



## Use of Protective Gloves in Nail Salons in Manhattan, New York City

Corey Basch<sup>1</sup>, Christina Yarborough<sup>1</sup>, Stephanie Trusty<sup>1</sup>, Charles Basch<sup>2</sup>

<sup>1</sup>Department of Public Health, William Paterson University, Wayne, NJ; <sup>2</sup>Department of Health and Behavior Studies, Teachers College, Columbia University, New York, NY, USA

**Objectives:** Nail salon owners in New York City (NYC) are required to provide their workers with gloves and it is their responsibility to maintain healthy, safe working spaces for their employees. The purpose of this study was to determine the frequency with which nail salon workers wear protective gloves.

**Methods:** A Freedom of Information Law request was submitted to New York Department of State's Division of Licensing Services for a full list of nail salons in Manhattan, NYC. A sample population of 800 nail salons was identified and a simple random sample (without replacement) of 30% (n=240) was selected using a random number generator. Researchers visited each nail salon from October to December of 2015, posing as a potential customer to determine if nail salon workers were wearing gloves.

**Results:** Among the 169 salons in which one or more workers was observed providing services, a total of 562 workers were observed. For 149 salons, in which one or more worker was observed providing services, none of the workers were wearing gloves. In contrast, in six of the salons observed, in which one or more workers was providing services, all of the workers (1 in 2 sites, 2 in 1 site, 3 in 2 sites, and 4 in 1 site) were wearing gloves. Almost three-quarters of the total number of workers observed (n=415, 73.8%) were not wearing gloves.

**Conclusions:** The findings of this study indicate that, despite recent media attention and legislation, the majority of nail salon workers we observed were not wearing protective gloves when providing services.

**Key words:** Nails, Protective gloves, New York City

### INTRODUCTION

The nail salon business is thriving in New York City (NYC). Recent attention has focused on the burgeoning health issues

faced by nail salon workers, including respiratory issues, skin irritation, reproductive issues, Hodgkin's disease, low birth-weight babies, and multiple myeloma [1,2]. One research study revealed that nail salon workers had occupational asthma attributed to exposure to sensitizers and irritants [3], and others indicated high levels of nose irritation, allergies, and other negative reactions [4,5]. Commonly used chemicals in the nail salon industry, such as dibutyl phthalate toluene, formaldehyde, and methyl methacrylate, can lead to major health issues when inhaled frequently [2,6,7].

The Governor of New York recently mandated that nail salon workers wear gloves when dealing with dangerous chemicals in the workplace. The mandate and guidelines set forth by the

**Received:** February 9, 2016 **Accepted:** July 10, 2016

**Corresponding author:** Corey Basch, PhD  
143 Wing, Wayne, NJ 07470, USA

**Tel:** +1-973-720-2603, **Fax:** +1-973-720-2215

**E-mail:** baschc@wpunj.edu

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Table 1. Regulations on glove use**

OSHA <sup>1</sup>	NYC legislation <sup>2</sup>
According to OSHA guidelines, latex gloves are appropriate to use while handling acetone, but nitrile gloves should be used when dealing with harsher chemicals	Protective gloves made of nitrile, or another similar non-permeable material for workers with a sensitivity to nitrile gloves You must have a sufficient number of gloves available so that each nail technician has access to and is able to use a new pair of gloves for each customer All workers must wear gloves when handling potentially hazardous chemicals or waste and during cleanup, or when performing any nail service that has a risk of breaking the customer's skin

OSHA, Occupational Safety and Health Administration; NYC, New York City.

<sup>1</sup>From US Department of Labor. Stay healthy and safe while giving manicures and pedicures: a guide for nail salon workers [6].

<sup>2</sup>From New York State Government. Information for nail salon workers [8].

Occupational Safety and Health Association are described in Table 1. In short, nail salon owners in NYC are required to provide their workers with gloves and it is their responsibility to maintain healthy, safe working spaces for their employees [6-8]. In NYC, businesses that do not abide by these rules are at risk for being permanently closed [8]. The purpose of this study was to determine the frequency with which nail salon workers wear protective gloves.

## METHODS

A Freedom of Information Law (FOIL) request was submitted to New York Department of State's Division of Licensing Services, in June 2015, for a full list of nail salons in Manhattan. The list of 3445 salons was received in September 2015, and included all salons regardless of their primary service provided (e.g., hair or nail, etc.). A total of 13 salons not listed in Manhattan were removed. The disposition of the remaining 3432 salons was determined by conducting an exhaustive search of the Internet to determine the primary service of the salon. If web pages were not provided, the salons were called. If there was no identifying information (i.e., web page or phone number), the salon was deemed unidentifiable. The overwhelming majority of salons on the FOIL list provided hair-related services as their primary focus (2394). An additional sample of (n=235) was unidentifiable, and three were duplicates, leav-

ing a sample population of 800 nail salons. A simple random sample (without replacement) of 30% (n=240) was selected using a random number generator.

Researchers visited each nail salon from October to December of 2015, posing as a potential customer. Salons were visited at varied times of day and visits took place Monday-Saturday. The total number of employees working with a customer was coded. Working with a customer was defined as conducting manicures and/or pedicures. Of those working with a customer, the total number of workers wearing gloves was documented. This study was reviewed and deemed exempt by the human subjects committees at William Paterson University and Teachers College, Columbia University.

