Skin Health (8 hours)

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Module 1:Skin Care

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Learning objectives:

After completing this lesson you will be able to:

- Describe the structural composition of the skin
- Explain functions of the skin
- List skin conditions and disorders
- Explain the environmental impact on the skin
- Describe aging skin
- Identify the benefits of a facial
- List the materials and equipment required for a facial
- List the basic procedures of a facial
- Identify skin care products and ingredients

Introduction

The purpose of this study module is to review the principles, practices and theories of skin care to include it's biological make-up and function.

Skin

Our level of health is often seen in the appearance of the skin. Environmental elements, hormonal imbalances, and stress can also change the skin's appearance.
Understanding the structure and function of skin can help in help in maintaining it's good health. Skin is our body's protective covering.

Our skin is varied with types and colorings from person to person. The skin, in a healthy state is very resilient and self-healing. It renews itself in the outer layer every 30 days.
It is the largest organ of the body and is just a few millimeters thick .
It's layers has many functions and activities primarily as a protective covering for our muscles, tendons, bones and organs.
It keeps our internal workings intact, acts as a barrier to bacteria and foreign bodies and secretes natural waste through sweat. Together the sweat and the sebum combine on the skin's surface to form the barrier-like acid mantle.

A vital regulator of temperature, skin acts as our cooling system. We flush when we're hot because blood vessels near the skin's surface dilate to allow more warm blood to circulate closer to the air to cool. When we're cold and need to conserve warmth, the blood vessels contract, so that a pale appearance is produced.

Sense of touch is due to nerve endings in the dermis. They are the reactors of heat, cold touch, pressure and pain.

The skin is not abundantly absorbent as only small amounts of water or oil-soluble substances can penetrate. Ultra-violet radiation can penetrate for the good as in the case of producing vital Vitamin D and for the bad, as with unsafe sun exposure.

Composition

Skin layers: Epidermis, Dermis, Subcutaneous Fat

The skin is made up of three distinct layers.
The outer most layer is called the **epidermis.**
The word epidermis, and the name of the second skin layer, the dermis, both come from the name used by the ancient Greeks for the skin, derma.
From this we also get the word dermatologist, meaning a doctor who specialize in skin problems. The epidermis is translucent. It allows light to pass partially through it similar to frosted glass.

The **epidermis** does not contain any blood vessels but gets its oxygen and nutrients from the deeper layers of the skin.
At the bottom of the epidermis is a very thin membrane, called the basement membrane, which attaches the epidermis to the layer below.

The second layer lies deeper and is called the **dermis**. It contains blood vessels, nerves, hair roots and sweat glands.

Below the dermis lies a layer of fat, the **subcutaneous fat.** The depth of this layer differs from one person to another. It contains larger blood vessels and nerves, and is made up of clumps of fat-filled cells called adipose cells.

The subcutaneous fat lies on the muscles and bones and whole skin structure is attached by connective tissues. The attachment is loose, so the skin can move fairly freely. If the subcutaneous tissues fill up with too much fat the skin cannot move as easily and this is what creates cellulite.
The skin has layers running from the outer epidermis, the dermis and the sub layers of connective tissue. Starting with the skin's outer layer, it is five layered with it's main characteristics being thin in feel, but proactive despite lacking in blood vessels or nerves.

Deep within, new skin cells are continuously formed to replace the constant shedding of surface cells.

The outermost layer is made up of a flexible protein keratin.
It is constantly being shed and replaced by the new cells. New skin cells are nourished by the dermis and if nutrient starved, will be poorly formed. However, if they have been fed from the start, the skin will be smooth, and hydrated.

It is important to remove make-up daily so that skin cells can flake off without oil and cosmetics clogging the process. At the same time, the skin's pH between 4.5 and 6 needs to be preserved and not stripped with harsh, dehydrating products.

The thickest, innermost section of the skin is the dual layered dermis, home to several vital structures. A mesh of twin proteins, collagen and elastin fibers give skin its contours and elasticity. As we age these deteriorate. The sebaceous glands, nerve endings, hair follicles and essential blood vessels all co-exist.

Sebum secreted from the sebaceous glands lubricates the skin and is slightly acidic in content. It is also somewhat anti-bacterial. Hormonal activity controls the amount of oil that the glands produce.

Should oil from the pores be overly plentiful, greasy skin and potential eruptions could result. If oil is low the skin will be dry and possibly scaly.

The third layer of skin is a connective tissue dividing the dermis from the muscular layer.

Networks of tiny blood vessels run through the epidermis bringing food, vitamins and oxygen.

In pale people, these vessels can be seen through the epidermis, particularly if the veins widen otherwise known as broken veins.

If the blood carries plenty of oxygen it will be pink and the skin will tend to have a rosy color. If the blood is running sluggishly and has lost most of its oxygen the skin will look bluer.

These blood vessels respond to temperature changes. They open up in hot weather, bringing lots of red blood cells - and hence a pink flush to the skin, and close down in the cold; this is why cold skin often looks blue.

In most areas of the body the epidermis is only 35-50 micrometers thick. A micrometer is one-millionth of a meter, one-thousandth of a millimeter. On the palms and the soles it is usually much thicker, up to several millimeters.

Functions of the Skin

Absorption	Substances can enter the body through the skin.
Excretion	Sweat glands within the skin puts out perspiration.
Heat regulation	Skin maintains our 98.6 °F body temperature.
Protection	Skin protects us from bacteria and viruses.
Secretion	Sebum is created by the sebaceous glands within the skin.
Sensation	Feeling cold, heat, pain and pressure.

Some of these functions are so important that unless most of the skin is working efficiently, we will die. This is the reason why second or third degree burns are so serious.

When the skin is destroyed over a large area, there is no way of controlling the rate at which water is lost to the outside environment, or of regulating the temperature of the body or of controlling infection. Someone who has lost over half their skin this way is unlikely to survive.

Although we think of the skin as a single organ, the epidermis and dermis have, to some extent, separate functions.

The function of water conservation is however dependent on both; the role of the stratum corneum in this field is absolutely vital, as it acts as a semipermeable barrier and allows us to survive in a hostile environment.

The epidermis has three principal functions:

- protecting the body from the environment, particularly the sun
- preventing excessive water loss from the body
- protecting the body from infection.

Epidermis is made up of:

- stratum corneum (horny layer)
- keratinocytes (squamous cells)
- basal layer

Dermis:The dermis is the middle layer of the skin.

- blood vessels
- lymph vessels
- hair follicles
- sweat glands
- collagen bundles
- fibroblasts
- nerves

Subcutis: The subcutis is the deepest layer of skin. The subcutis consists of a network of collagen and fat cells. It helps conserve the body's heat and protects the body from injury.

Diseases and Conditions of the Skin
Bacteria and viruses can invade through an injury or opening of the skin.
The skin is made up of natural occurring barriers that protect us from undesirable environmental elements from entering our body
All areas of the skin contain nerves which are sensory receptors. Without these receptors we could not feel heat, cold pressure or pain.

Descriptive Terms and Definitions: In reference to diseases and conditions

Acute	Severe symptoms.
Allergy	Physical reaction by the skin due to exposure to a substance.
Chronic	Recurring and long duration of symptoms
Contagious	Communicable
Dermatologist	Physician who specializes in the medical practice of the skin
Dermatology	The study, analysis and treatment of skin.
Diagnosis	Recognition of a disease by its symptoms
Disease	The pathological interference of the normal function of the body or it's parts
Disorder	An abnormal condition that is usually not contagious
Epidemic	Wide spread disease that affects a large number of people
Etiology	The study of the causes of diseases
Immune	When the body is totally resistant to a certain disease.
Immunity	Refers to the body's level and ability to be resistant to disease.
Infectious	The ability of a bacteria to enter the body
Inflammation	A skin disorder characterized by redness, pain, edema, and heat.
Occupational	Due to the activity of your job, possibly repetitive.
Parasitic	The type of any condition caused by animal or vegetable parasites.
Pathogenic	Any disease whose origin is bacterial
Pathology	The study of disease .
Prognosis	The predetermination, using educated insight, of the probable course of a disease.
Seasonal	Effects due to the exposure of changes in weather occurring throughout the year.
Subjective symptom	A symptom that can be felt but not seen

In a salon, you will assuredly come in contact with diseases and disorders of the skin.

You are responsible for being able to recognize infectious diseases and conditions that should be referred to a physician.

Conditions of the Skin

Albinism	Congenital condition in which there is an absence of melanin pigment.
Chloasma	Patches of increased deposits of pigment in the skin are also known as liver spots.
Leucoderma	Light patches on the skin due to congenital defective pigmentations.
Naevus	A birthmark also known as portwine or strawberry that can be small or large and that includes the malformation of skin due to pigmentation or dilated capillaries.
Lentigo	Small spots that can be yellow to brown in color.
Vitiligo	The type of condition of leucoderma that can affect skin or hair.

Hypertrophies (excessive growth)

Keratoma	The callus. It is the superficial, round, thickening of the epidermis caused by friction. If it grows inward it is called a corn.
Mole	A small spot on the skin that can be flat or raised. It is sometimes genetically inherited and it's colors can range from tan to brown or bluish black.
Polyp	A growth on the body that sometimes extends from the surface of the skin and others within the skin.
Skin Tag	A bead-like fibrous tissue that protrudes from the surface of the skin and is sometimes a dark color
Verruca	A wart, a viral infection of the epidermis and non cancerous.

Skin Pigment Disorders

Skin color is determined by a pigment (melanin) made by specialized cells in the skin (melanocytes). The amount and type of melanin determines a person's skin color.

Melanin gives color to the skin, hair, and iris of the eyes. Levels of melanin depend on race and amount of sunlight exposure.

Sun exposure increases melanin production - to protect the skin against harmful ultraviolet rays.
In addition, hormonal changes can affect melanin production.

Color changes of the skin and discoloration including shades of red, brown, purple and black are danger signs. Skin thickening can also be a sign of danger and should be examined by a physician.

Vitiligo
Vitiligo is a disorder in which white patches of skin appear on different parts of the body. This happens because the cells that make pigment in the skin are destroyed. These cells are called melanocytes.

Vitiligo can also affect the mucous membranes such as the tissue inside the mouth and nose and the eye.

The cause is not known. Vitiligo may be an autoimmune disease. These diseases happen when your immune system mistakenly attacks some part of your own body.

In vitiligo, the immune system may destroy the melanocytes in the skin. It is also possible that one or more genes may make a person more likely to get the disorder.

Some researchers think that the melanocytes destroy themselves. Others think that a single event such as sunburn or emotional distress can cause vitiligo. But these events have not been proven to cause vitiligo.

In the United States, 2 to 5 million people have the disorder. Most people with vitiligo develop it before the age of 40. The disorder affects all races and both sexes equally.

