B27 The Prevention of Occupational Exposure to Fentanyl and Fentanyl-Like Compounds: Elbow Grease and OxiClean™

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The goal of this presentation is to provide information on safely and effectively preventing occupational exposure to fentanyl through a decontamination procedure.

This presentation will impact the forensic science community by providing a method of preventing occupational exposures to fentanyl, which has not been addressed to date.

The current opiate epidemic not only affects the lives of those using the illicit substances; the lives of first responders and evidence custodians are also at risk. There have been multiple occupational exposures in the state of Ohio in the first seven months of 2017. Although the Centers for Disease Control and Prevention has provided useful information regarding personal protective equipment, there is very little information regarding appropriate and effective methods to clean a potential fentanyl spill. While there is one publication regarding the best oxidizers to degrade fentanyl, that study was not practical for various reasons.[1] The present study was designed to account for a working environment and supplies that can be purchased easily. This study also addresses the physical act of scrubbing the area with a standard paper towel in addition to chemical detergents.

Consistent amounts of fentanyl or acetylfentanyl were measured and placed in tape-defined squares on a laboratory benchtop surface. The powdered drugs were then subject to either tap water or a solution of tap water and OxiClean™ Versatile Stain Remover powdered detergent using 5mg in 500mL. This specific type of OxiClean™ uses oxidizers from the Qi study, where other versions may not.[1] Using time points of 0, 15, 30, and 60 minutes, samples were collected after allowing the water or solution to "soak" the drug or after "scrubbing" the area after soaking. The swabs were then soaked and agitated in methanol for 15 seconds and analyzed using a Gas Chromatograph coupled to a Mass Spectrometer (GC/MS). The maximum amount of drug detected by the instrument was calculated to be 200ng based on the amount seeded on the table, the volume injected into the instrument, and the volume split off during method acquisition. This nanogram level of fentanyl is less than the microgram levels that constitute a pharmaceutical dose of the prescription-only opiate. The evaluated spectra demonstrate that scrubbing the area is more effective than soaking at all time points evaluated. Further, OxiClean™ combined with scrubbing the area has more beneficial results compared to water, but both soaking and scrubbing conditions fail when evaporation occurs. For this reason, the area should be cleaned with scrubbing action within 15 minutes of spraying the OxiClean™ solution and the paper towel should be discarded in a biohazardous waste container along with personal protective equipment (e.g., double gloves, disposable laboratory coat, particulate mask) used for decontamination.

Reference(s):

1. Qi, Lihong et al. Oxidative Degradation of Fentanyl in Aqueous Solutions of Peroxides and Hypochlorites, *Defence Science Journal.* 2011, 61(1), pp.30-35, DOI:http://dx.doi.org/10.14429/dsj.61.68.

Fentanyl, Decontamination, Occupational Exposure

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