## RESULTS

Of the 240 salons visited, 29 salons (12%) were out of business. For 42 salons, none of the workers were providing services. The distribution of the number of workers observed across the remaining 169 salons was: one for 42 salons; two for 29; three for 25; four for 28; five for 22; six for 13; seven for two; eight for three; nine for two; 10 for two; and 11 for one; thus for the majority of salons five or fewer workers were observed providing services. Among the 169 salons in which one or more workers was observed providing services, a total of 562 workers were observed. For 149 salons, in which one or more worker was observed providing services, none of the workers were wearing gloves. In contrast, in six of the salons observed, in which one or more workers was providing services, all of the workers (1 in 2 sites, 2 in 1 site, 3 in 2 sites, and 4 in 1 site) were wearing gloves. Almost three-quarters of the total number of workers observed (n=415, 73.8%) were not wearing gloves.

## DISCUSSION

The findings of this study indicate that, despite recent media attention and legislation, the majority of nail salon workers we observed were not wearing protective gloves when providing services. To our knowledge, this is the first study of nail salon workers in Manhattan, NYC, to systematically document use of protective gloves. Nevertheless, our findings are consistent with another recent published report indicating that a very high percentage of nail salon workers did not wear protective gloves [4].

Our study design was cross-sectional and the days and times in which observations were conducted were not necessarily during peak business hours. The type of chemicals, if any, in use could not be determined. Also, the FOIL request only produced nail salons that were registered, and there may be lag time between obtaining a registration and appearing on the list. Finally, it was not possible to document the exact type of service being performed by each worker. Despite these limitations, this study provides a preliminary baseline prevalence estimate of glove use by nail salon workers in Manhattan, NYC.

Lack of knowledge, cultural and language factors, and inaccessibility to gloves are possible reasons that may undermine the use of protective glove by nail salon workers [9,10]. Given the potential occupational health risks posed to nail salon workers, additional research is needed to replicate our prevalence estimate, to expand the sampling frame to other locations, and to improve understanding about nail salon workers' awareness of the health risks involved in their work, their motivation to use or not use protective gloves, their access to protective gloves, as well as other factors that may influence protective glove use by salon workers.

## CONFLICT OF INTEREST

The authors have no conflicts of interest associated with the material presented in this paper.

## ORCID

Corey Basch <http://orcid.org/0000-0003-4862-4229>

Christina Yarborough <http://orcid.org/0000-0002-8309-1352>

Stephanie Trusty <http://orcid.org/0000-0002-0125-0218>

Charles Basch <http://orcid.org/0000-0001-8022-0959>

## REFERENCES

1. Nir SM. Perfect nails, poisoned workers. *New York Times*; 2015 May 8 [cited 2016 Jan 15]. Available from: [http://www.nytimes.com/2015/05/11/nyregion/nail-salon-workers-in-nyc-](http://www.nytimes.com/2015/05/11/nyregion/nail-salon-workers-in-nyc-face-hazardous-chemicals.html)
2. US Environmental Protection Agency. EPA science matters newsletter: healthier nail salons; 2014 [cited 2016 Jan 15]. Available from: <http://www.epa.gov/sciencematters/epa-science-matters-newsletter-healthier-nail-salons>.
3. Kreiss K, Esfahani RS, Antao VC, Odencrantz J, Lezotte DC, Hoffman RE. Risk factors for asthma among cosmetology professionals in Colorado. *J Occup Environ Med* 2006;48(10):1062-1069.
4. White H, Khan K, Lau C, Leung H, Montgomery D, Rohlman DS. Identifying health and safety concerns in Southeast Asian immigrant nail salon workers. *Arch Environ Occup Health* 2015;70(4):196-203.
5. Park SA, Gwak S, Choi S. Assessment of occupational symptoms and chemical exposures for nail salon technicians in Daegu City, Korea. *J Prev Med Public Health* 2014;47(3):169-176.
6. US Department of Labor. Stay healthy and safe while giving manicures and pedicures: a guide for nail salon workers [cited 2016 Feb 1]. Available from: <https://www.osha.gov/Publications/3542nail-salon-workers-guide.pdf>.
7. Cosmetic Ingredient Review Expert Panel. Final report of the safety assessment of methacrylate ester monomers used in nail enhancement products. *Int J Toxicol* 2005;24 Suppl 5:53-100.
8. New York State Government. Information for nail salon workers [cited 2016 Feb 8]. Available from: <https://www.ny.gov/nail-salon-safety-what-you-need-know/information-nail-salon-workers>.
9. Catherine A. Porter JD; California Healthy Nail Salon Collaborative. Overexposed and underinformed: dismantling barriers to health and safety in California nail salons [cited 2016 Feb 1]. Available from: <http://www.cahealthynailsalons.org/wp-content/uploads/2010/07/OverexposedAndUnderinformed.pdf>.
10. Quach T, Nguyen KD, Doan-Billings PA, Okahara L, Fan C, Reynolds P. A preliminary survey of Vietnamese nail salon workers in Alameda County, California. *J Community Health* 2008;33(5):336-343.