



# RCA Case Study

Process or Test  
Method Validation

Product Cleaning -  
Endotoxin Control

## Background

A medical device manufacturer was experiencing occurrences of unacceptable endotoxin levels on finished, cleaned surgical needles, and an FDA 483 observation was received for non-conformances to certain procedures related to the needle cleaning process and endotoxin control.

## Challenge

Regulatory Compliance Associates, Inc. (RCA) was requested to analyze the process used to clean the needles, develop a protocol for evaluating cleaning efficacy, and recommend improvements to the process and specifications.

## Approach

RCA developed and coordinated controlled testing using a “worst-case” product example inoculated at a target level of approximately 300 EU/device, and with the goal being final endotoxin levels at less than 2.15 EU/device after cleaning. Test results showed a gradual build-up of bioburden in the cleaning water from one batch of needles to the next.

RCA also assisted the client in the design and build of new cleaning equipment. The final cleaning system was replaced with the automated system, a clean compressed air system was installed, vacuum driers were installed, the equipment and process was validated, a clean room behavior SOP was developed, and training was performed. Additionally, a sampling plan with action and alert levels for product endotoxin levels was established.

## Result

Product endotoxin levels were substantially reduced, and the risk of non-conforming product reaching customers was effectively addressed and documented through process validation and improved process control.

## References

1. U.S. Pharmacopoeia 30 Section <161>, Transfusion and Infusion Assemblies and Similar Medical Devices
2. FDA Guidance, “Validation of the Limulus Amebocyte Lysate test as an end-product endotoxin test for human and animal parenteral drugs, biological products, and medical devices” DHHS, December 1987