People with certain autoimmune diseases such as thyroid disease are more likely to get vitiligo than people who don't have any autoimmune diseases. Scientists do not know why vitiligo is connected with these diseases.

Vitiligo may also run in families. Children whose parents have the disorder are more likely to develop vitiligo.

White patches on the skin are the main sign of vitiligo. These patches are more common in areas where the skin is exposed to the sun. The patches may be on the hands, feet, arms, face, and lips.

Other common areas for white patches are:

- The armpits and groin (where the leg meets the body)
- Around the mouth
- Eyes
- Nostrils
- Navel and
- Genitals

Those with dark skin may notice a loss of color inside their mouths. There is no way to tell if vitiligo will spread.
For some people, the white patches do not spread. For some people, vitiligo spreads slowly, over many years. For other people, spreading occurs quickly. Some people have reported more white patches after physical or emotional stress.

Moles
According to recent research, certain moles are at higher risk for changing into cancerous growths, including malignant melanoma, a form of skin cancer. Moles that are present at birth and atypical moles have a greater chance of becoming malignant.
Recognizing changes in your moles is crucial in detecting malignant melanoma, and other cancerous skin growths at its earliest stage of development.

Warts
Warts are non-cancerous skin growths caused by the papillomavirus. Warts are more common in children than adults, although they can develop at any age.
Warts can spread to other parts of the body and to other persons. There are many different types of warts, due to many different papillomavirus types, more than 100. Warts are not painful, except when located on the feet. Most warts go away, without treatment, over an extended period of time.

Common Types of Warts

common warts	Located around the nails and the back of the hands, rough surfaced, grayish-yellow or brown in color
foot warts	located on the soles of feet (plantar warts) with black dots (clotted blood vessels that once fed them); clusters of plantar warts are called mosaic; can be painful
flat warts	small, smooth growths that grow in groups up to 100 at a time; most often appear on children's faces
filiform warts	small, long, narrow growths that usually appear on eyelids, face, or neck

Inflammations

Eczema	Dry or moist lesions accompanied by itching and burning that usually has red-blisters and oozing.
Psoriasis	Lesions that are often round and are dry. Occurring in patches, they are covered with coarse, silvery scales. When irritated, they bleed. Although it spreads on the patient, it is not contagious.

Psoriasis
Psoriasis is a chronic skin condition characterized by inflamed, red, raised areas that often develop as silvery scales on the scalp, elbows, knees, and lower back.
Psoriasis is estimated to affect between 5 million to 7 million people in the US.
The cause of psoriasis is unknown, however, it is thought to be caused by abnormally fast-growing and shedding skin cells. The skin cells multiply quickly causing the skin to shed every three to four days.
Though not contagious, **the condition is hereditary.** Psoriasis is often recurrent and occurs in varying severities.

Types and symptoms
Individual will experience symptoms differently, as psoriasis comes in several forms and severities.

- **discoid psoriasis**
  Also called **plaque psoriasis**, this type of psoriasis is the most common. Symptoms may include patches of red, raised skin on the trunk, arms, legs, knees, elbows, and scalp. Nails may also thicken, become pitted, and separate from the nail beds.

- **guttate psoriasis**
  This type of psoriasis affects mostly children. Symptoms may include many small patches of red, raised skin. A sore throat usually proceeds the onset of this type of psoriasis.

- **pustular psoriasis**
  Symptoms may include small pustules (pus-containing blisters) all over the body or just on the palms, soles, and other small areas.

Allergy Related Dermatitis of the Skin

Dermatitis Medicamentosa	Dermatitis that occurs after an medical injection.
Dermatitis Venenata	Allergy to ingredients in cosmetics.
Urticaria	Hives and inflammation caused by an allergy to specific drugs or foods.

Contact Dermatitis
Contact dermatitis is a physiological reaction that occurs after skin comes in contact with certain substances. The majority of these reactions are caused by irritants to the skin. The remaining reactions are caused by allergens, which trigger an allergic response.

In allergic reactions, the reaction may not start until after several days.
Contact dermatitis caused by an irritant that is not an allergic response occurs from direct contact with the irritant.
Adults are most commonly affected by allergic contact dermatitis, but it can affect persons of all ages.

Causes
The most common causes of allergic contact dermatitis in adults include the following:
- soaps
- different foods
- detergents
- perfumes

Plants, as well as metals, cosmetics, and medications may also cause a contact dermatitis reaction:
- **poison ivy**
  Poison ivy, which is part of a plant family that includes poison oak and sumac, is the most common cause of a contact dermatitis reaction.

- **metals**
  Nearly 3,000 chemical agents are capable of causing allergic contact dermatitis. Nickel, chrome, and mercury are the most common metals that cause contact dermatitis

- **cosmetics**
  Many types of cosmetics can cause allergic contact dermatitis. Permanent hair dyes that contain paraphenylenediamine are the most frequent causes. Other products that may cause problems include dyes used in clothing, perfumes, eye shadow, nail polish, lipstick, and some sunscreens.

- **medications**
  Neomycin, which is found in antibiotic creams, is the most common cause of medication contact dermatitis. Penicillin, sulfa medications, and local anesthetics, such as novocaine or paraben, are other possible causes.

Symptoms of Contact Dermatitis
- mild redness and swelling of the skin
- blistering of the skin
- itching
- scaling and temporary thickening of skin

Skin Lesions

Bulla	A blister containing body fluids.
Crust	Scab
Excoriation	An abrasion caused by injury such as a scraped knee.
Fissure	A crack in the skin that penetrates the dermal layer.
Macule	A small, discolored spot or patch on the skin's surface. A freckle is a good example of a macule
Scale	The accumulation of flakes of the epidermal layer.
Ulcer	Open lesions on the skin or mucous membranes.
Vesicle	A blister that contains body fluid within or just beneath the epidermis, an example is poison ivy.
Wheal	An itchy, swollen lesion that is temporary, for example: a mosquito bite.

Contagious Disorders of the Skin

Athlete's Foot	Ringworm of the foot.
Tinea	Ringworm caused by fungus, a vegetable parasite, that includes symptoms of scaling of the skin.
Tinea Unguium	Ringworm of the nails.

Fungal Infections of the Skin

Skin fungi live in the dead, top layer of skin cells in moist areas of the body, such as the scalp. These fungal infections cause only a small amount of irritation.
Other types of fungal infections penetrate deeper and may cause itching, swelling, blistering, and scaling.

In some cases, fungal infections can cause reactions elsewhere on the body.
For example, a person may develop a rash on the scalp after touching an infected foot.
There are many types of fungal skin infections that require clinical care by a physician or other healthcare professional.

Tinea infections: Ringworm

"Ringworm" is a misleading term that refers to the circular appearance of the fungal lesion. There are no worms involved. Different fungi, depending on their location on the body, cause ringworm. Ringworm is characterized by ring-shaped, red, scaly patches with clearing centers.

Tinea is ringworm caused by fungus, a vegetable parasite, that includes symptoms of scaling of the skin. It can effect the skin on any part of the body.

There is an increased risk of contracting ringworm if a person:
- is malnourished.
- has poor hygiene.
- lives in a warm climate.
- has contact with other persons or pets that have ringworm.
- is immunocompromised by disease or medication.

Athlete's Foot
Athlete's foot is also known as tinea pedis or ringworm of the foot.
Contributing causes include sweating, not drying the feet well
after swimming or bathing, wearing tight socks and shoes, and warm weather conditions.

Symptoms of athlete's foot may include:
- whitening of the skin between the toes
- scaling of the feet
- itchy rash on the feet
- blisters on the feet

Body Ringworm (tinea corporis)
This skin infection is characterized by a ring-like rash anywhere on the body or the face. It occurs in all ages, but is seen more frequently in children. It is more common in warmer climates.

The symptoms of body ringworm may include:
- red, circular lesion with raised edges
- the middle of the lesion may become less red as the lesion grows
- itching of the affected area

The lesions of ringworm are unique, and usually allow for a diagnosis simply on physical examination.
Because the fungi can live indefinitely on the skin, recurrences of ringworm are likely.

Skin Cancers

Basal Cell Carcinoma	The least serious type of skin cancer, containing light or pearly nodules with visible blood vessels.
Malignant Melanoma	The most serious type of skin cancer, containing dark brown, black, or discolored patches on the skin.
Squamous Cell Carcinoma	Scaly, red papules.
Tumor	Abnormal growth of swollen tissue.

At Risk

Skin cancer is more common in fair-skinned people - especially those with blond or red hair, who have light-colored eyes. Skin cancer is rare in children. Almost half of all Americans who live to age 65 will be diagnosed with skin cancer at some point in their lives, according to the National Cancer Institute.

Other risk factors include the following:

- family history of melanoma
- sun exposure
- early childhood sunburns
- many freckles
- many ordinary moles (more than 50)

Disorders of the Sebaceous Glands

Acne Rosacea	The chronic inflammatory congestion of the cheeks and nose
Acne Simplex	The chronic inflammatory disorder that usually related to hormonal changes and overactive sebaceous glands
Acne Vulgaris	Acne pimples
Comedones	Blackheads, keratinized cells and hardened sebum
Cysts	Round, body fluid filled sac within the dermis caused by a ruptured follicle
Furuncle	A boil, which is a subcutaneous abscess that fills with pus
Milia	Whiteheads, which is an accumulation of dead, keratinized cells and sebaceous matter trapped beneath the skin's surface
Pimples	A follicle filled with oil, dead cells, bacteria and pus
Seborrhea	Oily Dandruff

Acne Scars

Acne Pit Scar	Sunken appearance, caused by pimples or cysts
Raised Scar	Lump of raised tissue on the surface of the skin, caused where cysts have clumped together
Ice Pick Scar	Large, open pore appearance, as if scarred with an ice pick, caused by deep pimples or cysts

Acne is a disorder of the hair follicles and sebaceous glands. The glands become clogged, leading to pimples and cysts. Acne is very common - nearly 17 million people in the US are affected by this condition.

Acne most often begins in puberty. During puberty, the male sex hormones (androgens) increase in both boys and girls, causing the sebaceous glands to become more active - resulting in increased production of oil (sebum).

The sebaceous glands produce sebum that normally travels via hair follicles to the skin surface. However, skin cells can plug the follicles, blocking the sebum coming from the sebaceous glands.

When follicles become plugged, skin bacteria begin to grow inside the follicles, causing inflammation.
Eventually, the plugged follicle bursts, spilling oil, skin cells, and bacteria onto the skin surface. In turn, the skin becomes irritated and pimples or lesions begin to develop. Acne can be superficial or deep.

