ESDO

Assessing Mercury Concentration in Beauty Parlors by Lumex: 2023

EEB
European
Environmental
Bureau

zero Hg
mercury working group

Disclaimer

ESDO acknowledges financial support by the Swedish public development co-operation aid through the Swedish Society for Nature Conservation (SSNC) and the European Commission via the European Environmental Bureau (EEB) for this work and report. The sole responsibility for the content of this document lies with ESDO. The EEB, SSNC and the European Commission are not responsible for any use that may be made of information contained therein.

Executive Summary

The presence of mercury-added products in Bangladesh is a critical issue that poses significant health risks to consumers and beauty parlor workers. Bangladesh Standards and Testing Institution (BSTI) banned 17 beauty products with high levels of mercury concentration, those products are still available in the market. The use of such products can pose serious health risks to consumers, as mercury is a toxic substance that can lead to various health issues, including skin problems, kidney damage, and neurological disorders.

This report provides an overview of the findings from beauty parlors study conducted by the ESDO team on 24 and 26 July 2023. The study aimed at assessing the presence of mercury in ambient air and the presence of mercury in products used in beauty parlors and the indoor area of beauty parlors in selected areas of Dhaka, Bangladesh, specifically on Noorjahan Road and Tajmahal Road, and Zakir Hossain Road in Mohammadpur. The study involved on-site visits to beauty parlors and interviews with beauty parlor workers. The team used a Lumex analyzer to monitor mercury emissions from beauty products indicating that they may contain high levels of mercury; from the findings, mercury was measured showing that some products may have mercury presence. Based on the results, averaging 13 out of 25 products, surpass the permissible limit with mercury concentrations exceeding 1 ppm. Moreover, the indoor air quality in parlors exhibited mercury concentrations ranging from 260 to 800 ng/m3. The study also aimed to raise awareness among beauty parlor workers about the harmful effects of mercury-containing products.

Background

The Environment and Social Development Organization – ESDO conducted an investigation into the sale of skin-whitening cosmetics containing mercury in Bangladesh under the project " Assisting in the implementation and enforcement of the Minamata Convention in Bangladesh", supported by the European Environmental Bureau (EEB) and the Zero Mercury Working Group (ZMWG).
This study aimed to support the implementation of the Minamata Convention on Mercury, which was ratified by the Government of Bangladesh on 18 April 2023. The Minamata Convention on Mercury is a global treaty to protect human health and the environment from the adverse effects of mercury.

Mercury is a highly toxic chemical that poses significant risks to both human health and the environment. It is particularly concerning that some beauty products still contain high levels of mercury, as these products can lead to adverse effects on the skin and overall health of consumers.

In beauty products, mercury is often used in skin-lightening creams, soaps, and other cosmetics, as it can inhibit the production of melanin and give the appearance of lighter skin. However, the use of such products can result in various skin issues and adverse health effects. When applied to the skin, mercury can be absorbed and enter the bloodstream, causing damage to the brain, lungs, kidneys, and immune system. Some common skin conditions caused by mercury-containing products include rashes, irritations, and allergic reactions. Long-term use of such products can lead to more severe health problems. When skin lightening creams containing mercury are used, mercury can be released into the room, exposing workers and patients to its emissions.

Additionally, raising awareness among the public, beauty parlor workers, and sellers about the risks associated with mercury-containing products is vital. Educational campaigns and clear labeling on products can help consumers make informed choices and protect themselves from harmful exposure.

ESDO has done several studies on mercury added products to ban mercury from the country and played a crucial role in advocating for the ban of mercury products in Bangladesh and raising awareness about the toxic effects of mercury on human health and the environment. As a pioneer organization in this field, ESDO has been actively involved in conducting studies and campaigns to address the issue of mercury contamination in the country.

The ESDO team visited a total of 11 beauty parlors in the designated areas. Among them, 5 beauty parlors provided access. The detailed remarks are as follows:

Beauty parlor clients mentioned that most of their customers use skin-lightening night creams, which are harmful to the skin. They often come to the beauty parlors at a stage where little can be done, as the parlors primarily offer face cleaning services and do not provide skin-lightening treatments. It is concerning to hear that many beauty parlor clients are using skin-lightening night

creams that may be harmful to their skin. These creams often contain ingredients that can cause adverse effects such as skin irritation, redness, and in some cases, long-term damage.

