

# Evaluation of a Database Containing Pharmacy and Nursing Real-World Hazardous Drug Wipe Test Following Use of an Air-Cleaning Closed System Transfer Device (CSTD) to Assess Surface Contamination

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## Background and Significance

Hazardous drug (HD) exposure through environmental contamination is a critical concern in oncology nursing, impacting both patient and nurse safety.

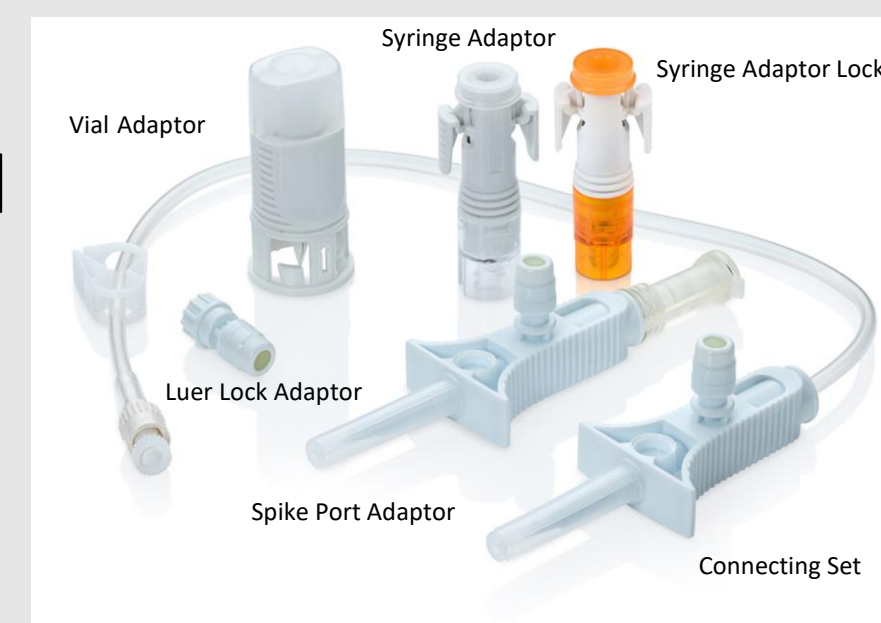
- United State Pharmacopeia (USP) <800> advises the use of CSTDs when compounding and **requires** it for administration of HDs.<sup>1</sup>
- Wipe testing is a widely accepted method for determining workplace surface drug contamination.<sup>2</sup>

Despite guidelines aimed at reducing occupational exposure, measurable concentrations of cytotoxic drugs are still found on workplace surfaces.

## Purpose

Air-cleaning CSTDs, designed to prevent the escape of liquid and aerosolized HDs, offer increased protection to clinicians and patients from HD compounding to its administration.

- This Real-World Data (RWD) evaluation assessed surface contamination using wipe test data collected from multiple hospital systems and outpatient facilities using an air-cleaning CSTD between 2018 and 2022.