Acne can occur anywhere on the body. However, acne most often appears in areas where there is a high concentration of sebaceous glands, including the following:
- face
- chest
- upper back
- shoulders
- neck

The following are the most common symptoms of acne. However, each individual may experience symptoms differently.

Symptoms may include:
- blackheads
- whiteheads
- pus-filled lesions that may be painful
- nodules (solid, raised bumps)

Environmental Impact on the Skin
The sun produces enormous amounts of heat and light, some of which reaches the earth. Without this heat and light there would be no life.
Unfortunately the sun also produces less beneficial rays, which are completely invisible to us, called ultraviolet radiation.
Part of this radiation is reflected by the stratum corneum at the skin surface, part is absorbed by the melanin in the epidermal cells, and some is scattered within the skin.

All three processes contribute to the vital function of protecting the nuclei of the cells in the epidermis and the collagen of the dermis.
This scattered radiation creates a lot of high-energy particles, which are called free radicals. Free radicals are very reactive, and attack the constituents of the skin: this is why over a long time ultraviolet radiation produces so much damage.
Sunlight reflected from snow can damage our skin because it contains a substantial proportion of ultraviolet radiation.

Sunburn
The following are the most common symptoms of a sunburn. However, each individual may experience symptoms differently. Symptoms may include:

- redness
- swelling of the skin
- pain
- blisters
- fever
- chills
- weakness
- dry, itching, and peeling skin days after the burn

Water and the skin
Throughout our lives our bodies naturally lose water by constant gentle evaporation through our skins trans-epidermal water loss, although we are unaware of the process.

Preventing excessive water loss is exceptionally important. In the normal epidermis the water content gets less the closer we get to the surface.
Water makes up to 70-75% of the weight of the basal layer, but only 10-15% of the stratum corneum. The stratum corneum is a particularly important barrier to the control of moisture loss.

Cell Regeneration
With increasing age, the skin's cell renewal process becomes less efficient. Tissue repair and cell regeneration slow down. The amount of natural moisture present in the skin is reduced. Because collagen production is less, the skin becomes thinner and loses its flexibility.

Protecting the Skin
The most obvious sign of aging is a decrease in the overall thickness of the epidermis as a whole, with a reduction in the number of cell layers.
The number of cells in the stratum corneum does not diminish with age, however; this is important, because of the vital role of this layer as the skin barrier. On the other hand, the numbers of melanocytes and other cells do decrease with age.
Metabolism in the skin slows down. So does the rate at which epidermal cells are produced, which may interfere with wound healing.

The time necessary to repair the stratum corneum barrier increases considerably with age: the replacement of skin cells takes about twice as long for people over 75 as for those around 30.
Although the sebaceous glands themselves do not change much with increasing age, sebum production declines in many older people, especially after the age of 70. With age, the number of active sweat glands falls and their output of sweat decreases too.
As a result, perspiration is less in elderly skin. This explains why older people often find it hard to adapt to hot weather.

Most older people have dry skin and therefore have a special need to avoid the over-use of harsh soaps and detergents, in order to prevent problems associated with dryness.
Aged skin retains its fundamental ability to control water loss, but may partially lose this ability if the stratum corneum barrier becomes damaged by physical or chemical agents.
Many substances will penetrate aged skin more easily than young skin.
As we grow older, the skin loses its firmness and elasticity. Patches of discoloration and areas of dilated blood vessels appear. On exposed areas of aged skin, such as the hands and face, the skin patterns are often markedly changed.

Reasons for the changing appearance:

* blood circulation slows down
* metabolism slows down
* chemical changes take place in the tissues
* sebaceous glands diminish in size and number
* collagen production breaks down
* hormone production is altered or reduced.

The Professional Facial

The professional facial is universally recognized as the most relaxing services available in the salon.
We enjoy the benefits to our skin as well as the esthetic sense of well being as the restful yet stimulating experience unfolds.
To get the best results from facials the client should come on a regular basis to maintain healthy skin and reverse environmental damage.

The professional Esthetician knows the techniques that must be applied in order to get the visible results that the client is looking for such as better skin tone, texture and overall appearance.

There are 2 categories of facials:
Preservative: for maintaining good health and
Corrective: for correcting skin conditions.

For a preservative facial, we focus on maintaining the good condition of our client using cleansing methods, increasing circulation, relaxing the nerves and activating the skin glands through manipulations.

For a corrective facial, we focus on correcting one or more facial conditions such as oiliness, dryness, blackheads, age lines and minor acne.

The benefits of a facial:
- Cleansing the skin
- Increasing circulation
- Activating glandular activity
- Relaxing the nerves
- Maintaining muscle tone
- Strengthening weak muscle tissue
- Correcting certain skin disorders
- Helping prevent the formation of wrinkles and age lines
- Softening and improving skin texture and complexion
- Adding to the client's confidence

The facial experience begins by helping the client to relax by speaking in a calming quiet manner.

A professional Esthetician will explain the benefits of the products and services and will answer any questions that the client may have.

In order for the client to relax, she must feel that she is in a calming environment. The biggest key to a successful calming environment is quietness.

The ability to work quietly and efficiently brings confidence to the client that she will have a high quality experience.

The professional Esthetician will keep all work areas neat and clean and above all, sanitary. Disorganization can not be a part of the professional esthetician's environment.

Work habits must be above average setting high standards in all elements of client service.

Being sanitary with products by only using clean, disposable spatulas is the only way to guarantee that no products will be contaminated.

The product must not be contaminated inside the container by a used implement as well as the product must not be contaminated that is being used on the client.

Prearrange all implements that you will need prior to the arrival of your client. **Follow systematic procedures.**

Warm your hands before touching the client if you hands are cold and keep your nails smooth and free from anomalies that might scratch or injure your client.

The professional Esthetician will naturally develop their own list of favorite products and equipment as they achieve better results with what they use.

But there are basics on the list of items that are standards in the industry and that we can not do without.

The most useful items are as follows:
1) Absorbent cotton

2) Antiseptic lotion

3) Astringent

4) Clean sheet or other covering

5) Cleansing cream or lotion

6) Cleansing tissues

7) Cotton pads

8) Cotton swabs and pledgets

9) Facial steamer

10) Freshing lotion – mild astringent

11) Gauze for the mask

12) Head band or head covering

13) High frequency machine

14) Infrared lamp

15) Lubricating oil

16) Magnifying lamp

17) Makeup tray

18) Mask

19) Moisturizer and protective lotion

20) Safety and bobby pins

21) Salon gown

22) Spatulas

23) Sponges

24) Tissue strips

25) Towels

Gathering and organizing elements from the list above should never become a daunting task.

To the professional Esthetician, it is a pleasure to provide high quality services to our worthy clients in order to develop the reputation that we all aspire to.

The appreciation of the client is unmeasurable when they tell all of their friends what a great experience it was to be served in such an outstanding way.

For the client, it is easy to detect disorganization and unpreparedness.

This impression leads to an end result in which the client will never return.

The client may never show signs of dissatisfaction and you still may get your anticipated tip, but she will never call and make an appointment again if she is dissatisfied. Repeat business is where you can see your diligence and consistency in the area of preparedness, organization, and sanitation pay off.

1. Prepare the client:

a) Please always greet the client with sincere tones and a least one compliment. This puts the client at ease in the warmth of your personal environment.

b) Even though the client may have been to your establishment many times, reminder her to remove all jewelry and store it in a safe place. Welcome her to keep her handbag nearby during the facial. This is a number one choice in the client's feeling of well being and security. And we know how many ladies "go nowhere" without their purses far behind.

c) And again, even though your client has been to your salon and could walk with blind folds on, still walk with her and show her to the dressing room and offer assistance if needed.

d) Place a clean towel across the back of the facial chair to prevent contact from the clients bare body parts. Not only is it unpleasant to feel cold vinyl against your bare shoulders, it has a definite impression of uncleanness and it is an unclean practice.

e) Seat the client and assist if needed, then place the towel across the clients chest. Cover the client with the sheet and fold the top edge of the towel over the sheet. Remove the client's shoes and tuck the sheet around their feet. If they have removed their shoes because your salon provides booties in the dressing room, simply tuck the sheet around their booted feet.

f) Fasten a headband lined with tissue, or a towel, or other head covering around the client's head to protect the hair. Turban designs are very popular and elasticized hair coverings are good as well. The fact that they are cloth or paper makes an acceptable alternative to towels.

Procedures for wrapping the clients head:

1. Fold the towel lengthwise from one of the top corners to the opposite lower corner, and place it over the headrest with the fold facing down. Place the towel on the headrest before the client enters the facial area. When the client is in a reclined position, the back of the head should nest on the towel, so that one side of the towel can be brought up to the center of the forehead to cover the hairline

2. With the other hand, bring the other side of the towel over the center and cross it over.

3. Use a regular bobby pin to hold the towel in place. Check to be sure that all stands of hair are tucked under the towel, earlobes are not bent , and the towel is no wrapped too tightly.

g) Remove lingerie straps from the client's shoulders. If client is given a strapless gown to wear, tuck the shoulder lingerie straps into the top of the gown.

h) Adjust the headrest, then lower the facial chair to a reclining position. Wash your hands

2.<u>Analyze the client's skin</u>.

a) Remove makeup to determine:

1. If the skin is dry, normal or oily
2. If fine lines or creases exist
3. If blackheads or acne are present
4. If broken capillaries are visible
5. If the skin texture is smooth or rough
6. If the skin's color is eventually

b) This will determine:

1.What products you will use
2.The areas of the face that need special attention
3.The amount of pressure for manipulations
4.If lubricating oil or cream is needed around the eyes
5.Equipment or apparatus to use

3. <u>Apply cleansing cream</u>

a) a tsp of cleansing cream or lotion should be used. Use your spatula to remove this from the container. Lend the cream or lotion with your fingers to soften it. Remove makeup with a moist cotton pad or soft tissue. Be gentle working around the eyes and mouth.

b) Start at the neck using both hands in a sweeping movements to spread the cleanser upward to the chin, jaws, cheeks and base of the nose to the temples, then along the side and the bridge of the nose. Use a circular motion with fingertips. Use upward sweeping movements between the brows and across the forehead to the temples

c) Take more cleanser and use long stokes to smooth down the neck chest and upper back

d) begin at the middle of the forehead and using fingertips and circular motion circle the eyes to the temples and back to the middle of the forehead

e) Then slide fingers down the nose to the upper lip to the temples and then the forehead – lightly down to the chin – then up the jawline to the temples and forehead

4. Remove the cleansing cream

a) Use tissues, warm moist towels, moist cotton pads, or facial sponges to remove the cleanser. Begin at the forehead and follow the contours of the face. After removal of the cleanser from the face then, proceed to the neck chest and back.

