



# HEALTH HAZARDS IN THE NAIL SALON INDUSTRY

PRESENTED BY

DEPARTMENT OF LICENSING & REGULATORY AFFAIRS  
MIOSHA CONSULTATION, EDUCATION & TRAINING DIVISION

[WWW.MICHIGAN.GOV/MIOSHA](http://WWW.MICHIGAN.GOV/MIOSHA)

517-284-7720



## CHEMICAL HAZARDS - EXPOSURES

- CHEMICALS CAN BE INHALED INTO THE LUNGS.
  - PRIMARY ROUTE OF EMPLOYEE EXPOSURES
  - BREATHING IN VAPORS, DUSTS, OR MISTS FROM THE PRODUCTS/PROCESS USED
- ABSORBED INTO THE SKIN OR EYES
  - SPLASHES/SPILLS
  - USE OF **NO** GLOVES, EYES/FACE OR HAND PROTECTION = BAD WORK PRACTICES
- INGESTED INTO THE MOUTH
  - CONTAMINATED FOOD, DRINK, OR CIGARETTES
  - DIRTY HANDS – NO GLOVE USE/NO HAND WASHING
  - EATING AT THE WORK STATION

## CHEMICAL HAZARDS - EXPOSURES

- FEDERAL GOVERNMENT (OSHA) & MIOSHA REGULATE EMPLOYEE CHEMICAL EXPOSURES
- ESTABLISHED CHEMICAL EXPOSURE LIMITS ( PERMISSIBLE EXPOSURE LIMITS – PEL)
  - 8 HR. TIME-WEIGHTED AVERAGE LIMITS (TWA – LONG TERM/CHRONIC EXPOSURES)
  - 15 MINUTE SHORT TERM EXPOSURE LIMITS (STEL – SHORT TERM/ACUTE EXPOSURES)
  - EXPOSURES CAN BE MEASURED IN PARTS OF CONTAMINANT PER MILLION PARTS OF AIR (ppm) OR MILLIGRAMS OF CONTAMINANT PER CUBIC METER OF AIR (mg/m<sup>3</sup>)
- DESIGNED TO PROTECT EMPLOYEES
  - 40 HRS./WEEK FOR A WORKING LIFETIME – PROTECTS 95% WORKING POPULATION
  - CHRONIC (LONG TERM) EXPOSURES & ACUTE (SHORT TERM) EXPOSURES
  - CHEMICALS CAN HAVE BOTH EFFECTS
  - INDIVIDUAL SUSCEPTIBILITY – PEOPLE REACT DIFFERENTLY TO CHEMICAL EXPOSURES

## HAZARDOUS CHEMICALS FOUND IN NAIL SALON PRODUCTS

- PRODUCTS INCLUDE: POLISHES, STRENGTHENERS, REMOVERS, & ARTIFICIAL NAIL LIQUIDS
- MULTIPLE CHEMICALS TYPICALLY FOUND IN EACH PRODUCT
- CHEMICAL EXPOSURES CAN CAUSE IRRITATING (RED SKIN/EYES) TO DEBILITATING (SENSITIZED/ALLERGIC/CANCER) EFFECTS
- AIR MONITORING CAN BE PERFORMED TO DETERMINE EMPLOYEE EXPOSURE LEVELS
- MIGHT BE POSSIBLE TO FIND LESS HAZARDOUS CHEMICALS TO USE/REPLACE THE HAZARDS



## COMMON SALON CHEMICALS

- **ACETONE** – NAIL POLISH REMOVER
  - SYMPTOMS INCLUDE: HEADACHES; DIZZINESS; IRRITATED EYES, SKIN, & THROAT
  - EXPOSURE LIMIT = 750 ppm (PARTS PER MILLION) TWA (LONG TERM) & 1000 ppm STEL (SHORT TERM)
- **ACETONITRILE** – FINGERNAIL GLUE REMOVER
  - SYMPTOMS INCLUDE: IRRITATED NOSE & THROAT; BREATHING PROBLEMS; NAUSEA; VOMITING; WEAKNESS; & EXHAUSTION
  - EXPOSURE LIMIT = 40 ppm TWA & 60 ppm STEL
- **BUTYL ACETATE** – NAIL POLISH, NAIL POLISH REMOVER
  - SYMPTOMS INCLUDE: HEADACHES & IRRITATED EYES, SKIN, NOSE, MOUTH, & THROAT
  - EXPOSURE LIMIT (N-BUTYL ACETATE) = 150 ppm TWA & 200 ppm STEL

