HealthySole UV Exposure Pixel Analysis

Report 5/13/16

Frank Mascarich, B.S. CSE

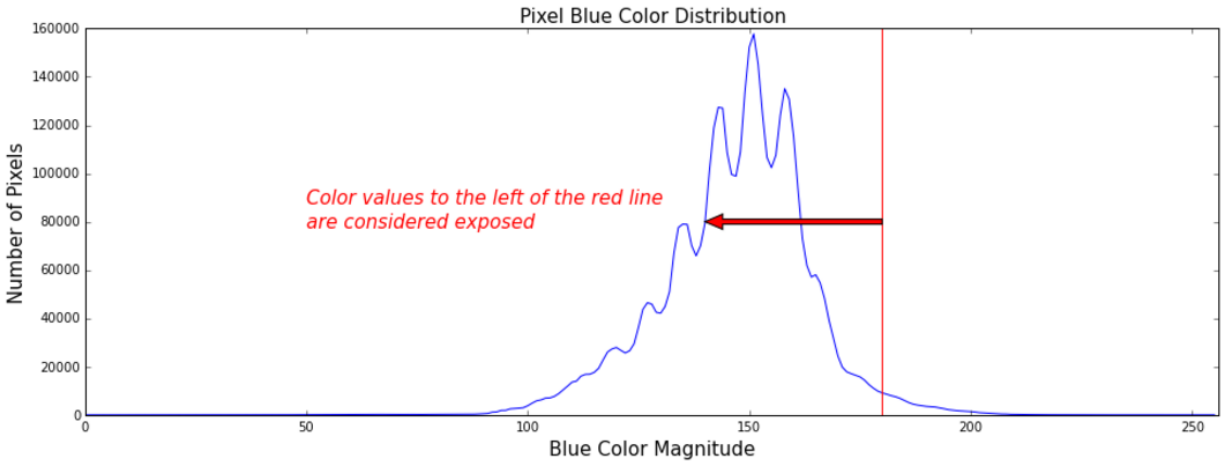
This report details an analysis of an image demonstrating the exposure of a surface to UV light using the HealthySole Plus. A pixel by pixel analysis was performed on a color image showing the chemical reaction in the presence of UV light. The irrelevant portions of the image were masked out and the remaining were inspected for intensity. Images are stored in RGB values in which each pixel is represented by three numbers, a red value, a green value, and a blue value. These values vary from 0 to 255 where 0 is the strongest color value (black) and 255 is the weakest color value (white). Since the detection medium is blue, the analysis looks at the intensity of blue in each pixel and counts how many pixels are below a certain threshold. This report used a threshold of 180. The right foot scored an exposure of 97.9%, while the left foot scored an exposure of 96.8%, yielding an average exposure over both shoes of 97.35%.

97.35%

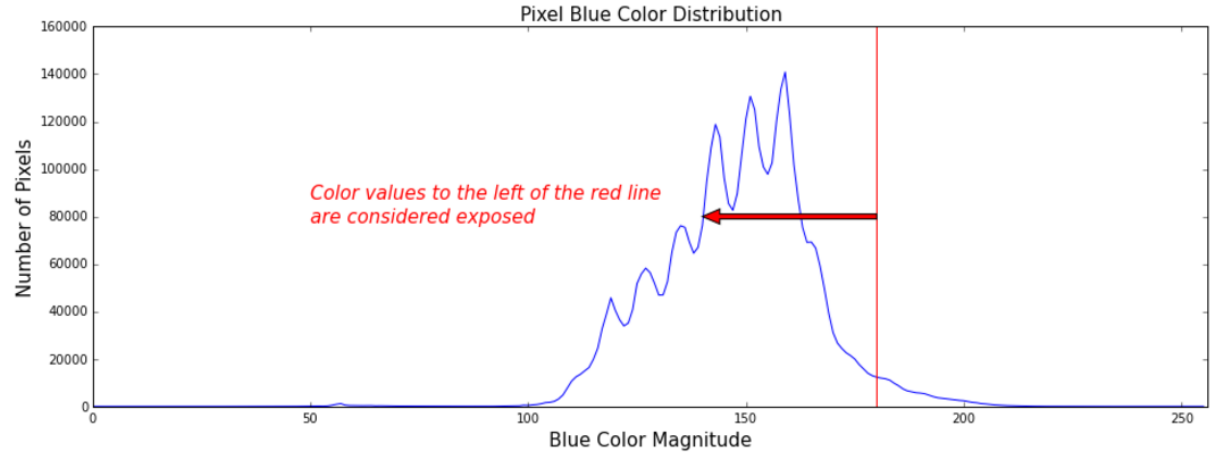
Contents:

