

## Preparedness for Microbial Forensics Evidence Collection on Best Practice

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**Abstract :** Safety issues, scene protection, and appropriate evidence collection must be handled in any bio crime scene. There will be a scene or multi-scene to be cordoned for investigation in any bio-incident or bio crime event. Evidence collection is critical in determining the type of microbial or toxin, its lethality, and its source. As a consequence, from the start of the investigation, a proper sampling method is required. The most significant challenges for the crime scene officer would be deciding where to obtain samples, the best sampling method, and the sample sizes needed. Since there could be evidence in liquid, viscous, or powder shape at a crime scene, crime scene officers have difficulty determining which tools to use for sampling. To maximize sample collection, the appropriate tools for sampling methods are necessary. This study aims to assist the crime scene officer in collecting liquid, viscous, and powder biological samples in sufficient quantity while preserving sample quality. Observational tests on sample collection using liquid, viscous, and powder samples for adequate quantity and sample quality were performed using UV light in this research. The density of the light emission varies upon the method of collection and sample types. The best tools for collecting sufficient amounts of liquid, viscous, and powdered samples can be identified by observing UV light. Instead of active microorganisms, the invisible powder is used to assess sufficient sample collection during a crime scene investigation using various collection tools. The liquid, powdered and viscous samples collected using different tools were analyzed using Fourier transform infrared - attenuate total reflection (FTIR-ATR). FTIR spectroscopy is commonly used for rapid discrimination, classification, and identification of intact microbial cells. The liquid, viscous and powdered samples collected using various tools have been successfully observed using UV light. Furthermore, FTIR-ATR analysis showed that collected samples are sufficient in quantity while preserving their quality.

**Keywords :** biological sample, crime scene, collection tool, UV light, forensic

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