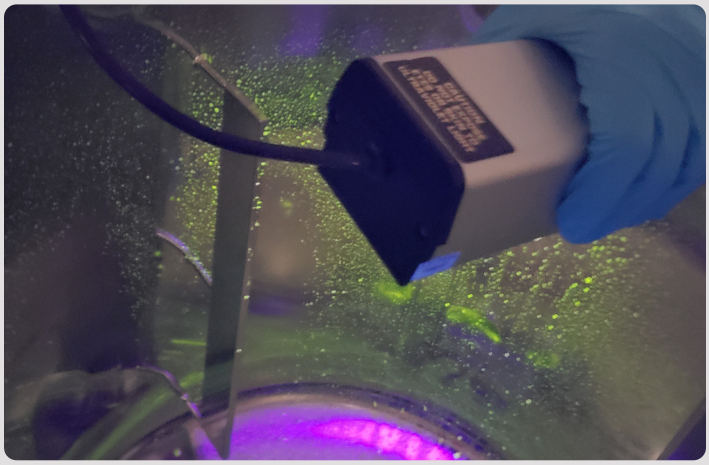
Riboflavin Coverage Test

Clean-in-place (CIP) systems are used in the pharmaceutical industry to clean one or more vessels in the manufacturing process. Spray devices are internally installed in vessels to ensure the CIP system can properly clean all areas of the tank. During the cleaning cycle, spray devices disperse cleaning solution and provide physical action to remove residues inside equipment.

Spray devices must deliver adequate tank coverage for a complete clean. One method to determine coverage is to perform a riboflavin coverage test. Riboflavin, a type of vitamin B found in food, is selected for vessel coverage studies due to its fluorescent properties under ultraviolet light.

Riboflavin Coverage Procedure



A vessel coated with riboflavin solution fluorescing under ultraviolet light.

1. Coat the tank with 0.2 g/L riboflavin solution
2. Observe with ultraviolet (UV) light while wet
3. Perform a short rinse cycle with water
4. Observe with UV light while wet

If the procedure outlined above has not removed the fluorescent riboflavin from the tank, then the system does not have adequate coverage. To ensure adequate coverage, changes must be made to the spray device and/or vessel. For example, changing the position of the spray device or adding additional spray devices can help eliminate shadow areas in the vessel. Repeat the procedure after the changes until 100% coverage is observed.

Resources

Verghese G. & Lopolito P., "Cleaning Engineering and Equipment Design", in Pluta, P. (Ed) Cleaning and Cleaning Validation, Vol 1, PDA & DHI publishing (2009)

STERIS Life Sciences Technical Tip, "Spray Device Coverage Test using Riboflavin" Literature number 410-200-3036

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