl acetate	ENT irritation dermatitis CNS depression
ethyl alcohol	CNS depression
ethyl cyanoacrylate	ENT irritation asthma
ethylene glycol dimethacrylate	no information

ethyl ether	CNS depression dermatitis
ethyl methacrylate	ENT irritation CNS depression allergic dermatitis
fiberglass	cancer in animals
formaldehyde	allergic dermatitis asthma cancer in animals
hydroquinone	ENT irritation allergic dermatitis
isobutyl methacrylates	ENT irritation CNS depression allergic dermatitis
methacrylic acid	ENT irritation dermatitis
4-methoxyphenol	dermatitis
methylene chloride	CNS depression cancer in animals
methyl ethyl ketone	ENT irritation CNS depression
neoprene	dermatitis
titanium dioxide	lung irritation
toluene	CNS depression dermatitis reproductive
1,1,2-trichloro- 1,2,2-trifluoroethane	dermatitis CNS depression
xylene	CNS depression reproductive

Appendix 4

The Glycol Ethers Known To Cause Birth Defects Or Infertility In Test Animals



<u>Common name</u>	<u>Synonyms</u>
ethylene glycol methyl ether	EGME 2-methoxyethanol Methyl Cellosolve®
ethylene glycol methyl ether acetate	EGMEA 2-methoxyethyl acetate Methyl Cellosolve Acetate®
ethylene glycol ethyl ether	EGEE 2-ethoxyethanol Cellosolve®
ethylene glycol ethyl ether acetate	EGEEA 2-ethoxyethyl acetate Cellosolve Acetate®
ethylene glycol dimethyl ether	EGDME 1,2-dimethoxyethane
ethylene glycol diethyl ether	EGDEE 1,2-diethoxyethane
diethylene glycol methyl ether	DEGME 2-(2-methoxyethoxy)ethanol
diethylene glycol ethyl ether	DEGEE 2-(2-ethoxyethoxy)ethanol
diethylene glycol dimethyl ether	DEGDME bis(2-methoxyethyl)ether
triethylene glycol dimethyl ether	TEGDME

Appendix 5

Sample Letter For Requesting Material Safety Data Sheets



Date
Manufacturer
Address

Attention: MSDS Request

Dear Sir/Madam:

The Cal/OSHA Hazard Communication Standard (Section 5194 of the General Industry Safety Orders of Title 8 of the California Administrative Code) requires employers to have in their possession up-to-date Material Safety Data Sheets (MSDSs) for all hazardous substances used in their workplaces. In general, an MSDS should list the hazardous ingredients of a product, describe its health and safety hazards, and suggest ways to use the product safely. It should also contain information about any fire and explosion hazards, first aid, and procedures for cleaning up leaks and spills.

The state requires manufacturers of hazardous substances to prepare and provide MSDSs to their purchasers, either directly or through their suppliers (California Labor Code Division 5, Chapter 2.5, Section 6390).

Accordingly, we request that you either provide us with current MSDSs for each product which we purchase from your company (see attached list), or provide us with a statement explaining why a product is exempt from these regulations. Also, please certify that your MSDS meets the requirements of GISO Section 5194.

An early reply will be very much appreciated.

Sincerely,

Purchaser's Name
Title
Address

(Note: Copies of the Director's List of Hazardous Substances, the above-mentioned regulations, and general information may be available from Cal/OSHA Consultation Service.)