## COMMON SALON CHEMICALS

- **DIBUTYL PHTHALATE (DBP)** – NAIL POLISH
  - SYMPTOMS INCLUDE: NAUSEA & IRRITATED EYES, SKIN, NOSE, MOUTH & THROAT, LONG-TERM EXPOSURES TO HIGH CONCENTRATIONS MAY CAUSE OTHER SERIOUS EFFECTS
  - EXPOSURE LIMITS = 5 mg/m<sup>3</sup> TWA
- **ETHYL ACETATE** – NAIL POLISH, NAIL POLISH REMOVER, FINGERNAIL GLUE
  - SYMPTOMS INCLUDE: IRRITATED EYES, STOMACH, SKIN, NOSE, & THROAT; HIGH CONCENTRATIONS CAN CAUSE FAINTING
  - EXPOSURE LIMITS = 400 ppm TWA
- **ETHYL METHACRYLATE (EMA)** – ARTIFICIAL NAIL LIQUID
  - SYMPTOMS INCLUDE: ASTHMA, IRRITATED EYES, SKIN, NOSE, AND MOUTH; DIFFICULTY CONCENTRATING.
  - MAY CAUSE SKIN ALLERGY/SENSITIZATION
  - EXPOSURES WHILE PREGNANT MAY AFFECT YOUR CHILD.
  - EXPOSURE LIMITS = **NO OSHA/MIOSHA LIMITS**

## COMMON SALON CHEMICALS

- **FORMALDEHYDE** – NAIL POLISH, NAIL HARDENER
  - SYMPTOMS INCLUDE: DIFFICULTY BREATHING, INCLUDING COUGHING, ASTHMA-LIKE ATTACKS, & WHEEZING; ALLERGIC REACTIONS; IRRITATED EYES, SKIN, & THROAT
  - FORMALDEHYDE CAN CAUSE CANCER!
  - EXPOSURE LIMITS = 0.75 ppm TWA, 2 ppm STEL, 0.5 ppm ACTION LEVEL
- **ISOPROPYL ACETATE** – NAIL POLISH, NAIL POLISH REMOVER
  - SYMPTOMS INCLUDE: SLEEPINESS, & IRRITATED EYES, NOSE & THROAT
  - EXPOSURE LIMITS = 250 ppm TWA & 310 ppm STEL
- **METHACRYLIC ACID** – NAIL PRIMER
  - SYMPTOMS INCLUDE: SKIN BURNS & IRRITATED EYES, SKIN, NOSE, MOUTH, & THROAT
  - AT HIGHER CONCENTRATIONS, THIS CHEMICAL CAN CAUSE DIFFICULTY BREATHING
  - EXPOSURE LIMITS = 20 ppm TWA



## COMMON SALON CHEMICALS

- **METHYL METHACRYLATE (MMA)** – ARTIFICIAL NAIL PRODUCTS, THOUGH BANNED FOR USE IN MANY STATES
  - SYMPTOMS INCLUDE: ASTHMA; IRRITATED EYES, SKIN, NOSE, & MOUTH; DIFFICULTY CONCENTRATING; LOSS OF SMELL
  - EXPOSURE LIMITS = 100 ppm TWA
- **TOLUENE** – NAIL POLISH, FINGERNAIL GLUE
  - SYMPTOMS INCLUDE: DRY/CRACKED SKIN; HEADACHES, DIZZINESS, & NUMBNESS; IRRITATED EYES, NOSE, THROAT, AND LUNGS; DAMAGE TO THE LIVER & KIDNEYS; HARM TO UNBORN CHILDREN DURING PREGNANCY
  - EXPOSURE LIMITS = 100 ppm TWA & 150 ppm STEL
- **QUARTERNARY AMMONIUM COMPOUNDS** – DISINFECTANTS
  - SYMPTOMS INCLUDE: IRRITATED SKIN & NOSE, MAY CAUSE ASTHMA
  - AVOID SKIN CONTACT WEAR GLOVES & EYE/FACE PROTECTION WHEN HANDLING
  - EXPOSURE LIMITS = **NO OSHA/MIOSHA LIMITS**