5. Steam the face

a) use warm moist towels or a facial steamer to open the pores. Steam opens pores to cleanse blackheads, makeup and other debris and helps to soften superficial lines and increases blood circulation

6. Apply manipulation cream

a) select for the skin type and use the same procedure as with the cleanser
b) add lubrication oil or cream around the eyes and on the neck

7. Give facial manipulations

a) Cover the clients eyes with cotton pads moistened with a mild astringent
b) Manipulate the face using proper procedures

8. Expose the face to infrared light during or after facial manipulations

a) Cover the clients eyes with cotton pads moistened with a mild astringent
b) Place the lamp at a comfortable distance from the face
c) Expose the face to infrared rays for 3 to 5 minutes

9. Remove manipulation cream

a) use tissues, moist towels, moist cleansing pads, or sponges.

10. Apply astringent or mild skin freshening lotion

a) Sponge the face with cotton pledgets moistened with the lotion

11. Apply mask formulated for the client's skin condition. Leave on 7 to 10 minutes.

12. Remove the mask with wet cotton pledgets or towels

13. Wipe the face with pledgets saturated with a mild astringent

14. Apply a moisturizer or protective lotion

15. Completion
    a) discard used disposable supplies
    b) close product containers tightly, clean them and put them away
    c) place used towels, coverlets, and head covers in appropriate containers
    d) tidy up
    e) wash and sanitize your hands

Professional Skin Care Products
Skin care products are designed specifically to improve the appearance and health of the skin. Knowledge of these products and their ingredients are key in successful esthetic service application and results.

Basic cleansers
The skin needs a less harsh choice for cleansing than regular soap. Soap can create dryness and can leave a film on skin, so the better alternatives are face washes, cleansing lotions and cleansing creams.

The face wash is a detergent based cleanser but is neutral in it's pH level. It foams like soap but is much gentler on the skin. It leaves the face with a tight feeling after rinsing but for those with **oily skin** it is often a good choice because it can get rid of oil.

The cleansing lotion is water based and is great for **normal to combination** skin.

The cleansing cream is oil based and is a first choice for makeup removal. It is also great for cleansing dry or aged skin. It must be applied and removed with sponges or clothes in order to completely remove residue.

Toners (tonic lotions)
Toners are astringents that are used after cleansing the skin and before moisturizers are applied. They can be applied with cotton pads or sprayed on . Toners vary in strengths containing different levels of alcohol.

Categories of Toners:
Fresheners have the lowest level of alcohol content, between 0% and 4% and are recommended for dry or aged skin.

Toners have a medium level of alcohol content, between 4% to 15% and are recommended for normal or combination skin. They tend to give the skin a tight feel.

Astringents have the highest alcohol content, between 15% to 35% and are recommended for very oily skin including acne conditions. It's easy to over dry the skin when using this level too often.

Masks and Packs:
For thousands of years beauty applications have included masks. They have always included ingredients such as herbs, vitamins and oils. Many have used seaweed and clay in their formulations due to the high content of nutrients. Skin conditions can be improved by using masks.

Setting masks contain ingredients that harden on the face.
Non-setting masks stay moist and do not harden.

Masks tighten skin, draw out impurities, hydrate, nourish, and soothe the skin.
As **clay masks** dry and harden, they draw out impurities. It stimulates circulation and contracts the pores of the skin. These clay formulations contain silica, kaolin, and bentonite. Commercially made **packs** remain moist and creamy and often contain aloe or seaweed which have healing properties.

Paraffin wax masks are used to promote penetration of ingredients by it's warming action. It increases blood circulation and has a softening effect on the skin.

Paraffin wax application procedure

1. melt the paraffin – set the warming unit temperature to just above body temperature
2. once melted, test the wax on your own wrist to insure a comfortable temperature has been achieved
3. Apply one coat of paraffin to the skin of the face and neck
4. Place pre-cut gauze over the first coat of wax
5. apply wax ¼ inch thick
6. cover the client's eyes with pads
7. the wax will harden after 15 to 20 minutes – use a wooden spatula to work the mask loose
8. lift the mask in one piece

Modelage masks
Modelage masks are a self-heating application. When ingredients are mixed together and applied to the client a chemical reaction occurs that self-heats up to 105°F.
It takes 20 minutes to heat and then cool down on the client's face.

Moisturizers
After cleansing the skin, we apply moisturizer in order to protect and nourish. All skin no matter what the type needs to be moisturized.
The formula of moisturizer is chosen according to the condition and type of the skin.
Moisturizers contain ingredients that help the skin retain it's moisture.

Product Ingredients
The following ingredients are found in skin care products.

- **Alcohol**: SD alcohol aka ethanol
- **Algae**: derived from minerals
- **Allantoin**: man-made chemical from uric acid – has healing qualities
- **Aloe**: from the aloe leaf – has hydrating, healing, antimicrobial and anti-inflammatory properties
- **Alum**: man-made compound – from aluminum, potassium or ammonium sulfate – stops bleeding
- **Azulene**: from the chamomile plant – anti-inflammatory properties
- **Benzyl peroxide**: drying properties
- **Calendula**: plant extract with anti-inflammatory properties
- **Carrot**: used to color and contains vitamin in it's oil
- **Chamomile**: plant extract with soothing properties
- **Collagen:** from cow placentas – a protein
- **Essential oils**: herb oils
- **Glycerine**: from oils or fats, used as a softener
- **Hyaluronic acid**: water binding properties
- **Jojoba**: lubricant, moisturizer
- **Lanolin**: sheep's wool derivative, emollient
- **Liposomes**: transporting delivery system of hollow spheres that carry nutrients to the skin

- **Mineral oil**: petroleum based, emollient
- **Parabens**: preservative
- **Silicone**: emollient that leaves a film
- **Sodium bicarbonate**: baking soda, use as a pH adjuster
- **Squalane**: derived from olives, nourishes
- **Sulfur**: reduces oil gland activity
- **Titanium dioxide**: blocks UV rays
- **Urea**: helps other substances penetrate into the skin
- **Witch Hazel**: ingredient in toner, astringent qualities, derived from bark
- **Zinc Oxide**: healing agent from zinc ore

The cosmetic industry has a large selection of professional products for the Esthetician to chose from. The professional Esthetician will make her choices from these products in order to best serve the client's needs. The combination of knowing anatomy of the skin and recognizing skin conditions are irreplaceable in choosing the products used. Results are strongly based on these factors.

This concludes our study on Skin Care. Now let's turn our attention to Health and Sanitation.

Module 2:Health and Sanitation

Outline

Universal Sanitation / Proper Cleaning and Disinfection
The Study of MRSA
OSHA Regulations

Learning objectives:

After completing this lesson you will be able to:
explain sanitation methods
describe facts about MRSA
identify OSHA standards that pertain to matters of safety, health and sanitation

Let's review the practices, principles and theories from the United States Environmental Protection Agency.

The EPA has set Universal Sanitation and Sterilization Rules.

Universal Sanitation

Proper Cleaning and Disinfection
Everything in the salon has either a hard or soft surface. Any surface coming into direct contact with a client's skin is considered contaminated.
All contaminated surfaces must be thoroughly and properly:

1) cleaned and then 2) disinfected.

To be considered properly clean, a surface must first be thoroughly scrubbed free of all visible signs of debris or residue. Proper cleaning is the total removal of all visible residue from every surface of tables, tools and equipment, followed by a complete and thorough rinsing with clean water.

Proper cleaning must be performed before continuing with the disinfection step. Proper ***disinfection*** is the destruction of potentially harmful or infection-causing microorganisms (pathogens) on a pre-cleaned surface.

Disposable (single-use) items
Items that the manufacturer designs to be disposed of after one use are called "disposable" or "single-use". These items must be properly disposed of after one use on a single client. Reusing these items is considered an unsanitary, improper and unprofessional practice.

Some examples of disposable items are: cotton balls, gauze pads, wooden implements, disposable towels, toe separators, tissues, and wooden sticks. Items damaged during the cleaning and disinfecting process are considered single-use and must be discarded after every client.

Proper Product Application
Some types of products can become contaminated if improperly used. Some examples are: creams, lotions, scrubs, paraffin wax, masks, and oils. These products must always be used in a sanitary manner that prevents contamination. For example, paraffin and nail oils should not be applied with a brush (or spatula) that has touched the skin. These practices may introduce bacteria into the product and cause contamination that can render products unsafe for use.

To avoid product contamination always:
(a) Dispose of used or remaining product between clients.
(b) Use single-use disposable implements to remove products from containers for application or remove product with a clean and disinfected spatula and put product to be used into a disposable or disinfect-able service cup.
(c) Use an applicator bottle or dropper to apply the product.

Proper Disinfection of Multi-use Tools and Equipment
Some items are designed to be used more than once and are considered to be "multi-use". Multi-use items are sometimes referred to as "disinfect-able", which means that the implement can be properly cleaned and disinfected while retaining its usefulness and quality. Multi-use items are designed for use on more than one client, but require proper cleaning and disinfection between each use. Examples of multi-use items include cloth towels, and manicure bowls. Hard and non-absorbent items constructed of hard materials that do not absorb liquid, like metal, glass, fiberglass or plastic should be cleaned and disinfected as described below.

Individual Client Packs
Tools/instruments kept in individual packs must be properly cleaned and disinfected after each use. State rules require all tools and equipment to be disinfected before being reused, even if used by the same client! Improperly cleaned and disinfected implements may grow infection/disease-causing organisms before the client returns for their next visit, thereby increasing the risk of infection. Never use air-tight bags or containers for storage as these can promote bacterial growth.

Methods of Proper Cleaning
Proper cleaning requires liquid soap/detergent, water and the use of a clean and disinfected scrub brush to *remove all visible* debris and residue. All items should be scrubbed with a clean and disinfected scrub brush under running water. Cleaning is not disinfection; disinfection is an entirely separate step.

Different items are cleaned in different ways. This often depends on what the item is made of and how it was used.
NOTE: the cleaning step must be properly performed before an item can be disinfected. All items must be thoroughly rinsed and dried with clean cloth or paper towels prior to putting them into a disinfectant.

Methods of Proper Disinfecting
After proper cleaning, all reusable implements and tools must be disinfected by complete immersion in an appropriate disinfecting solution.
The item must be completely immersed so that all surfaces, including handles, are soaked for the time required on the disinfectant manufacturer's label. In general, U.S. Environmental Protection Agency (EPA) registered disinfectants require 10 minute immersion.
Remove items after the required time, using clean and disinfected tongs or gloves to avoid skin contact with the disinfectant solution. If required by the instruction label, rinse thoroughly in running water.
Allow items to air dry completely by placing them on top of a clean towel and covering them with another clean towel.

Methods for Proper Storage
All properly cleaned, disinfected and dried implements must be stored in a sanitary manner.