1. Pixel Distribution Chart

RIGHT FOOT

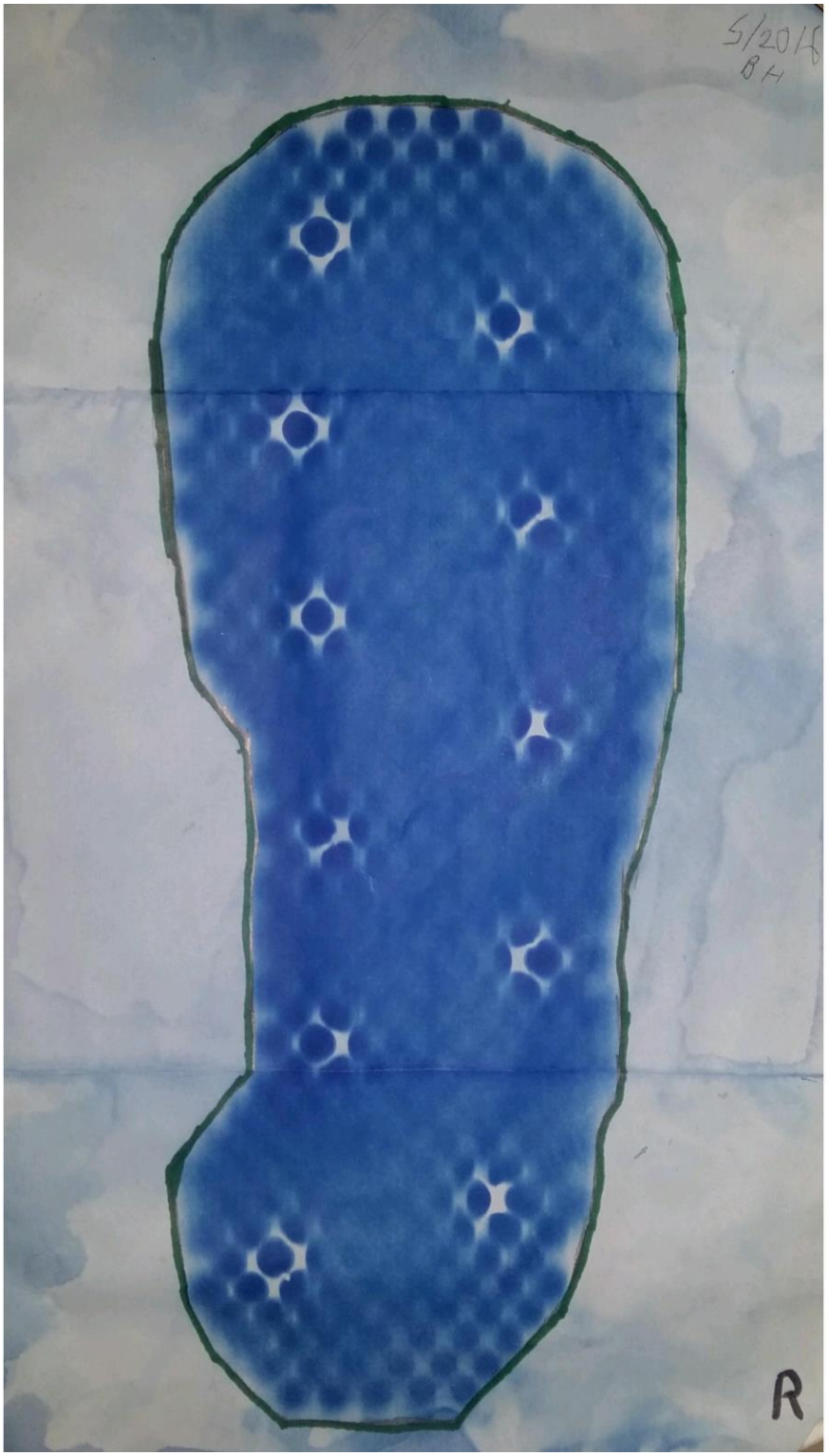


LEFT FOOT

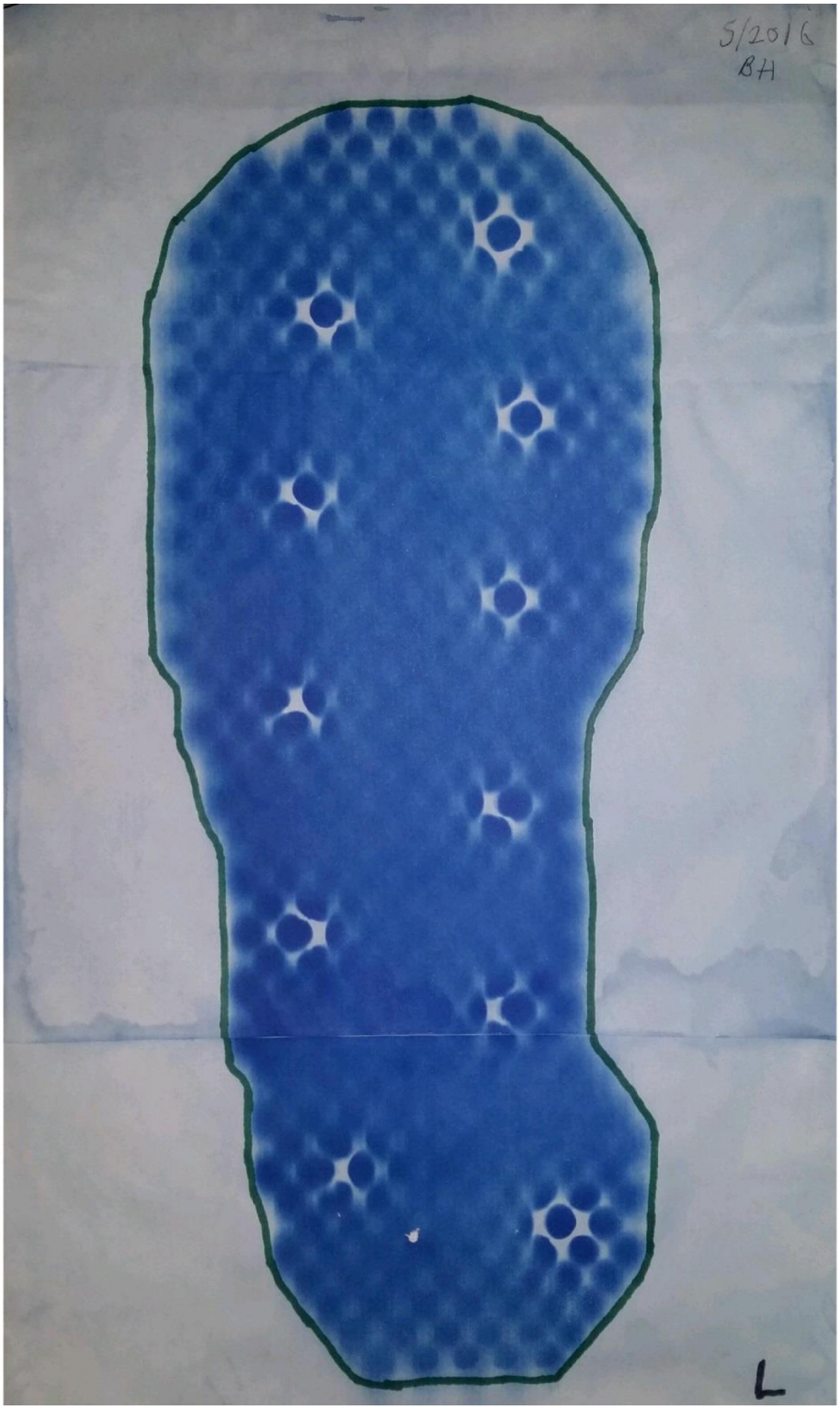


2. Original Image

RIGHT FOOT



LEFT FOOT



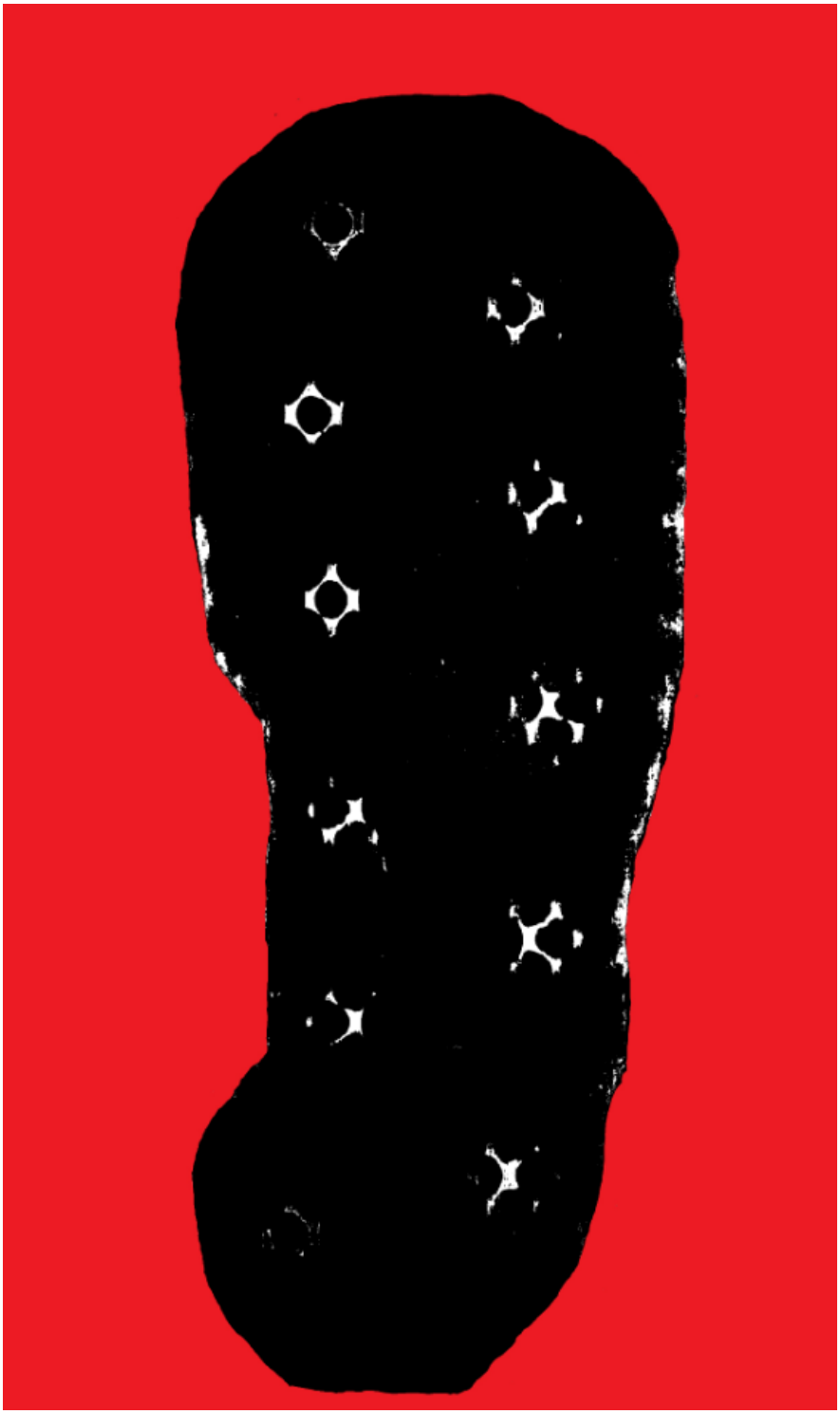
