

Microbial Sampling from Dry Surfaces: Current Challenges and Solutions



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1 Introduction

Surface sampling methods are not standardized. Different media are employed, and in the case of swabs, different results have been reported for wet and dry swab methods and contact plates. Replicate sample contact plates should be expected to give similar results under identical conditions, but rates of recovery have been reported to be both lower than expected and highly variable. In general, surface monitoring has been found to recover <50%, even when used with relatively high inoculum levels on standardized coupons. In actual production environments where organisms are stressed to varying degrees, recovery rates may be lower.

United States Pharmacopeia (USP), Chapter 1116: “Microbiological Control and Monitoring of Aseptic Processing Environments”, 2014.

Various types of dry (not submerged) surfaces such as plastics, stainless steel, glass, wood etc. used today in all branches of human activity, are all subject to contamination by microorganisms [1]. In general, surface colonization is beneficial for microorganisms in terms of growth and nutrient uptake so that most bacteria and fungi live attached to a solid surface—artificial, animal, mineral, or vegetable [2–4].

Many studies have emphasized the primary role of microbiological surface sampling in obtaining sufficient and representative information about the character and number of biological agents associated with materials. Microbiological public safety relies on sufficient recovery of significant microorganisms and following species/strain identification that together provide key evidences for decision-making.

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