Permissible Limit

Mercury in Air: Occupational Safety and Health Administration (OSHA): The legal airborne permissible exposure limit (PEL) is 0.1 milligrams per cubic meter (mg/m3) averaged over an 8-hour work shift.[1]

Mercury in Products: No mercury-added products are permitted

Objectives

- To Assess the Beauty Parlor Situation
- To analyze mercury concentration in the air using a Lumex analyzer inside and outside of the beauty parlor and beauty product emission
- To raise awareness among the beauty parlor workers

Methodology

The study is designed to conduct surveys and interviews with beauty parlor owners and workers to gather information on the types of beauty products used, sources of procurement, and their awareness of the mercury ban. Firstly, samples of beauty products used in beauty parlors are collected. These products include cosmetics, skin creams, soaps, and other items suspected to contain mercury. The collected beauty products are tested in terms of mercury emitted in the air when the tube/box is open using a Lumex analyzer.

The procedure was followed by:

Air Sampling Mode: Connecting a sampling probe.

Initiate Measurement: air analysis

Real-time Readings: Lumex analyzer provided real-time readings of mercury vapor concentration on the display.

Steps:

- The product was placed in a sterilized, clean plastic bag.
- The hose of the Lumex device was inserted into the bag, and the bag was secured around the hose.
- The product was opened and left for 50 seconds to 3 minutes.

[1] https://nj.gov/health/eoh/rtkweb/documents/fs/1183.pdf

- The measurements were taken to determine the amount of mercury emitted from the product.
- According to Zero Mercury Working Group report, Lumex readings above 1000 ng/m3 appear to indicate that the mercury content of cream is greater than 1 ppm. Therefore, the possible mercury concentration was determined by comparing with this reference[1].
- The indoor air in beauty parlors was tested by using the Lumex - hose at hip height.
- Mercury was also measured outside the parlors in open air, the Lumex- hose was at hip height.

Date and Time

The study was conducted on 24 and 26 July 2023 from 4.30 pm – 5.30 pm.

Study Area

ESDO Office to Noorjahan Road, Tajmahal Road, and Zakir Hossain Road, Mohammadpur, Dhaka.

Beauty Parlor List

- Chadni Beauty Parlor
- Shoukhin Beauty Parlor
- Beyond Beauty Parlor
- Srity Beauty Parlor
- Roja Beauty Parlor

Participants

- Khalilur Rahman, Assistant Program Officer
- Tanjima Haque Trisha, Project Associate
- Habiba Islam Liza, Admin and Account Associate
- Fullkumari Khisa, Junior Project Associate

[1] https://www.zeromercury.org/wpcontent/uploads/2019/02/zmwg_skin_lightening_cream_report_final_nov_2018.pdf

Discussions with Beauty Parlors

As stated by the beauty parlors staffs, the skin-lightening creams do not work for all skin types, and only a few people may experience positive results from using them. As beauty parlors, it is essential to prioritize the well-being of clients and provide them with accurate information about skincare. The beauty parlors stated that they do not offer specific skin-lightening treatments but suggest promoting healthy skincare practices and educating clients about the potential risks of using certain products.

They also mentioned that they only provide facial treatments that focus on cleansing, exfoliating, and nourishing the skin. They encourage clients to embrace their natural skin tone and work towards improving overall skin health rather than focusing on skin lightening. The issue of skin-lightening cream use is particularly prevalent among college students, as mentioned by one of the beauty parlor owners. This suggests a need for targeted awareness and education campaigns in places like girls' hostels.

According to the beauty parlors, proper monitoring and control of harmful products like skin-lightening creams can minimize the problem. To address this issue, the supply and import of these harmful creams must be banned. Despite inquiries regarding the company or brand names, the products lacked proper labeling. The parlor assistants indicated that they were not permitted to disclose any brand names.

Lumex Activity

- Mercury was measured outside the parlors in open air.
- Mercury levels were measured within the indoor area of beauty parlors.
- To detect mercury in the products, a plastic bag was utilized. Approximately an inch of the product was placed inside the plastic bag, which was then carefully flattened and spread within the bag. Subsequently, the probe of the Lumex device was inserted into the bag and left for approximately 50 seconds to 3 minutes before taking the reading in ng/m3.
- According to Zero Mercury Working Group report, Lumex readings above 1000 ng/m3 appear to indicate that the mercury content of a cream is greater than 1ppm[1]. Therefore, the possible mercury concentration were determined by comparing with this reference.