3. Masked Image

RIGHT FOOT

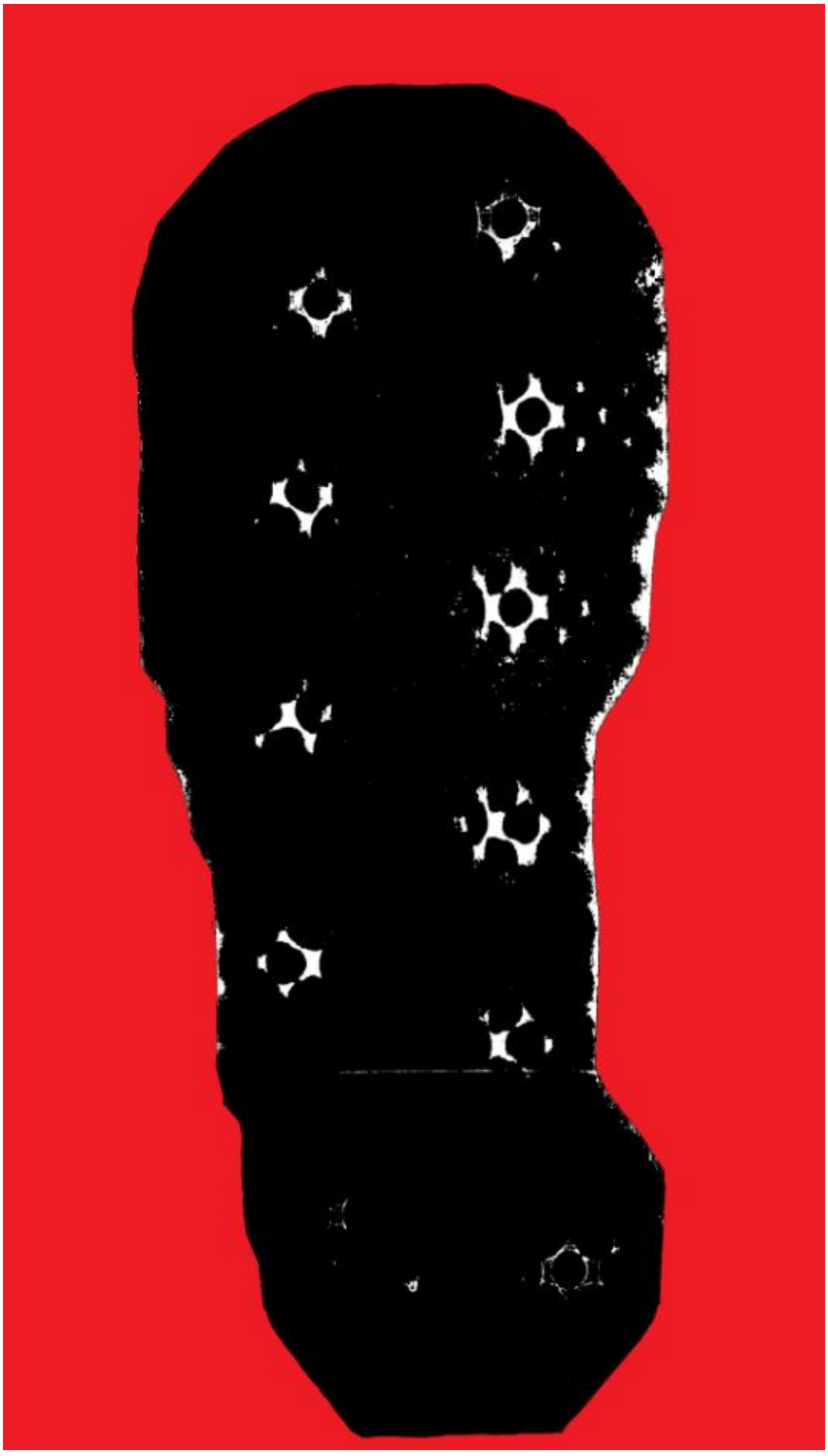
LEFT FOOT

4. Threshold Image

RIGHT FOOT, Threshold = 180, 97.9% Exposure



LEFT FOOT, Threshold = 180, 96.8% Exposure



Disclaimer

This analysis should not be used to evaluate the absolute effectiveness of a light exposure system. It is intended to be used as an aide to compare exposures across light barrier designs, and to show where disinfection surfaces will be less exposed. The exposure percentage is does not correlate to UV dosage or disinfection rate, it is only a relative metric for comparing the average brightness of pixels in an image.