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(54) **SANITARY SWAB COLLECTION SYSTEM, MICROFLUIDIC ASSAY DEVICE, AND METHODS FOR DIAGNOSTIC ASSAYS**

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(57) **ABSTRACT**

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Biohazard specimen collection containers are provided with an external disposable skin, that is stripped away and discarded after the biohazardous specimen is collected, thus reducing or eliminating objectionable or dangerous residues on the outside surfaces of the container. Further, we teach that the sample collection container with external disposable skin may also serve as an integrated microfluidic biosample processing and analytical device, thereby providing a single entry, disposable assay unit, kit and system for “world-to-result” clinical diagnostic testing. These integrated assay devices are provided with synergic, multiple safe-handling features for protecting healthcare workers who handle them. The modified collection containers and analytical devices find application, for example, in PCR detection of infectious organisms or pathogenic markers collected on a swab.

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