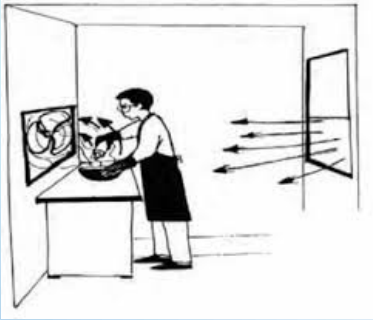
## KNOW THE CHEMICALS YOU WORK WITH!

- **PRODUCT LABELS**
  - LIMITED INFO PROVIDED
  - MANUFACTURER/DISTRIBUTOR'S CONTACT INFO
- **SAFETY DATA SHEETS (SDS - NEW)**
  - NOT THE MATERIAL SAFETY DATA SHEET (MSDS - OLD)
  - MOST UP TO DATE INFORMATION
  - ALL INGREDIENTS LISTED!
  - DESCRIBES THE NECESSARY PERSONAL PROTECTIVE EQUIPMENT (PPE)
  - REQUIRED FOR ALL PRODUCTS USED IN SALON (HAZARD COMMUNICATION)

## PROTECT YOUR HEALTH FROM CHEMICAL EXPOSURE

- **CHOOSE SAFER PRODUCTS**
  - CHEMICAL SUBSTITUTION – REPLACE HAZARDOUS CHEMICALS
  - 3-FREE (TOLUENE, FORMALDEHYDE, DIBUTYL PHTHALATE) – CONFIRM ON SDS
  - ACID-FREE – CONFIRM ON SDS
  - READ PRODUCT LABELS, FOLLOW MANUFACTURERS' INSTRUCTION
- **VENTILATION**
  - BEST CONTROL METHOD AVAILABLE
  - OPEN DOORS/WINDOWS
  - LEAVE THE BUILDING'S HVAC EXHAUST FAN RUNNING AT ALL TIMES
  - USE VENTILATED TABLES OR PORTABLE VENTILATION MACHINES TO CAPTURE CONTAMINANTS

# Good vs. Bad Ventilation

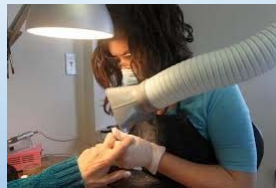
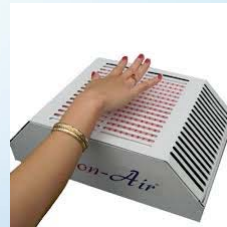
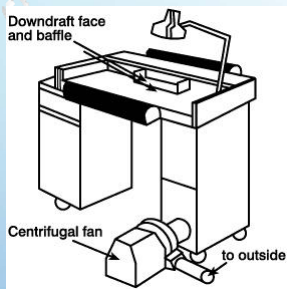


Good ventilation takes contaminants away.



Bad or no ventilation leaves contaminants in the air to breathe

# VENTILATION OPTIONS





## PROTECT YOUR HEALTH FROM CHEMICAL EXPOSURES

- USE SAFE WORK PRACTICES

- STORE CHEMICALS IN SMALL SEALED BOTTLES – KEEP CLOSED WHEN NOT IN USE
- USE METAL TRASH CANS WITH SELF-CLOSING LIDS TO DISPOSE OF CHEMICAL SOAKED COTTON
- OR PUT SOAKED COTTON BALLS IN A SEALED BAG THEN TRASH
- FOLLOW INSTRUCTIONS FOR PROPER DISPOSAL OF WASTE CHEMICALS
- WASH HANDS BEFORE EATING, DRINKING, PUTTING ON COSMETICS OR SMOKING
- GO OUTSIDE OFTEN FOR FRESH AIR
- COVER FOOD AND DO NOT STORE AND EAT AT THE WORK STATION



