

OCCUPATIONAL HEALTH HAZARDS IN NAIL SALONS



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INTRODUCTION. NAIL COSMETICS INCLUDES THE APPLICATION OF NAIL POLISH, ARTIFICIAL NAILS, NAIL ELONGATORS AND/OR NAIL TREATMENTS THAT ARE USUALLY DICTATED BY CURRENT FASHION TRENDS. It's popularity among women and men is on the rise. With this increasing volume of clients, cosmetologists are being put at risk of increased and prolonged exposures to various hazards in the workplace.

Many products are used during manicures and pedicures. Depending on the nail treatment being performed, exposure and health risks will vary amongst cosmetologists. It is therefore important that all workers are aware of the hazards.

OCCUPATIONAL HAZARDS

Nail polish consists of pigments suspended in a solvent to which hardening agents have been added. Solvents are used to dilute and hold other substances in liquid form.

A professional nail enamel application includes three layers of polish: a base coat, a pigmented enamel and a top coat. After each layer, several minutes are required for drying and hardening of the coat in which the solvents volatilize – meaning it goes from a liquid to a gas.

Nail polish may contain formaldehyde and some methacrylates which can cause occupational asthma with repeated inhalation exposure. In addition, repeated skin contact can lead to sensitization where subsequent exposures will lead to an immunological response (*allergic reaction*); such as eczema, skin rashes and hives.

Other chemicals such as xylene, methacrylates, toluene, acetates and ketones can be skin irritants if proper skin protection is not worn. Skin irritation can include itchiness, swelling and/or burning sensation.

NAIL ENAMEL/POLISH REMOVER

Nail polish removers are strong solvents which are highly volatile. Exposure to organic solvents can cause many problems:

- Nose, throat, lung, skin and eye irritation
- Headaches
- Light-headedness
- Nausea
- Increased pulse rate
- Confusion

The degree to which each symptom is felt is related to the concentration of the solvent(s) in the air.

Some solvents in nail polish and nail polish removers may also be absorbed through the skin. This will increase the worker's overall exposure to a chemical.

NAIL ADHESIVES

The application process for artificial and sculptured nails can take anywhere from half hour to two hours. An acrylic glue is typically used to attach the artificial piece to the nail. Originally, methyl methacrylate (MMA) was used, but it has been removed from products because of its potential for sensitizing. A similar chemical, ethyl methacrylate (EMA) and other related methacrylates have now replaced MMA.

Both MMA and EMA are known to cause occupational asthma and contact dermatitis (inflammation of the skin) in some workers. Occupational asthma is caused when workers breathe in certain substances at work

that can produce a hypersensitive response in the airways of the lung. Pre-existing asthma may also be aggravated by such substances. Signs and symptoms of asthma are as follows:

- Wheezing,
- Coughing,
- Chest tightness and/or
- Shortness of breath

Table 1. Commonly used products in a nail salon with examples of ingredients.

NAIL POLISH	<p>Primary film former (e.g. nitrocellulose, methacrylate polymers and vinyl polymer)</p> <p>Secondary film forming resin (e.g. formaldehyde, p-toluene sulfonamide, acrylates and vinyl resins)</p> <p>Plasticizers (e.g. dibutyl phthalate, dioctyl phthalate and tricresyl phosphate)</p> <p>Solvents (e.g. acetates, ketones, toluene, xylene and alcohols)</p> <p>Colouring agents</p> <p>Specialty fillers</p>
NAIL ENAMEL/ POLISH REMOVER	<p>Strong solvents (e.g. acetone, alcohols, ethyl acetate or butyl acetate)</p>
ADHESIVES	<p>Acrylic glues (e.g. methyl methacrylate, ethyl methacrylate, ethyl 2-cyanoacrylate or isobutyl methacrylate)</p>

Note: Adapted from Nail Manufacturers Council (2003)

OTHER OCCUPATIONAL HAZARDS

Some of the solvents and chemicals used in nail salons are suspected reproductive toxins. It is important that exposure levels are minimized through proper ventilation to reduce the risk. Down-draft tables (*where wind is pulled down and away from the worker*) should be used as working surfaces.

Nail treatment sometimes calls for the buffing or sculpting of real or artificial nails using a pumice stone or a nail file. This process creates nuisance dusts that may be irritating when breathed in. Dust masks should be used

to reduce the inhalation of dust. They, however, do not reduce the exposure to solvents and vapors. Safety glasses should also be worn to reduce any particulates from entering the eye.

The nature of the services provided, requires the cosmetologist to be sitting for prolonged period of time (*static postures*). Static posture reduces the blood flow to working muscles, causing the worker to tire faster, thus increasing the risk of musculoskeletal injuries. It is important for the cosmetologist to take frequent breaks to move out of the static posture – especially when sitting periods last longer than half an hour.

FOR MORE INFORMATION

The National Institute for Occupational Safety and Health (NIOSH) has published a document titled “Controlling chemical hazards during the application of artificial fingernails.” NIOSH’s goal is to prevent work related injuries and illnesses. <http://www.cdc.gov/niosh>

The Agency for Toxic Substances and Disease Registry (ATSDR) provides health information on chemical exposures. <http://www.atsdr.cdc.gov>

The Occupational Safety and Health Administration (OSHA) provides information on various occupational hazards and how to control them. <http://www.osha.gov>

Nail Manufacturers Council (NMC) provides various information related to cosmetics. <http://www.american-beautyassociation.org>

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If you need further assistance, call the Occupational Health Clinic for Ontario Workers Inc. Closest to you.

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