

**INVESTIGATION OF FACTORS AFFECTING FOR
AIR BUBBLES FORMATION DEFECT OF THE
GLOVES MANUFACTURED FROM NITRILE
RUBBER LATEX**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
In partial fulfillment of the requirements for the award of
Bachelor of Science in Palm & Latex Technology and Value Addition

By
PODDALA KAMKANAMGE THILINI ISURIKA

**Palm & Latex Technology and Value Addition Degree
Programme**

Faculty of Animal Science and Export Agriculture

Uva Wellassa University of Sri Lanka

2019

ABSTRACT

Nitrile gloves are made of Acrylonitrile butadiene rubber latex (NBRL). The pin hole formation on glove surface is a common defect in Nitrile gloves which originates due to air bubbles formed in the NBRL compounds. The Overall Equipment Efficiency (OEE) of the production has been reduced increasing the downtime of the process due to the defect. Therefore this study was carried out in order to investigate the root causes for the pin hole formation. Possible causes were identified conducting a brainstorming session and they were rated using Failure Mode & Effect Analysis Tool. The causes which showed high risk ratings were investigated further to extract the root cause. Depending on the results of rating, bacteria formation in latex and poor housekeeping practices were subjected to further investigations. Nutrient agar culture technique was used to investigate bacterial availability in two types of NBRL (BL 20 and BL15) from different processing stages. Also a questionnaire was developed to investigate the current level of housekeeping practices. As per the results, BL 20 NBRL showed bacterial contamination which was not observed in BL15 NBRL. Also results revealed that cleaning of feed line and dipping tank in practical scenario was not complying with standard operating procedure, thus, it has stimulated the microbial contamination continuously. Overall root cause for the pin hole formation defect was formation of bacteria in the NBRL compound. And also it was continuously occurred due to the issues of housekeeping practices.

Key words: Acrylonitrile Butadiene rubber latex (NBRL), Bacteria, Brainstorming, Housekeeping, Overall Equipment Efficiency (OEE).