## PROTECT YOUR HEALTH FROM CHEMICAL EXPOSURES

- KEEP PRODUCTS OFF SKIN/OUT OF EYES

- WEAR LONG SLEEVES OR CUFFS, ENSURE THE LAP IS COVERED – WEAR AN APRON
- WASH HANDS BEFORE AND AFTER WORKING ON CLIENTS
  - BEFORE EATING, DRINKING, PUTTING ON COSMETICS OR SMOKING
  - AFTER HANDLING OR TRANSFERRING PRODUCTS
- WEAR GOOGLES/SAFETY GLASSES AND APPROPRIATE GLOVES
  - WHEN HANDLING AND TRANSFERRING PRODUCTS
  - NITRILE GLOVES PROVIDE GOOD PROTECTION AGAINST MANY CHEMICALS
  - VINYL GLOVES WHEN WORKING WITH ACETONE
  - LATEX GLOVES CAN CAUSE ALLERGIES – DO NOT USE
  - REPLACE GLOVES WHEN TORN, CUT OR HOLES IN THEM



## RESPIRATORY PROTECTION

- RESPIRATORY PROTECTION MAY BE NEEDED IF NO VENTILATION IS USED
- AIR MONITORING IS USED TO EVALUATE EMPLOYEE EXPOSURES
  - MIOSHA ON-SITE CONSULTATION – FREE
  - EMPLOYER'S INSURANCE CARRIER
  - PRIVATE INDUSTRIAL HYGIENE CONSULTANTS
- SOME EMPLOYEES WILL HAVE CHEMICAL EFFECTS BELOW THE LIMITS – INDIVIDUAL SUSCEPTIBILITY
- RESPIRATORS ARE DESIGNED FOR SPECIFIC CONTAMINANTS
  - DUSTS, POWDERS, VIRUSES, GERMS – FILTERING FACE-PIECE RESPIRATORS (DUST MASKS)
  - CHEMICAL GASES AND VAPORS – HALF-MASK RESPIRATOR W/ CARTRIDGES
  - ALL EMPLOYEES THAT WEAR RESPIRATORS NEED TRAINING ON THEM

## RESPIRATORY PROTECTION

- FILTERING FACE-PIECE RESPIRATORS
- NEEDS TO BE NIOSH APPROVED AS A RESPIRATOR – 2 STRAPS NEEDED
- ALSO KNOWN AS A DUST MASK (APPROVED)
- PROTECTS AGAINST DUST, VIRUSES, AND GERMS
- USED WHEN BUFFING OR FILING ARTIFICIAL NAILS OR USING ACRYLIC POWDERS
- MUST HAVE TRAINING ON APPENDIX D OF THE RESPIRATORY PROTECTION STANDARD (PART 451)





## RESPIRATORY PROTECTION (NON-APPROVED)



Single strap mask

- These are non-approved respirators
- They do not provide any protection against gases, vapors, or dust/particulates
- These are not recommended for respiratory protection
- These protect against splashes



Surgical splash mask



Leaks contaminants

## RESPIRATORY PROTECTION

- HALF-MASK ELASTOMERIC FACE-PIECE WITH ORGANIC VAPOR CARTRIDGES
- NIOSH APPROVED
- PROTECTS AGAINST GASES AND VAPORS (FORMALDEHYDE/TOLUENE)
- USED WHEN TRANSFERRING CHEMICALS INTO SMALLER BOTTLES
- SPILL CLEAN-UP
- EMPLOYER MUST DEVELOP A RESPIRATORY PROTECTION PROGRAM
- EMPLOYEES MUST BE FIT TESTED, TRAINED, BE MEDICALLY EVALUATED
- RESPIRATOR CARTRIDGES REQUIRE A CHANGE-OUT SCHEDULE
- SEE MIOSHA PART 451 – RESPIRATORY PROTECTION



