CHARACTERIZING OCCUPATIONAL EXPOSURES IN A HAIR SALON

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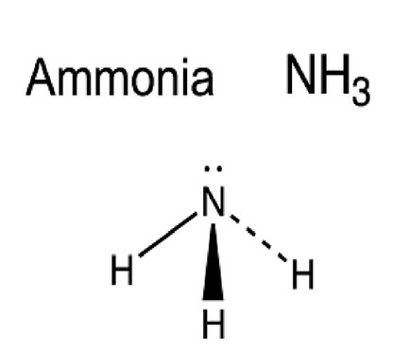
INTRODUCTION

There are an estimated 1.45 million Beauty Salon Professionals (BSP) in the U.S., working in salons where they are constantly exposed to the products they use. While there is research available on certain chemicals used in the hair products, there's a lack of research on risk characterization and exposure to hair salon workers, which limits the ability of concerned health professionals and BSP to develop effective exposure and risk reduction strategies. To characterize exposures to chemicals from products that can evaporate into the workplace air and thus be inhaled, a pilot study was conducted using a hair salon in the southeastern U.S. as an illustrative case study.

OBJECTIVE

The aim of the project is to characterize the risk to hair salon workers when using hair products and communicate it to them in an effective way.

A basic risk characterization, surveys, and chamber study were designed to understand which chemicals workers are exposed to, their toxicity, and how much ammonia workers are exposed to when using a hair product on clients. A chemical that is in many of the hair products is ammonia, which can cause respiratory irritation when there is an acute exposure. When the hair workers are using products that contain ammonia, it would be befitting to know the concentration of ammonia to which the workers are exposed to and make appropriate safe handling recommendations.

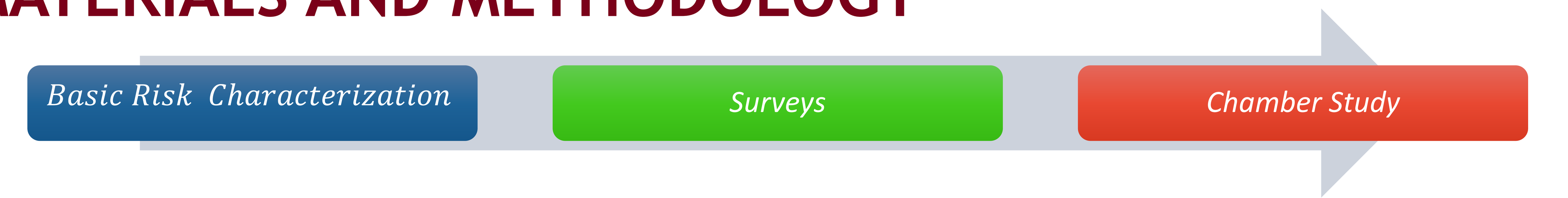


RESULTS

Basic risk characterization proved to be a challenge from the beginning of the study. There were many barriers that hindered us from assessing exposure to chemicals emitted from hair products. The barriers which hindered the process were:

- Lack of data in the published studies providing this information
- Lack of information on the products. ex. No SDS available for a lot of the products
- Due to trade secrets, information about the amount of chemicals used in a product cannot be given