Appropriate Disinfectants
How do you know if a disinfectant product is suitable for professional salon use? Standards and requirements vary from country to country, but in the United States, the EPA registered Hospital disinfectants with bactericidal, fungicidal and virucidal claims on the label are best for use in salons.
Disinfectant products are designed to destroy disease-causing microorganisms (pathogens) on non-living surfaces, such as those described in this document. They are not appropriate for use on living skin and contact with skin should be avoided.

Appropriate salon disinfectants include the following:
(a) EPA-registered Hospital disinfectants with bactericidal, fungicidal and virucidal claims on the label.
(b) 10% bleach solution (1 part bleach to 9 parts water)

Contact with Blood, Body Fluid or Unhealthy Conditions
If blood or body fluid comes in contact with any salon surface, the nail professional should put on a pair of clean protective, disposable gloves and use an EPA-registered Hospital liquid disinfectant or a 10% bleach solution to clean up all visible blood or body fluid.

Disposable items, must be immediately double-bagged and discarded after use, as described at the end of this section. Any non-porous instrument or implement that comes in contact with an unhealthy condition of the nail or skin, blood or body fluid, must be immediately and properly cleaned, then disinfected using an EPA-registered Hospital disinfectant as directed or a 10% bleach solution.
Any porous/absorbent instrument that comes in contact with an unhealthy condition of the nail or skin, blood or body fluid must be immediately double-bagged and discarded in a closed trash container or bio-hazard box.
Some EPA disinfectants are registered for hospital use, but may not say "Hospital" on their label. In these cases, the product label MUST claim effectiveness against Salmonella choleraesuis, Staphylococcus aureus, and Pseudomonas aeruginosa.

Additional Information about Disinfectants and Cleaners
1) Disinfectants must be mixed, used, stored and disposed of according to manufacturer's label instructions (proper mixing ratio is of the utmost importance to be an effective disinfectant). Some are ready to use and do not require mixing.

2) U.S. Federal Law prohibits the use of EPA-registered disinfectants in a manner that is contrary to its label.

3) Disinfectants must be prepared fresh every day (including spray bottles). Further, they must be replaced immediately if the solution becomes visibly contaminated. Disinfectant solutions will lose their strength upon standing and become ineffective within 24 hours. Use a logbook to record when fresh disinfectant is made.

4) Disinfectants are ineffective if implement/tools are not properly cleaned prior to use.

5) Just spraying disinfectants on tools and equipment is inadequate.

6) Disinfectants can damage or rust some metal tools if improperly used.
7) All disinfectant containers must be properly labeled. Disinfectant solutions prepared in the salon must list on the container: the contents and percentage solution (concentration), and use a logbook to record the date and time of mixing. Check the label for the product's expiration date.

8) All brushes used for cleaning purposes must be properly cleaned and disinfected between each use.

9) Ultra-violet light cabinets are not suitable replacements for liquid disinfectant solutions.

10) Read all warning labels and precisely follow manufacturer's instructions.

These guidelines are believed to be highly effective and are designed to help avoid unforeseen pitfalls, problems and complications. These guidelines are not a replacement for local government standards, rules or regulations. Always consult federal, state and local laws and regulations, which may vary somewhat from these recommendations. Disinfectants used should indicate on the label that they're approved for hospital use. A disinfectant label should clearly show its uses and that it is EPA-approved.

Disinfectants and Antiseptics

Antiseptic is defined as**:** a substance that inhibits the growth and reproduction of disease-causing microorganisms. For practical purposes, antiseptics are routinely thought of as topical agents, for application to skin and mucous membranes.
Their uses include cleansing of skin and wound surfaces after injury, preparation of skin surfaces prior to injections or surgical procedures, and routine disinfection of the oral cavity as part of a program oral hygiene.

Disinfectant: Any chemical agent used chiefly on inanimate objects to destroy or inhibit the growth of harmful organisms.

Hand Washing

Hand washing, when done correctly, is the single most effective way to prevent the spread of communicable diseases. Good hand washing technique is easy to learn and can significantly reduce the spread of infectious diseases among both children and adults.

What types of disease can good hand washing prevent?

- Diseases spread through fecal-oral transmission. Infections which may be transmitted through this route include salmonellosis, shigellosis, hepatitis A, giardiasis, enterovirus, amebiasis, and campylobacteriosis. Because these diseases are spread through the ingestion of even the tiniest particles of fecal material, hand washing after using the toilet cannot be over-emphasized.
- Diseases spread through indirect contact with respiratory secretions. Microorganisms which may be transmitted through this route include influenza, Streptococcus, respiratory syncytial virus (RSV) and the common cold. Because these diseases may be spread indirectly by hands contaminated by respiratory discharges of infected people, illness may be avoided by washing hands after coughing or sneezing and after shaking hands with an individual who has been coughing and sneezing.
- Diseases may also be spread when hands are contaminated with urine, saliva or other moist body substances. Microorganisms which may be transmitted by one or more of these body substances include cytomegalovirus, typhoid, staphylococcal organisms, and Epstein-barr virus. These germs may be transmitted from person to person or indirectly by contamination of food or inanimate objects such as toys.

What is good hand washing technique?
By rubbing your hands vigorously with soapy water, you pull the dirt and the oily soils free from your skin. The soap lather suspends both the dirt and germs trapped inside and are then quickly washed away.

Follow these four steps to keeping hands clean:

- Wet your hands with warm running water.
- Add soap, then rub your hands together, making a soapy lather. Do this away from the running water for at least 15 seconds, being careful not to wash the lather away. Wash the front and back of your hands, as well as between your fingers and under your nails.
- Rinse your hands well under warm running water. Let the water run back into the sink, not down to your elbows.
- Dry hands thoroughly with a clean towel. Then turn off the water with a clean paper towel and dispose in a proper receptacle.

May I use the over-the-counter alcohol gels for washing my hands instead of using soap and water?
These products, which can be found wherever soap is sold, are very effective at killing germs on the hands as long as your hands are not visibly dirty. They should be used when soap and water are not readily available.
To use correctly, apply about a teaspoonful of the alcohol gel on the palm of one hand. Then rub all over both hands, making sure you rub the front, back, and fingernail areas of both hands. Let the alcohol dry, which should take about 30 seconds.If your hands look dirty but you have no other way to wash your hands, use the gel but wash with soap and water as soon as you can.

Transmission of Pathogens on Hands
Transmission of pathogens from one person to another happens when:

- Organisms present on the patron's skin transfers to the hands of the Salon Professional
- Hand washing or hand antisepsis by the Salon Professional are inadequate or omitted entirely, or the agent used for hand hygiene is inappropriate.
- The contaminated hands of the Salon Professional comes in direct contact with another person, or with an inanimate object that will come into direct contact with a person

Pathogens can be transported from one person to another. The number of organisms present on the skin varies.Persons with diabetes, patients undergoing dialysis for chronic renal failure, and those with chronic dermatitis are more likely to have colonized organisms. We shed microorganisms daily from normal skin onto nightgowns, bed linen, bedside furniture, and other objects in our environment.

Scientific Study of Hand Washing
Investigators use different methods to study hand washing, antiseptic hand wash, and hand antisepsis protocols.

Differences among the various studies include:

- whether hands are purposely contaminated with bacteria before use of test agents,
- the method used to contaminate fingers or hands,
- the volume of hand-hygiene product applied to the hands,
- the time the product is in contact with the skin,
- the method used to recover bacteria from the skin after the test solution has been used, and
- the method of expressing the effectiveness of the product

Despite these differences, the majority of studies can be placed into one of two major categories:

1. studies focusing on products to remove transient flora and
2. studies involving products that are used to remove resident flora from the hands

The majority of studies of products for removing transient flora from the hands involve artificial contamination of the volunteer's skin with a defined test organism before the volunteer uses a plain soap, an antimicrobial soap, or a waterless antiseptic agent.
In the United States, antiseptic hand wash products are regulated by FDA's Division of Over-the-Counter Drug Products (OTC). Products are evaluated by using a standardized method. Tests are performed in accordance with use directions for the test material.

Plain (Non-Antimicrobial) Soap

Soaps are detergent-based products that contain esterified fatty acids and sodium or potassium hydroxide. Their cleaning activity can be attributed to their detergent properties, which result in removal of dirt, soil, and various organic substances from the hands. Plain soaps have minimal, if any, antimicrobial activity. However, hand washing with plain soap can remove loosely adherent transient flora.

Alcohol-based Hand Cleansers
The majority of alcohol-based hand antiseptics contain either isopropanol, ethanol, n-propanol, or a combination of two of these products.
The majority of studies of alcohols have evaluated individual alcohols in varying concentrations.
Alcohols, when used in concentrations present in alcohol-based hand rubs, also have activity against several viruses.

For example, 70% isopropanol and 70% ethanol are more effective than medicated soap or nonmedicated soap in reducing viruses on fingers. Products containing 60% ethanol were also found to reduce the presence of viruses.
Other viruses such as hepatitis A and the polio virus may require 70%--80% alcohol to be reliably inactivated. However, both 70% ethanol and a 62% ethanol foam product with emollients reduced hepatitis A virus on whole hands or fingertips more than nonmedicated soap.
However, depending on the alcohol concentration, the amount of time that hands are exposed to the alcohol, and viral variant, alcohol may not be effective against hepatitis A and other viruses. Alcohol can prevent the transfer some pathogens.
Alcohol-based products are more effective for standard hand washing than soap or antimicrobial soaps.

The effectiveness of alcohol-based hand-hygiene products is affected by several factors, including:

- the type of alcohol used
- concentration of alcohol
- contact time
- volume of alcohol used and
- whether the hands are wet when the alcohol is applied

Frequent use of alcohol-based formulations for hand antisepsis can cause drying of the skin unless emollients, humectants, or other skin-conditioning agents are added to the formulations. The drying effect of alcohol can be reduced or eliminated by adding 1%--3% glycerol or other skin-conditioning agents.
Moreover, in several recent prospective trials, alcohol-based rinses or gels containing emollients caused substantially less skin irritation and dryness than the soaps or antimicrobial detergents tested. These studies, which were conducted in clinical settings, used various subjective and objective methods for assessing skin irritation and dryness. Further studies are warranted to establish whether products with different formulations yield similar results.
Alcohols are flammable. As a result, alcohol-based hand rubs should be stored away from high temperatures or flames in accordance with National Fire Protection Agency recommendations.

Irritant Contact Dermatitis Resulting from Hand-Hygiene Measures

Frequency of Irritant Contact Dermatitis

Frequent and repeated use of hand-hygiene products, particularly soaps and other detergents, is a primary cause of chronic irritant contact dermatitis.
This is of great concern to all Salon Professionals.