## ERGONOMICS

- CAUSES ACHES AND PAINS IN THE NECK, BACK, SHOULDERS, ARMS, WRIST & FINGERS
- RELATED TO AWKWARD POSTURE, REPETITIVE MOTION & FORCEFUL EXERTION (RISK FACTORS)
  - AWKWARD POSTURE = BENDING, TWISTING, SQUATTING, KNEELING, HANDS OVER HEAD
  - REPETITIVE MOTION = FILING/BUFFING NAILS
  - FORCEFUL EXERTION = HOLDING TOOLS TIGHTLY



## ERGONOMICS

- MAINTAIN A NEUTRAL POSTURE, USE ADEQUATE LIGHTING, DO NOT REST ELBOWS, WRISTS, & ARMS ON HARD SURFACES (USE A PAD OR SOFT TOWEL)



Bad posture



Good posture

## ERGONOMICS – REDUCE THE HAZARDS

- USE AN ADJUSTABLE CHAIR – FEET FLAT ON FLOOR, USE A FOOTREST IF FEET NOT ON THE FLOOR
- ADJUST THE LIGHTING – SEE BETTER WITHOUT BENDING OVER
- RAISE THE CLIENT'S HAND OR FOOT – SO YOU DO NOT BEND OVER AS MUCH
- USE SAFETY GLASSES WITH MAGNIFYING LENSES – HELPS TO SEE BETTER AND ELIMINATE BENDING
- USE A FOAM PAD OR TOWEL - SOFT RESTING PLACE FOR YOUR HANDS, ARMS, WRISTS, & ELBOWS
- MAKE TOOL HANDLES LARGER – WRAP WITH SOFT PADS TO ENLARGE AND GRIP EASIER
- TAKE FREQUENT BREAKS – CHANGE BODY POSITIONS, GIVE IT A REST
- PACE YOUR WORK – FAST WORK = TENSE BODY = MUSCLE PAIN
- DO GENTLE STRETCHING EXERCISES – CHECK WITH YOUR DOCTOR, TARGET HANDS, WRISTS, ARMS, SHOULDER, NECK

## BIOLOGICAL HAZARDS

- INCLUDE BACTERIA, FUNGI, VIRUSES (SUCH AS BLOODBORNE PATHOGENS)
- INFECTIOUS AGENTS/VIRUSES INCLUDE HEPATITIS B, HEPATITIS C & HUMAN IMMUNODEFICIENCY VIRUS (HIV)
  - INFECTED BLOOD FROM COWORKER OR CLIENT (TREAT ALL AS IF INFECTED)
  - FUNGAL INFECTIONS OF THE NAILS AND FEET BY TOUCHING CLIENT'S INFECTED SKIN
  - FUNGAL INFECTIONS ALSO OCCUR BY USING EQUIPMENT THAT HAS NOT BEEN DISINFECTED

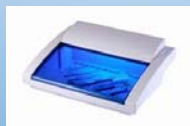
## PREVENT BIOLOGICAL HAZARDS

- AVOID TOUCHING ANY BLOOD AND BODY FLUIDS
- WEAR GLOVES AND AVOID CLIENTS WITH CUTS, SORES, BLISTERS OR VISIBLY INFECTED SKIN
- THROW AWAY DISPOSABLE GLOVES IMMEDIATELY AFTER USE
- ALWAYS WASH YOUR HANDS WITH SOAP AND WATER – BEFORE & AFTER EACH CLIENT
- BANDAGE OPEN CUTS OR BROKEN SKIN TO PREVENT CONTACT WITH
- IF AN INDIVIDUAL IS BLEEDING, DO NOT TOUCH THE BLOOD, HAND THE INDIVIDUAL A COTTON BALL OR TISSUE AND HAVE THEM STOP THE BLOOD FLOW THEN HAVE THEM THROW IT IN THE TRASH
- CONSIDER GETTING IMMUNIZED AGAINST HEPATITIS B
- CLEAN & DISINFECT TOOLS AFTER EACH CLIENT ACCORDING TO THE POLICIES OF THE STATE'S COSMETOLOGY BOARD



