B148 A Population Study of Textile Fibers on Parapets of High-Rise Housing in Singapore

Sherni Koh, BS, Health Sciences Authority, Singapore 169078, SINGAPORE; Vanessa Eng, Health Sciences Authority, Singapore 169078, SINGAPORE*

Learning Overview: After attending this presentation, attendees will have gained insight into the background fiber population in the Southeast Asian country of Singapore.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing the first fiber population study done in a Southeast Asian country, characterized by a typical tropical climate with abundant rainfall and high humidity all year round. This study seeks to compare to some of the previous population studies and investigate if geographical and climatic changes present any effect on background fiber population.

Singapore is one of the most densely populated countries in the world and more than 80% of the population stay in high-rise housing.[1] As a result, fall-from-height deaths are common in Singapore. Sometimes, it is crucial to determine where the fall started. The presence of transferred fibers onto the parapets of housing estates could provide key evidence in such cases. However, the significance of such fiber evidence would be difficult to assess without any background fiber statistics.

Fibers were lifted from the surfaces of the parapets from the ninth and tenth levels of ten housing locations. The microscopic characteristics and optical properties of the fibers were examined and compared using polarized light microscopy and fluorescence microscopy techniques. The frequency of fibers recovered from these surfaces were ranked in terms of color and generic fiber type. The fibers recovered from the parapets at each level and location were compared against each other.

A total of 1,256 fibers were recovered from ten housing locations. They ranged from having a minimum of 25 fibers to a maximum of 148 fibers at each level, with a mean of 63 fibers. No trends were observed in the number of fibers recovered with respect to the level or the location. Gray/black, blue, colorless, and red were the four most abundant colors that were present in the population while cotton, polyester, and rayon fibers were the three most abundant generic types. With a combination of color and generic type, blue cotton, gray/black cotton, and colorless polyesters were the three most abundant fiber types that were present in the population.

Thirteen out of 20 levels examined were found to have similar fibers within the same level. In a total of ten locations, only two locations had similar fibers between levels nine and ten.

Reference(s):

1. *Singapore Housing & Development Board Annual Report 2018/2019*, Key Statistics, Page 13. https://services2.hdb.gov.sg/ebook/AR2019-keystats/html5/index.html?&locale=ENG&pn=1.

Population Study, Fibers, Singapore

*Presenting Author