Results

Outside the parlors: Approximately 2.1 ng/m3

Chadni Beauty Parlor

Mercury Concentration in the indoor area: 260 ng/m3

[1] https://www.zeromercury.org/wp-content/uploads/2019/02/zmwg_skin_lightening_cream_report_final_nov_2018.pdf

Products	Mercury emissions by monitored by the Lumex (ng/m3)	Possible Concentration in ppm
Face cleanser	26	
Facial Musk	1112	>1
Day cream	1280	>1
Lipstick	1220	>1
Mascara	800	

Shoukhin Beauty Parlor

Mercury Concentration in the indoor area: 800 ng/m3

Products	Mercury emissions by monitored by the Lumex (ng/m3)	Possible Concentration in ppm
Foundation	145	
Face oil	43	
Day cream	1236	>1
Lipstick	210	
Night cream	1780	>1

Beyond Beauty Parlor

Mercury Concentration in the indoor area: 300 ng/m3

Products	Mercury emissions by monitored by the Lumex (ng/m3)	Possible Concentration in ppm
Day cream	1300	>1
Night cream	1470	>1
Toner	2.8	
Lipstick	120	
Mascara	600	

Srity Beauty Parlor

Mercury Concentration in the indoor area: 350 ng/m3

Products	Mercury emissions by monitored by the Lumex (ng/m3)	Possible Concentration in ppm
Face powder	56	
Day Cream	1310	>1
Night Cream	1380	>1
Face Brightening Musk	1150	>1
Mascara	360	

Roja Beauty Parlor

Mercury Concentration in the indoor area: 600 ng/m3

Products	Mercury emissions by monitored by the Lumex (ng/m3)	Possible Concentration in ppm
Body Cream	1550	>1
Spot mattifying cream	1320	>1
Moisturizer	1245	>1
Lipstick	180	
Mascara	360	

Discussion

The air quality within parlors reveals a spectrum of mercury concentrations, ranging from 260 ng/m3 to as high as 800 ng/m3, while outdoor air levels typically hover around 2.1 ng/m3. Although the measured mercury levels seem to fall within acceptable limits, the fact that they exceed those found in the ambient environment raises significant concerns. Even at seemingly low doses, mercury poses considerable health risks, making any elevation in concentration a cause for alarm.

Turning to the emissions from beauty products, a thorough examination uncovers troubling findings. Among the 25 products analyzed, a startling 13 were found to emit mercury exceeding

1000ng/m3. Therefore 13/25 products are likely to have mercury concentrations above 1 ppm. The implications of this exceedance are grave, particularly in light of the stipulations outlined by the Minamata Convention COP 5, which mandates the elimination of all mercury-added products. Furthermore, while the remaining products appear to fall below the 1 ppm threshold, their presence in the market still warrants careful scrutiny and consideration, given the overarching goal of reducing mercury exposure and its associated risks.

Outcome

- The discussion and tests in the beauty parlors helped the ESDO team identify the presence of beauty products containing potentially harmful chemicals in beauty parlors.
- The parlor staff learned about the potential health implications of using certain beauty products from the beauty parlor owners. Clients had reported using these products they faced skin irritations, allergies, and other adverse effects.
- The visit highlighted the need for increased awareness among both consumers and beauty parlor workers about the potential dangers of using harmful whitening products. Many workers were aware of the issues but may need more information to guide their clients effectively.
- The parlor staff and association admitted that they were completely unaware of the presence of mercury and its effects. Moving forward, they will replace mercury-containing products with safer alternatives.

Conclusion

The findings regarding mercury concentrations in both parlor air and beauty products underscore the critical need for heightened awareness and action. While the levels detected within parlors may appear to be below permissible limits, the fact that they exceed outdoor air levels suggests ongoing environmental contamination from a source emitting mercury which eventually appears to be the creams used. Moreover, the presence of elevated mercury concentrations in beauty products, with a significant portion likely surpassing permissible limits, highlights a concerning trend that demands immediate attention. It is recommended that the products found to contain mercury are removed and suppliers are notified thereof. It is essential that the parlors take such actions to align with their core principle of prioritising the well-being of their clients.

To safeguard public health and adhere to international agreements such as the Minamata Convention COP 5, it is imperative that regulatory bodies and stakeholders collaborate to enforce stricter standards and phase out mercury-added products. Furthermore, ongoing monitoring and research efforts are essential to fully understand the extent of mercury exposure and its potential health impacts. By taking decisive steps to mitigate mercury pollution at its source and promote safer alternatives, we can work towards a healthier and more sustainable future for all.

Pictorials