The potential of detergents to cause skin irritation can vary considerably. Irritation associated with antimicrobial soaps may be caused by the antimicrobial agent or by other ingredients of the formulation. Affected persons often complain of a feeling of dryness or burning; skin that feels rough or even scaling.
Detergents can damage the skin. Irritant contact dermatitis is more commonly reported with iodophors. Other antiseptic agents that can cause irritant contact dermatitis (in order of decreasing frequency) include chlorhexidine, triclosan, and alcohol-based products. Skin that is damaged by repeated exposure to detergents may be more susceptible to irritation by alcohol-based preparations.

Allergic Contact Dermatitis Associated with Hand-Hygiene Products
Allergic reactions to products applied to the skin may present as delayed type reactions or less commonly as immediate reactions. The most common causes of contact allergies are fragrances and preservatives; emulsifiers are less common causes. Liquid soaps, hand lotions or creams, and may contain ingredients that cause contact allergies.
Allergic contact dermatitis associated with alcohol-based hand rubs is uncommon. Allergic reactions to alcohol-based products may represent true allergy to alcohol, allergy to an impurity or aldehyde metabolite, or allergy to another constituent of the product.

Proposed Methods for Reducing Adverse Effects of Agents
Potential strategies for minimizing hand-hygiene--related irritant contact dermatitis include reducing the frequency of exposure to irritating agents (particularly detergents), replacing products with high irritation potential with preparations that cause less damage to the skin, and increasing education on hand care.
Hand lotions and creams often contain humectants and various fats and oils that can increase skin hydration and replace altered or depleted skin lipids that contribute to the barrier function of normal skin.

MRSA
Methicillin-Resistant Staphylococcus Aureus

In health news reports, awareness of one particular type of invasive staph infection has come to the forefront. It is called MRSA . It is also known as “the flesh eating disease”. The results of having this disease is often bodily disfigurement. Bodily damage occurs in varying degrees of severity.

An outbreak of “USA300 strain” MRSA: methicillin-resistant Staphylococcus aureus occurred in a Cosmetologist and 2 of her customers. Eight other persons, who were either infected or colonized, were linked to this outbreak, including a family member, a household contact, and partners of customers.

The CA-MRSA USA300 strain is known to cause outbreaks among population groups, such as:

- native Americans,
- prison inmates,
- military personnel,
- men who have sex with men, and
- competitive sports participants,
- and accounts for 97% of MRSA isolates obtained in emergency departments across the United States from patients with soft tissue infections.

CA-MRSA is associated with invasive infections. The USA300 strain, which is also found in Europe was first isolated in the Netherlands in 2002.
Overall prevalence of MRSA in the Netherlands is low (2%).
In 2006, 3.8% of all MRSA isolates sent to the National Institute for Public Health were identified as the USA300 strain.
We report an outbreak of the USA300 strain related to a Beauty Salon in the Netherlands, in a:

- Cosmetologist
- A family member
- A household contact and
- Customers and their partners.

The Study of MRSA
In September 2005, a medical microbiologist from the regional medical microbiology laboratory reported to the municipal health department a recurring MRSA infection in a Cosmetologist. From December 2004 onwards, the woman had recurrent infections on the:

- legs,
- buttocks, and
- groin

resulting in treatment to include incision and drainage of lesions. When an abscess developed in the genital area in July 2005, MRSA was cultured from a wound swab.

In December 2005, the Cosmetologist was declared MRSA-free after antimicrobial treatment.
Swabs were taken 3 times in 1-week intervals from:

- nose,
- throat,
- perineum, and
- wound

and used for enrichment culture of MRSA.

In March 2006, the woman was tested again for MRSA colonization; test results showed that she had been reinfected or that therapy had failed. The Cosmetologist had eczema. Because of the "hands on" nature of her work, she was advised to temporarily stop providing services to customers.

The municipal health department conducted a risk assessment of the woman's household contacts and the Beauty Salon. The Netherlands does not require that MRSA infections be reported. Therefore, the municipal health department depends upon the consent and full cooperation of index patients and contacts for further investigation of outbreaks.

Consequently, in this instance, household contacts for screening were identified but had not presented themselves for screening. Contacts who had complaints sought treatment at the emergency department, where the observant infection control practitioner and microbiologists related them to the MRSA outbreak.

Nurses obtained specimens by swabbing each patient's nose, throat, and wounds. A case was defined as a patient who had a culture-confirmed MRSA infection during the outbreak period July 2005–December 2006 and a direct epidemiologic link to the index patient.

In April 2006, a salon customer was hospitalized with an abscess of the breast caused by MRSA; in July 2006, another customer who had had boils since February 2006 was found to be MRSA positive. Both customers had been given wax treatments by the Cosmetologist during the period in which she had an infected hair follicle in her armpit.

Swabs taken from this site showed that the beautician was infected with the same MRSA strain as before. Concern arose about the risk for infection to customers through:

- instruments,
- materials (wax), or
- contact with other employees.

The index patient and the other 6 employees of the salon regularly provided services to each another.
A nurse and a member of the municipal health department visited the salon in June 2006 to check on hygiene protocols and to advise on preventive measures to reduce risk for further transmission. All working procedures and protocols were investigated, and the salon was advised to clean and disinfect instruments and procedure rooms. More specifically, the health department observed a total waxing procedure performed by the staff.
Ten swabs were taken from:

- used wax,
- wax implements, and
- the treatment room.

All 6 employees were screened and informed about MRSA and the current situation. Arrangements were also made to test 22 regular customers who had received wax treatments by the index patient in the previous 2 months.

In the following weeks, these customers were screened at the municipal health office and informed about MRSA.
Of the 22 regular customers, 21 completed a questionnaire and 19 were actually screened for MRSA by culturing samples from nose and throats.

All employees and the 19 selected regular customers were negative for MRSA colonization. All environmental swabs were also negative for MRSA. It was noted that the 70% alcohol used to disinfect the skin after waxing was diluted with water because customers had complained about the stinging effect of the alcohol on treated skin. Furthermore, it became apparent that after performing waxing treatments the Cosmetologist would touch the waxed skin of customers with ungloved hands to check for remaining hairs. She did not wash her hands after removing the gloves.

During the outbreak investigation, more background information became available from those who were MRSA colonized or infected and who could be indirectly linked to the beautician or her customers. During the week that the first infected customer was identified (in April 2006), another customer was hospitalized with an abscess in the groin. Unfortunately, no culture was taken from this patient. The partner of the second infected customer was also infected with MRSA that was related to an abscess on his leg. By the end of 2006, a MRSA-positive couple was identified as a contact of the second infected customer. In August 2006 another couple was reported to be MRSA positive; both had abscesses on the thighs. Because no further epidemiologic data could be obtained, whether the couple's infection was linked to the beauty salon is not clear.

A total of 45 persons who had been in direct or indirect contact with the beautician were screened for MRSA:

- 3 family members
- 3 roommates
- 11 other persons (including secondary contacts)
- 6 beauty salon employees and
- 22 customers (including regular customers)

Fifteen persons had skin infections and 10 of them were colonized with MRSA

- Cosmetologist
- family member
- roommate
- ex-partner of the roommate
- customers and
- partners of customers

Although skin infections never developed in the Cosmetologist's family members, tests did show MRSA colonization in one of them. The beautician's boyfriend, a native of the United States, had already lived for 2 years in the Netherlands.

Although he had skin lesions, no MRSA was found. The girlfriend of a sport mate who regularly exercised with the partner of a customer was colonized with MRSA at the end of 2006. She had immigrated recently from the United States to the Netherlands, but her first screening test results were negative. The mean age of the patients was 29 years (range 21–40 years).

Eleven people were found to be MRSA positive.

Of these 11:

3 persons with a direct link to the beauty salon (the Cosmetologist and 2 customers)
6 with an indirect link (family member, roommate, ex-partner of roommate, partner of a customer, sport mate of partner of a customer and his partner), and
a couple from whom no epidemiological data could be obtained were infected with the same MRSA strain as the Cosmetologist.

All MRSA isolates were identical and identified as the well-known CA-MRSA USA300 strain. All MRSA isolates had identical susceptibility patterns: resistant to oxacillin (and thus to all β-lactam antimicrobial drugs) and erythromycin, and susceptible to rifampicin, ciprofloxacin, gentamicin, clindamycin, vancomycin, teicoplanin, tetracycline, cotrimoxazole, mupirocin, and fusidic acid.

Conclusions

Outbreaks of CA-MRSA strains have been reported with increased frequency. Several reports involved outbreaks among:

competitive sports participants
military personnel
men who have sex with men
prisoners
native Americans
and drug users

Skin treatments in a beauty salon likely led to MRSA transmission as a result of contact with an infected Cosmetologist.
Unless outbreaks occur in a defined group, MRSA remains undetected in the general population because reporting is not mandatory. Although the prevalence of MRSA in the Netherlands is low, local microbiologic laboratories should report outbreaks, when detected, to the local municipal health department for further investigation. More research is necessary to better understand the risk factors involved in these outbreaks.

To fully comply with safety, health and sanitation standards in the salon, we must also observe federal regulations set by the the United States Department of Labor's Occupational Safety and Health Administration regarding the use, handling and storage of chemicals.

OSHA

How Must Chemicals Be Labeled?

Chemical manufacturers and importers must communicate hazard information to employers by properly labeling containers and material safety data sheets (MSDS).

Chemical manufacturers, importers, and distributors must mark containers of hazardous chemicals with labels, tags, or marked with the identity of the chemical, appropriate hazard warnings, and the name and address of the manufacturer or other responsible party.

Each container must be labeled, tagged, or marked with the identity of hazardous chemicals contained therein, and must show hazard warnings appropriate for employee protection.

The hazard warning can be any type of message, words, pictures, or symbols that provide at least general information regarding the hazards of the chemical(s) in the container and the targeted organs affected, if applicable.
Labels must be legible, in English (plus other languages, if desired), and prominently displayed.

What Are Material Safety Data Sheets, And Why Are They Needed?

The MSDS is a detailed information bulletin prepared by the manufacturer or importer of a chemical that describes

- the physical and chemical properties
- physical and health hazards
- routes of exposure
- precautions for safe handling and use
- emergency and first-aid procedures and control measures

Chemical manufacturers and importers must develop an MSDS for each hazardous chemical they produce or import, and must provide the MSDS automatically at the time of the initial shipment of a hazardous chemical to a downstream distributor or user.

Distributors also must ensure that downstream employers are similarly provided an MSDS. Each MSDS must be in English and include information regarding the specific chemical identity of the hazardous chemical(s) involved and the common names.

In addition, information must be provided on the

physical and chemical characteristics of the hazardous chemical
known acute and chronic health effects and related health information
exposure limits whether the chemical is considered to be a carcinogen
precautionary measures
emergency and first-aid procedures
and the identification (name, address, and telephone number) of the organization responsible for preparing the sheet.

