

Pretty Nails, Crooked Nose: Air Quality in Nail Salons

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Key Findings



Overview

- Growing concern from both consumers and government agencies has focused chemicals of products used in the nail salon industry.
- Health effects of exposure to some chemicals has been established, information on the actual level of toxic chemicals in nail salons has not.
- A number of states have made some effort to regulate the use of and exposure to toxic chemicals and provided training and education for salon workers and owners.
- Response from other state boards and federal agencies, like the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) has been less detailed.

Purpose

- To determine the level and sources of toxic air pollutants in nail salons.

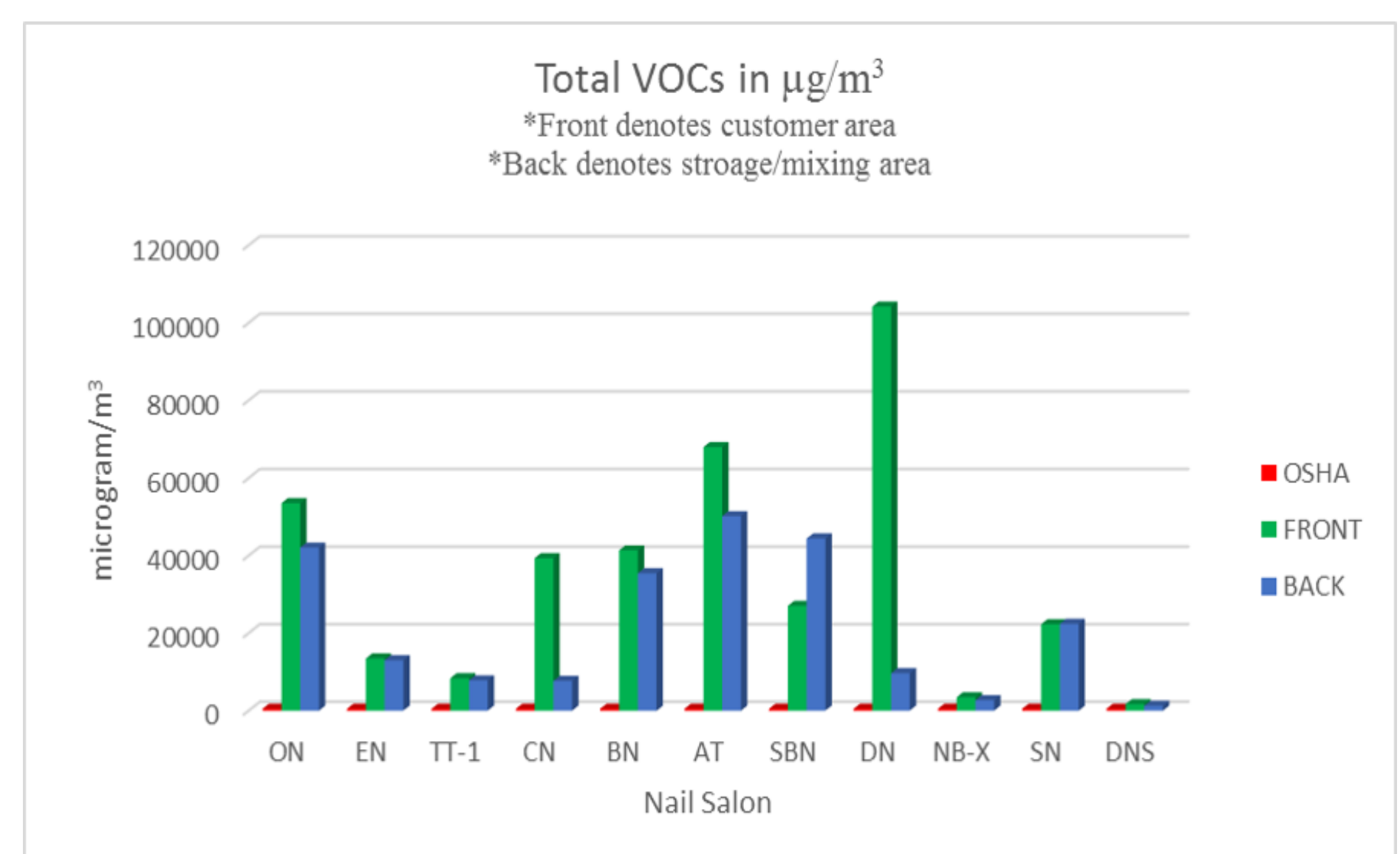
Methodology

- Ninety seven stores in Madison and Morgan county Alabama were contacted from July 2015 to October 2015. 11 stores participated.
- Formaldehyde and volatile organic compounds (VOCs) Vapor monitors (one from each) were placed in the work area and in the storage area of each salon for an average of 8 working hours.

Conclusion

- Individual VOC levels in salons are within established PEL guidelines, yet high TVOC levels may still pose a health risk to workers
- Cultural and language differences present within the industry may create a problem with identifying and filling education and knowledge gaps of salon owners and workers

- 31 VOCs were found.
- Total VOCs (TVOC) levels in all 11 salons were 2.5%-200% higher than recommended level for Indoor Air Quality (IAQ) of 500-1000 $\mu\text{g}/\text{m}^3$ for green buildings.
- Personal equipment, such as masks, was inadequate or not enforced.
- Ventilation methods may have been inadequate.
- Methyl Methacrylate (MMA), banned from use in many states and Naphthalene, banned for use in many European countries, were found in a majority of salons.
- Some most frequently found VOCs do not have a PEL, although they are recognized as having possible negative health effects.



Compound	Salons code	Range (ppm)	Median (ppm)	OSHA PEL limit (ppm/8hr)
Acetone	11	(F)0.21-15.09 (B)NF-13.94	(F)5.99 (B)4.11	1000
Formaldehyde	11	(F)0.01-1.3 (B)0.01-0.06	(F)0.145 (B)0.029	0.75
Isopropyl Alcohol	11	(F)0.079-4.36 (B)0.085-3.82	(F)1.94 (B)1.67	400
Butyl Acetate	10	(F)NF-0.234 (B)0.007-0.20	(F)0.0824 (B)0.0663	150
Ethyl Acetate	10	(F)0.006-0.46 (B)0.021-0.99	(F)0.17 (B)0.24	400
Ethyl Alcohol	9	(F)0.055-4.64 (B)NF-7.69	(F)1.098 (B)1.62	1000
Ethyl Methacrylate	9	(F)NF-7.42 (B)0.031-1.01	(F)1.15 (B)0.24	
Naphthalene (in $\mu\text{g}/\text{m}^3$)	8	(F)<37.2-<173 (B)NF-<173	(F)<130.3 (B)<116.4	
2-Methylpentane	7	(F)0.012-0.033 (B)0.013-0.034	(F)0.024 (B)0.026	
Isobutane	6	(F)0.081-1.47 (B)NF-1.99	(F)0.388 (B)0.67	800
Methyl Methacrylate	6	(F)0.016-13.73 (B)0.092-2.75	(F)3.14 (B)0.73	100

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