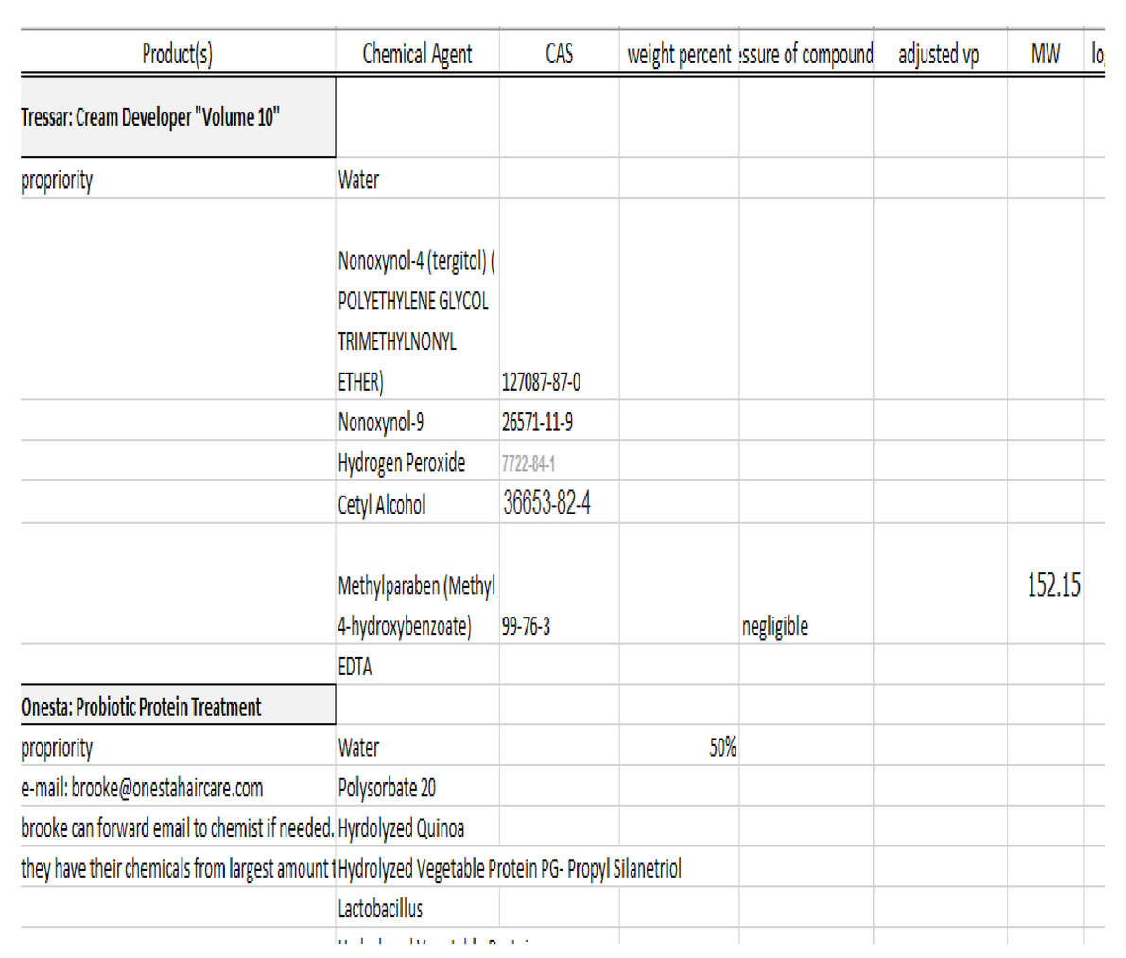
MATERIALS AND METHODOLOGY



BASIC RISK CHARACTERIZATION

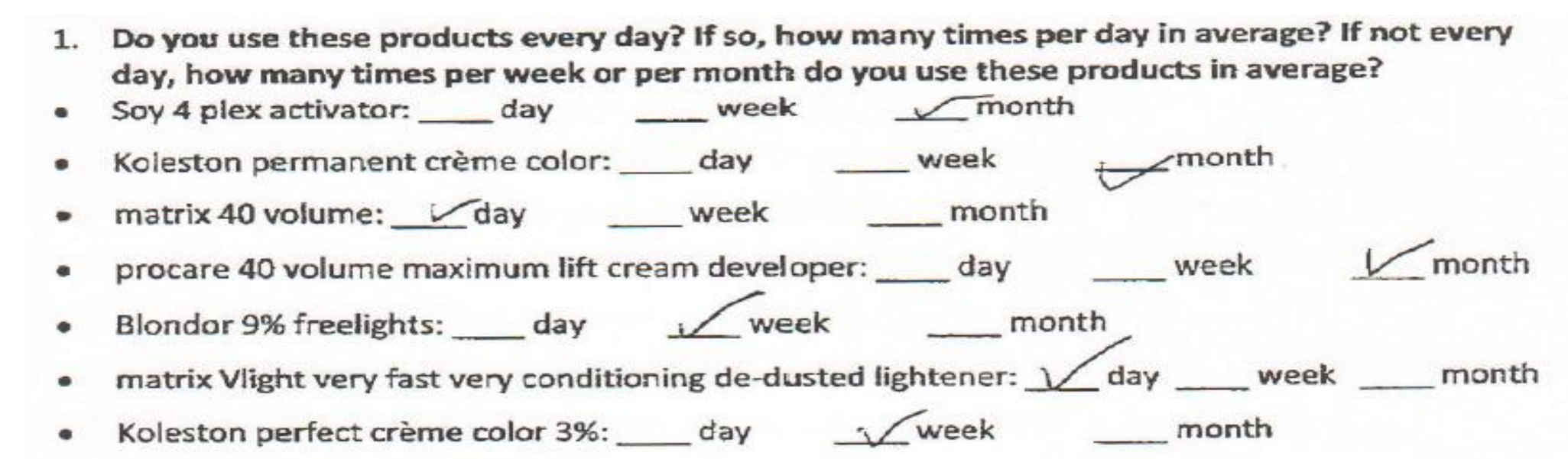
The first step of the study was to do a basic characterization of each product used by the hair salon workers. Pictures of the 38 products used at the hair salon in the Southeast were given for the study. Using the pictures, we identified the chemicals used in each product. All the information was then inputted into Microsoft Excel sheet and the following steps were taken for the basic risk characterization:

- Look for SDS/MSDS for each product
- Check NIOSH pocketbook guide, EPA, ECHA, ChemID, ATSDR, and OSHA Occupational Chemical Database to get information on each chemical in the product
- Call the company to get information on the products



INDIVIDUALIZED SURVEYS

The second step was to create an individualized survey using the information given from the hair salon. Having information about the workers and the products they use, survey for each of the 8 workers were created. The surveys contained questions of how the products were applied and how much were used.



1. Do you use these products every day? If so, how many times per day in average? If not every day, how many times per week or per month do you use these products in average?
- Soy 4 plex activator: ____ day ____ week ✓ month
- Koleston permanent crème color: ____ day ____ week ✓ month
- matrix 40 volume: ✓ day ____ week ____ month
- procare 40 volume maximum lift cream developer: ____ day ____ week ✓ month
- Blondor 9% freelights: ____ day ✓ week ____ month
- matrix Vlight very fast very conditioning de-dusted lightener: ✓ day ____ week ____ month
- Koleston perfect crème color 3%: ____ day ✓ week ____ month

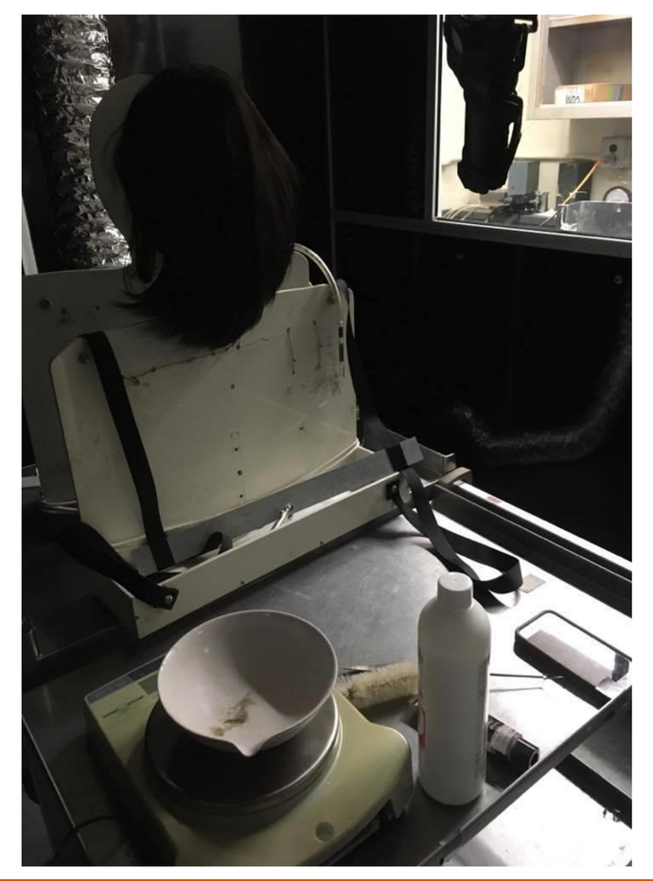
Questions in the survey

Questions in the survey
1. Do you use these products every day? If so, how many times per day in average? If not every day, how many times per week or per month do you use these products in average?
2. How much of these products do you use each time?
3. Do you mix these products with any other products? If yes, what are they and how much of the other products is mixed?
4. How are these products applied? For example, do you spray the product, use a brush, or apply it using hands (massage it to scalp)?

CHAMBER STUDY

The third step was setting up a chamber study using information from the surveys and NIOSH method 6015 for sampling ammonia in the air. This work was led by another graduate student, Guole Shi under the direction of Dr. Arnold. The results from the chamber study are still being analyzed.

For the chamber study, air samples were collected using solid sorbent tubes, connected to personal air sampling, and ppbRAE 3000. The products, method of applying the products, amount of product, and process of application were chosen according to the surveys and product label.



CONCLUSION

This study shows that there are many gaps in the process of assessing the risk posed to hair salon workers from the products they use. The uncertainty of the health risk due to knowledge gaps regarding the chemicals from the hair products needs to be addressed.

With the results from the chamber study and information gained from exposure assessment, educational materials will be created to share with the hair salon workers. The material will contain information on:

- How to protect oneself form the vapors emitted from salon products
- The uncertainties of the health risk from the chemicals used
- Health information on ammonia and like chemicals used in hair products

REFERENCES

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