Copies of the MSDS for hazardous chemicals in a given work site are to be readily accessible to employees in that area. As a source of detailed information on hazards, they must be readily available to workers during each work shift. MSDS have no prescribed format.

Any Material Safety Data Sheet Preparation format may be used.
The non-mandatory MSDS form (OSHA 174) also may be used as a guide and a copy can be obtained from OSHA field offices.

Employers must prepare a list of all hazardous chemicals in the workplace. When the list is complete, it should be checked against the collected MSDS that the employer has been sent.
If there are hazardous chemicals used for which no MSDS has been received, the employer must contact the supplier, manufacturer, or importer to obtain the missing MSDS. A record of the contact must be maintained.

What are temporary agency employers required to do to meet HAZCOM requirements?
In meeting the requirements of OSHA's Hazard Communication Standard, the temporary agency employer would, for example, be expected to provide generic hazard training and information concerning categories of chemicals employees may potentially encounter. Host employers would then be responsible for providing site-specific hazard training.

Can MSDS be stored on a computer to meet the accessibility requirements of HAZCOM?
If the employee's work area includes the area where the MSDS can be obtained, then **maintaining MSDS on a computer would be in compliance.** If the MSDS can be accessed only out of the employee's work area, then the employer would be out of compliance.

What are the container labeling requirements under HAZCOM?
Under HCS, the manufacturer, importer, or **distributor is required to labe**l each container of hazardous chemicals. If the hazardous chemicals are transferred into unmarked containers, these containers must be labeled with the required information, unless the container into which the chemical is transferred is intended for the immediate use of the employee who performed the transfer.

When is the chemical manufacturer required to distribute MSDS?
Hazard information must be transmitted on **Material Safety Data Sheets (MSDS)** that must be distributed to the customer at the time of first shipment of the product. **The Hazard Communication Standard** also requires that MSDS be updated by the chemical manufacturer or importer within three months of learning of "new or significant information" regarding the chemical's hazard potential.

What is considered proper training under the HAZCOM standard?
Employees are to be trained at the time they are assigned to work with a hazardous chemical. The intent of this provision is to have information prior to exposure to prevent the occurrence of adverse health effects. This purpose cannot be met if training is delayed until a later date.

The training provisions of the **HCS** are not satisfied solely by giving employee the data sheets to read. An employer's training program is to be a forum for explaining to employees not only the hazards of the chemicals in their work area, but also how to use the information generated in the hazard communication program.

This can be accomplished in many ways (audiovisuals, classroom instruction, interactive video), and should include an opportunity for employees to ask questions to ensure that they understand the information presented to them.

Training need not be conducted on each specific chemical found in the workplace, but may be conducted by categories of hazard (i/e: carcinogens, sensitizers, acutely toxic agents) that may be encountered by an employee during the course of his duties.

Furthermore, the training must be comprehensible. If the employees receive job instructions in a language other than English, then the training and information to be conveyed under the HCS will also need to be conducted in a foreign language.

Do you need to keep MSDS for commercial products such as Windex and White-Out?
OSHA does not require that MSDS be provided to purchasers of household consumer products when the products are used in the workplace in the same manner that a consumer would use them: when the duration and frequency of use (and therefore exposure) is not greater than what the typical consumer would experience.

This exemption in OSHA regulation is based, however, not upon the chemical manufacturer's intended use of his product, but upon how it actually is used in the workplace.
Employees who are required to work with hazardous chemicals in a manner that results in a duration and frequency of exposure greater than what a normal consumer would experience have a right to know about the properties of those hazardous chemicals.

Is a material safety data sheet (MSDS) required for a non-hazardous chemical?
MSDS that represent non-hazardous chemicals are not covered by the HCS.
OSHA does not require nor encourage employers to maintain MSDS for non-hazardous chemicals. Consequently, an employer is free to discard MSDS for non-hazardous chemicals.

On December 6, 1991, the Occupational Safety and Health Administration (OSHA) promulgated the **Occupational Exposure to Blood Borne Pathogens Standard.**
This standard is designed to protect approximately 5.6 million workers in the health care and related occupations from the risk of exposure to blood borne pathogens, such as the Human Immunodeficiency Virus (HIV) and the Hepatitis B Virus (HBV).

What Is Hazard Communication, And Why Is a Standard Necessary?
Under the provisions of the Hazard Communication Standard, employers are responsible for informing employees of the hazards and the identities of workplace chemicals to which they are exposed.
About 32 million workers work with and are potentially exposed to one or more chemical hazards. There are an estimated 650,000 existing chemical products, and hundreds of new ones being introduced annually. This poses a serious problem for exposed workers and their employers.

Chemical exposure may cause or contribute to many serious health effects such as heart ailments, central nervous system, kidney and lung damage, sterility, cancer, burns, and rashes. Some chemicals may also be safety hazards and have the potential to cause fires and explosions and other serious accidents.
Because of the seriousness of these safety and health problems, and because many employers and employees know little or nothing about them, the Occupational Safety and Health Administration issued the Hazard Communication Standard.

The basic goal of the standard is to be sure employers and employees know about work hazards and how to protect themselves; this should help to reduce the incidence of chemical source illness and injuries.

The Hazard Communication Standard establishes uniform requirements to make sure that the hazards of all chemicals imported into, produced, or used in U.S. workplaces are evaluated, and that this hazard information is transmitted to affected employers and exposed employees.
Employers and employees covered by an OSHA-approved state safety and health plan should check with their state agency, which may be enforcing standards and other procedures at least as effective as, but not always identical to, federal requirements.

Why Is a Written Hazard Communication Program Necessary?
A written hazard communication program ensures that all employers receive the information they need to inform and train their employees properly and to design and put in place employee protection programs. It also provides necessary hazard information to employees, so they can participate in, and support, the protective measures in place at their workplaces.
Employers therefore must develop, implement, and maintain at the workplace a written, comprehensive hazard communication program that includes provisions for **container labeling, collection and availability of material safety data sheets, and an employee training program.**

If the workplace has multiple employers on site (for example, a construction site), the rule requires these employers to ensure that information regarding hazards and protective measures be made available to the other employers on site, where appropriate.

In addition, all covered employers must have a written hazard communication program to get hazard information to their employees through labels on containers, MSDS, and training.

The written program does not have to be lengthy or complicated, and some employers may be able to rely on existing hazard communication programs to comply with the above requirements.

The written program must be available to employees, their designated representatives, the Assistant Secretary of Labor for Occupational Safety and Health, and the Director of the National Institute for Occupational Safety and Health.

Material Safety Data Sheets / Identifying Document Content

SECTION I: MANUFACTURER'S NAME AND CONTACT INFORMATION SECTION
Manufacturer's name and address Emergency phone number

II: HAZARDOUS INGREDIENTS/IDENTITY INFORMATION SECTION
Lists hazardous components and safe exposure limits

III: PHYSICAL/CHEMICAL CHARACTERISTICS SECTION
Physical state (gas, liquid, or solid), boiling point, freezing point, vapor pressure, specific gravity

IV: FIRE AND EXPLOSION HAZARD DATA SECTION
Flash point, extinguishing media, special fire fighting procedures, unusual fire and explosion hazards, if any

V: REACTIVITY DATA SECTION
Stability, incompatibility, hazardous decomposition or by-products, if any

VI: HEALTH HAZARD DATA SECTION
Routes of entry/exposure Health hazards Carcinogenicity Signs and symptoms of exposure Medical conditions generally aggravated by exposure

VII: PRECAUTIONS FOR SAFE HANDLING AND USE SECTION
Emergency and First Aid procedures Steps to be taken in case material is released or spilled Waste disposal methodsPrecautions to be taken in handling and storing

VIII: CONTROL MEASURES
Respiratory protection Ventilation requirements Personal Protective Equipment

The following is a sample of an MSDS.

SAMPLE MSDS

XYZ Company		**Material Safety Data Sheet**
I. Product Claudia's Quick Clean and Shine		
Description Orange liquid, a phenolic odor		
Other Designations	**Distributor**	**Emergency Telephone Nos**
Non-Porous Surface Sanitizer	XYZ Company 123 Drive City, State, Zip	For Medical Emergencies call (000) 111-2222 Transportation Emergencies call (000) 222-1111

II. Health Hazard Data	**III. Hazardous Ingredients**
Corrosive... First Aid For: Eye Contact... Skin Contact... Inhalation... Ingestion... HMIS Hazard Scale...	Ingredient Concentration Worker Exposure Limit …... ….... …..... …... ….... ….....
IV. Special Protection and Precautions	**V. Transportation and Regulatory Data**
Hygienic practices Personal Protection Equipment	Not restricted
VI. Spill Procedures / Waist Disposal	**VII. Reactivity Data**
Spill Procedures Waist Disposal	Stable under normal use
VIII. Fire and Explosion Data	**IX. Physical Data**
Not flammable or explosive	Boiling point Soluble in water

The following is a copy of an OSHA News Release posted by the Administration.

OSHA News Release
When new information regarding a hazardous chemical is discovered, OSHA releases the information to the public.

HAZARD ALERT April 11th, 2011

Hair Smoothing Products That Could Release Formaldehyde
The Occupational Safety and Health Administration (OSHA) and several State OSHA programs are investigating questions and complaints from hair salon owners and workers about possible formaldehyde exposure from using Brazilian Blowout and other hair smoothing products. Some of these products have been labeled as "formaldehyde-free."Oregon's Occupational Safety and Health Administration, California's Occupational Safety and Health Administration, the Connecticut's Dept of Public Health and several other state agencies have already issued warnings about these products to salon owners, stylists, other salon workers, and clients. This Hazard Alert provides information about OSHA's investigations, the health hazards of formaldehyde, and how to protect workers using hair smoothing products that contain or release formaldehyde.

Recent reports from Oregon OSHA, California OSHA, and now Federal OSHA should alert salon owners and stylists to look closely at the hair smoothing products they are using to see if they contain methylene glycol, formalin, methylene oxide, paraform, formic aldehyde, methanal, oxomethane, oxymethylene, or CAS Number 50-00-0. All of these are names for or treated as formaldehyde under OSHA's Formaldehyde standard. Products containing them can expose workers to formaldehyde; employers who manufacture, import, distribute, or use the products must follow OSHA's formaldehyde standard.

What have OSHA's investigations found?
Federal OSHA and State OSHA programs are investigating complaints from stylists and hair salon owners about exposure to formaldehyde while using GIB LLC dba (doing business as) Brazilian Blowout products and other hair smoothing products. OSHA has found formaldehyde in the air when stylists use hair smoothing products. Some had "formaldehyde-free" on the label or did not list formaldehyde on the product label or in the Material Safety Data Sheet (MSDS).