## PREVENT BIOLOGICAL HAZARDS

- DISINFECTION AND CLEANING OF TOOLS
  - ALWAYS WEAR THE CORRECT GLOVES WHILE CLEANING AND DISINFECTING
  - WASH TOOLS WITH SOAP AND WATER, USE A SCRUB IF NEEDED
  - SOAK TOOLS IN AN EPA-REGISTERED DISINFECTANT FOR 10 – 30 MINUTES
  - FOLLOW THE MANUFACTURER'S DIRECTIONS!
  - RINSE THE TOOLS IN CLEAN WATER
  - DRY TOOLS WITH A CLEAN CLOTH
  - STORE ALL DISINFECTED TOOLS IN A CLEAN, COVERED AREA. ONLY USE ULTRAVIOLET (UV) SANITIZING BOXES FOR STORING CLEAN AND DISINFECTED REUSABLE METAL TOOLS
  - UV BOXES DO NOT DISINFECT TOOLS
  - DISINFECT FOOT BASINS & SPAS AFTER EACH CLIENT AND AT THE END OF THE DAY – FOLLOW COSMETOLOGY BOARD RULES



## ADDITIONAL RESOURCES

- **NAIL TECHNICIANS' HEALTH AND WORKPLACE EXPOSURE CONTROLS**
  - NIOSH WORKPLACE SAFETY AND HEALTH TOPICS
  - [http://www.cdc.gov/niosh/topics/manicure/?s\\_cid=3ni7d2fb082020111130am](http://www.cdc.gov/niosh/topics/manicure/?s_cid=3ni7d2fb082020111130am)
- **CONTROLLING CHEMICAL HAZARDS DURING THE APPLICATION OF ARTIFICIAL FINGERNAILS**
  - NIOSH (PUBLICATION NO. 99-112)
  - <http://www.cdc.gov/niosh/docs/99-112/>
- **TIPS ON WORKER SAFETY**
  - LABOR OCCUPATIONAL HEALTH PROGRAM (LOHP) & CALIFORNIA HEALTHY NAIL SALON COLLABORATIVE
  - ENGLISH & VIETNAMESE – GENERAL TIPS FOR STAYING SAFE AND HEALTHY
- **SAFETY AND HEALTH HAZARDS IN NAIL SALONS**
  - OREGON OSHA FACT SHEET PLUS
  - [http://www.orosha.org/pdf/pubs/fact\\_sheets/fs28.pdf](http://www.orosha.org/pdf/pubs/fact_sheets/fs28.pdf)
- **HOW TO BE SAFE AT WORK**
  - OREGON HEALTHY NAIL SALON COLLABORATIVE
  - <http://www.cbs.state.or.us/osha/pdf/pubs/4783e.pdf>

## ADDITIONAL RESOURCES

- **SUMMARY OF DATA & FINDINGS FROM TESTING OF A LIMITED NUMBER OF NAIL PRODUCTS**
  - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY, DEPT. OF TOXIC SUBSTANCE CONTROL
  - [http://www.dtsc.ca.gov/PollutionPrevention/upload/NailSalon\\_Final.pdf](http://www.dtsc.ca.gov/PollutionPrevention/upload/NailSalon_Final.pdf)
- **UNDERSTANDING THE TOXIC TRIO: PROTECTING YOURSELF AT WORK**
  - CALIFORNIA HEALTHY NAIL SALON COLLABORATIVE
  - [https://cahealthynailsalons.org/s/CAHNSC\\_brochure\\_Mar16.pdf](https://cahealthynailsalons.org/s/CAHNSC_brochure_Mar16.pdf)
- **SAFE NAIL SALON TRAINING**
  - BOSTON PUBLIC HEALTH COMMISSION
  - [http://www.bphc.org/whatwedo/healthy-homes-environment/safe-shops/nail-salons/Documents/Nail%20Salon%20Regulation%20Training\\_ENG\\_Revised%2010.4.16.pdf](http://www.bphc.org/whatwedo/healthy-homes-environment/safe-shops/nail-salons/Documents/Nail%20Salon%20Regulation%20Training_ENG_Revised%2010.4.16.pdf)

ANY QUESTIONS?