During one investigation, Federal OSHA's air tests showed formaldehyde at levels greater than OSHA's limits in a salon using Brazilian Blowout Acai Professional Smoothing Solution, even though the product was labeled "formaldehyde-free." In most cases, OSHA found that hair salon owners did not know that a hair smoothing product contained or could expose workers to formaldehyde because manufacturers, importers, and distributors did not include the correct warnings on product information.

California OSHA recently found violations at one importer and distributor, GIB LLC dba Brazilian Blowout, that failed to list formaldehyde as a hazardous ingredient on the MSDS provided to downstream users (e.g., salon owners, stylists) for two products: Brazilian Blowout Acai Professional Smoothing Solution and Brazilian Blowout Professional Brazilian Blowout Solution. The MSDS also did not list the health effects from formaldehyde exposure. The MSDS is required to provide users information about the chemicals in a product, the hazards to workers, and how to use a product safely.

The first reports about formaldehyde in hair smoothing products surfaced when Oregon OSHA investigated a complaint from a hair stylist who had nosebleeds, eye irritation, and trouble breathing while using a Brazilian Blowout product labeled "formaldehyde-free." After testing the product, Oregon OSHA found that the product contained formaldehyde, a chemical that can cause the health problems reported by the stylist. Oregon OSHA tested more than 100 samples of keratin-based hair smoothing products and found formaldehyde levels in some products well above what could legally be labeled as "formaldehyde-free." In addition to the Brazilian Blowout products, Oregon OSHA found that other manufacturers, importers, and distributors of hair smoothing products also had not listed formaldehyde or included hazard information on the label or in the MSDS. Based on these findings, Oregon OSHA published a Hazard Alert and a full report in October 2010. Oregon OSHA also alerted Federal OSHA and State OSHA programs where the products were manufactured, imported, or distributed because the hazard information for the product was not correct and did not meet the requirements of OSHA's Hazard Communication standard or State equivalent).

OSHA continues to work with other agencies (e.g., Food and Drug Administration, National Institute for Occupational Safety and Health) to look at formaldehyde exposures in other salons and to make sure that workers and the public have correct information about these products.

What is formaldehyde and how can it affect my health?
Formaldehyde is a colorless, strong-smelling gas that presents a health hazard if workers are exposed.

You can be exposed to formaldehyde if you breathe it into your lungs, if it gets into your eyes, or if it is contained in a product that gets onto your skin. You can also be exposed accidentally if you touch your face, eat food, or drink after using a product containing formaldehyde without first washing your hands. It can irritate the eyes and nose, and cause coughing and wheezing. Formaldehyde is a "sensitizer," which means that it can cause allergic reactions of the skin, eyes, and lungs such as asthma-like breathing problems and skin rashes and itching. When formaldehyde is in a product that gets sprayed into the eyes, it can damage the eyes and cause blindness. It is also a cancer hazard that is linked to nose and lung cancer.

Formaldehyde is a health hazard, whether in a product or in the air. OSHA's Formaldehyde standard covers employers who use formaldehyde, and products that contain or release formaldehyde. (OSHA has also published a formaldehyde fact sheet

Why do some hair smoothing products expose me to formaldehyde?
Many keratin-based hair smoothing products contain formaldehyde dissolved (and chemically reacted) in water and other ingredients in the product. Because of the way the formaldehyde reacts in these products, some manufacturers, importers, or distributors might list other names for formaldehyde on product information or might claim that the product is "formaldehyde-free." Formaldehyde might be listed as methylene glycol, formalin, methylene oxide, paraform, formic aldehyde, methanal, oxomethane, oxymethylene, or CAS Number 50-00-0. All of these are names for formaldehyde under OSHA's Formaldehyde standard. The bottom line is that formaldehyde can be released from hair smoothing products that list any of these names on the label and workers can breathe it in or absorb it through their skin. Workers can be exposed to formaldehyde during the entire hair straightening process, especially when heat is applied (e.g. blow-drying, flat ironing).

How would I know if the product I'm using could expose me to formaldehyde?
Read the product label and MSDS to determine if they list methylene glycol or any of the other names for formaldehyde listed above. If they do, the product can expose you to formaldehyde. Under OSHA's Hazard Communication standard, salon owners and other employers must have an MSDS for each product used in the salon that contains a hazardous chemical. Employers need to review the MSDSs they receive and make sure they understand the hazards of the products they use in their salon(s). They must also make the MSDSs available to their workers (e.g., stylists) and train all workers using the product about the hazards and how to use it safely. If employers do not receive an MSDS automatically, they should request one. If the MSDS does not look complete (e.g., blank spaces that are not completed) then the employer should request a new one from the manufacturer. If the request does not produce the information needed, then the employer should contact the local OSHA Area Office for assistance in obtaining the MSDS.

Be aware that an MSDS may not contain all of the hazard information required, as initially found in the case of Brazilian Blowout products. In the Oregon case, it was only after a stylist reported health problems while using the products that the investigation began. Workers need to report any health problems they think are from the products they use in the workplace to their employer and employers need to follow up on reports of health problems from workers.

When are manufacturers, importers, and distributors of hair smoothing products required to list formaldehyde as an ingredient in their products?
OSHA requires manufactures of products that contain or release formaldehyde to include information about formaldehyde and its hazards on the label and in the MSDS.

Formaldehyde must be listed if it is in the product at 0.1% or more (as a gas or in solution) or if the product releases formaldehyde above 0.1 parts of formaldehyde per million parts of air. Salons and other employers that directly import hair smoothing products from other countries have the same responsibilities as a manufacturer under the Hazard Communication standard - they must determine the hazards of the product and develop labels and MSDSs that communicate the hazards to users. These requirements are explained in OSHA's Hazard Communication standard (commonly referred to as the "Worker's Right-to-Know Rule") and OSHA's Formaldehyde standard.

What can I do to reduce exposure to formaldehyde when using formaldehyde releasing hair smoothing/straightening products?
Employers, stylists, and other salon workers should read the product information and MSDSs for the products they buy and use so that they know what chemicals are in them and how to use them safely in the workplace. The best way to control exposure to formaldehyde is to use products that do not list formaldehyde, formalin, methylene glycol, or any of the other names for formaldehyde listed above on the label or in the MSDS. Beauty care companies are now making and selling products that they claim do not contain formaldehyde in the solution. Choosing one of these products might eliminate the risk of formaldehyde exposure. Note that just because a product doesn't list formaldehyde, formalin, or methylene glycol does not mean that it does not contain any other hazardous ingredients.

If salon owners decide to use products that contain or release formaldehyde, then they must follow the requirements in OSHA's Formaldehyde standard. The standard requires that employers test the air to find out the level of formaldehyde present in the air when the product is being used. If the test shows that formaldehyde is present at levels above OSHA's limits (0.75 parts of formaldehyde per million parts (or ppm) of air during an 8-hour work shift or 2 ppm during any 15-minute period), then the employer must:

- Install air ventilation systems in the areas where these products are mixed and used to help keep formaldehyde levels below OSHA's limit and perform regular maintenance to make sure the systems work correctly;
- When possible, require workers to use lower heat settings on blow-dryers and flat irons used during the process;
- Give workers respirators, if needed; train them to use the respirator properly; and meet the other requirements in OSHA's Respiratory protection standard;
- Ensure workers understand the information on a product's label and MSDS;

- Post signs at entryways to any area where formaldehyde is above OSHA's limit to tell workers of the danger and stating that only authorized personnel may enter;
- Tell workers about the health effects of formaldehyde, how to use the product safely, and what personal protective equipment to wear while using the product; and
- Train workers how to safely clean up spills and properly throw products out.

In addition, where the tests show that formaldehyde is present in the air at a level of 0.5 ppm during an 8-hour work shift or 2 ppm during any 15-minute period, then the employer must:

- Get workers the right medical attention (e.g., doctor exams), and
- Test the air periodically to make sure that formaldehyde levels are below OSHA's limits.

Whether or not air tests show formaldehyde levels above OSHA's limits, employers must follow certain parts of the standard if a product contains formaldehyde:

- Give employees appropriate gloves and other personal protective equipment (e.g., face shield, chemical splash goggles, chemical-resistant aprons) and train them on how to use this equipment while mixing and applying the products;
- Explain to workers how to read and understand the information on a product's label and MSDS;
- Make sure the workplace has eye and skin washing equipment if products that contain formaldehyde could be splashed onto the workers' skin or into their eyes;
- Train workers how to safely clean up spills and properly throw products out, and;
- Get workers the right medical attention (e.g., doctor exams) if they develop signs and symptoms of an exposure to formaldehyde or are exposed to large amounts of formaldehyde during an emergency (e.g., a large spill).

Employers must also keep records of the air tests they perform, any medical attention needed by their employees, and respirator fit-testing.
For more information about how to control formaldehyde exposures in hair salons, read Oregon OSHA's hazard alert and Cal/OSHA's Advisory.

How can OSHA help you?
OSHA continues to monitor ongoing inspections that may have nationwide impact to ensure that health hazards and appropriate protections for products containing hazardous chemicals are communicated properly on the labels and MSDS. OSHA developed this webpage to give workers and employers useful, up-to-date information on formaldehyde hazards that might be present when using hair smoothing products that contain or release formaldehyde. Employers and workers should read OSHA's

Formaldehyde Fact Sheet for more information about formaldehyde hazards and how to work with it safely. Contact your local OSHA office if you have any questions about a product that you are using or its MSDS. Hair salon owners can also contact OSHA's free and confidential consultation service to help determine if there are hazards at their workplace. On-site consultations do not result in penalties or citations.

What rights do workers have?
Workers have a right to a safe workplace. The Occupational Safety and Health Act of 1970 (OSH Act) was passed to prevent workers from being killed or seriously harmed at work. The law requires employers to provide their workers with a workplace that is free of potential hazards. The OSH Act created the Occupational Safety and Health Administration (OSHA), which sets and enforces protective workplace safety and health standards. OSHA also provides information, training and assistance to workers and employers. Workers may file a complaint to have OSHA inspect their workplace if they believe that their employer is not following OSHA standards or that there are serious hazards.

- Disclaimer -
This Hazard Alert is not a standard or regulation, and it creates no new legal obligations. It contains recommendations as well as descriptions of mandatory safety and health standards. The recommendations are advisory in nature, informational in content, and are intended to assist employers in providing a safe and healthful workplace. The Occupational Safety and Health Act requires employers to comply with safety and health standards and regulations promulgated by OSHA or by a state with an OSHA-approved state plan. In addition, the Act’s General Duty Clause, Section 5(a)(1), requires employers to provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm.

This concludes this study: Skin Health (8 hours)

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