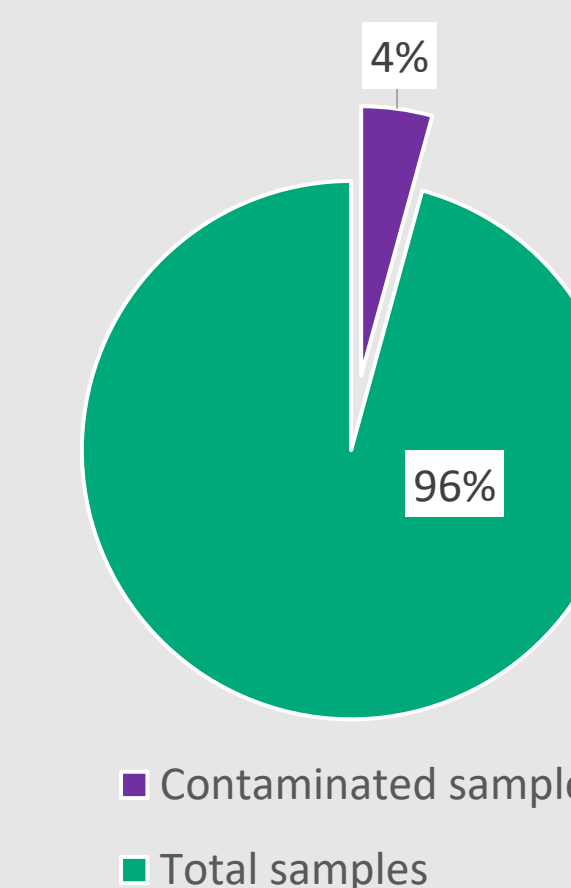
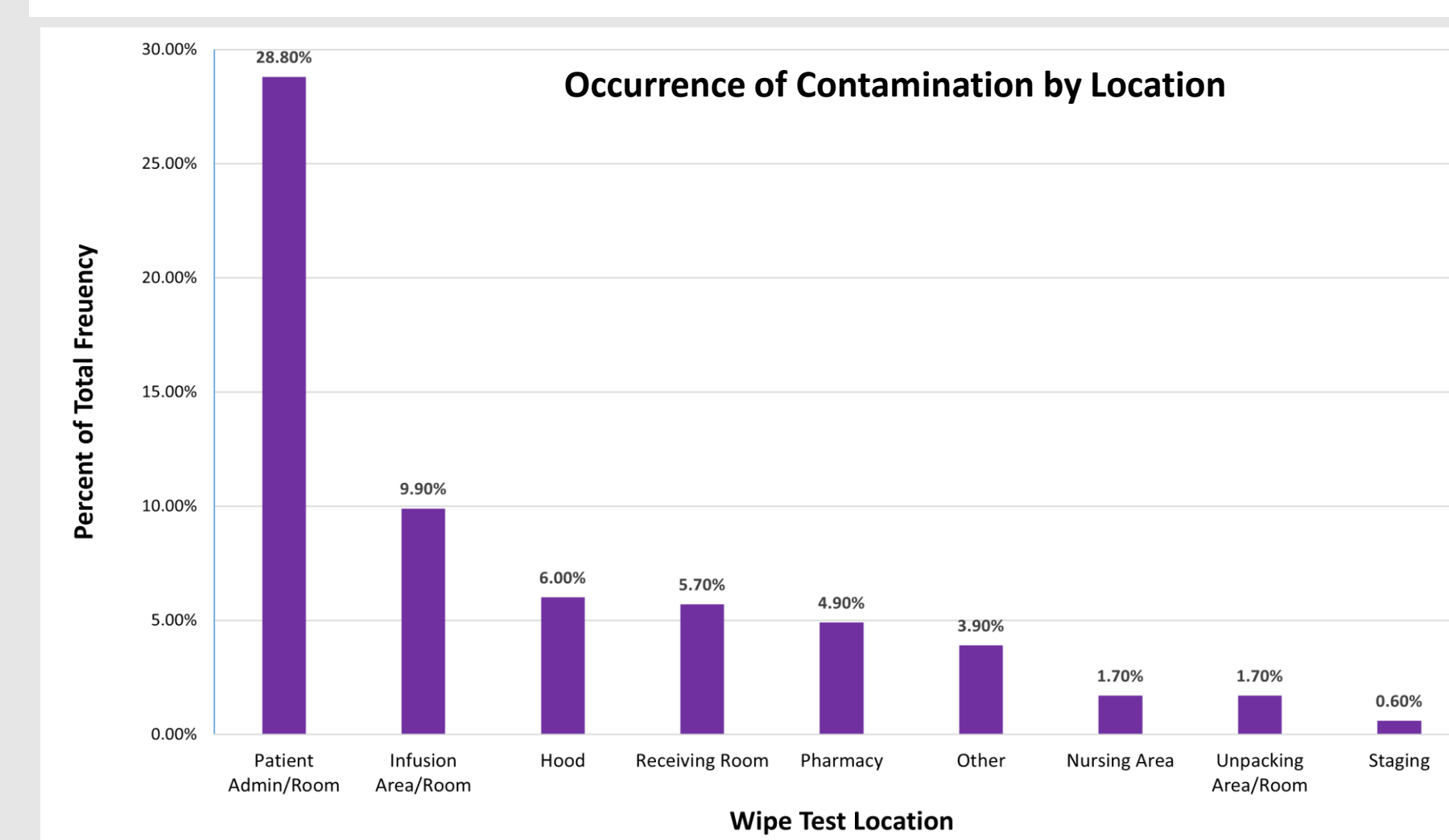
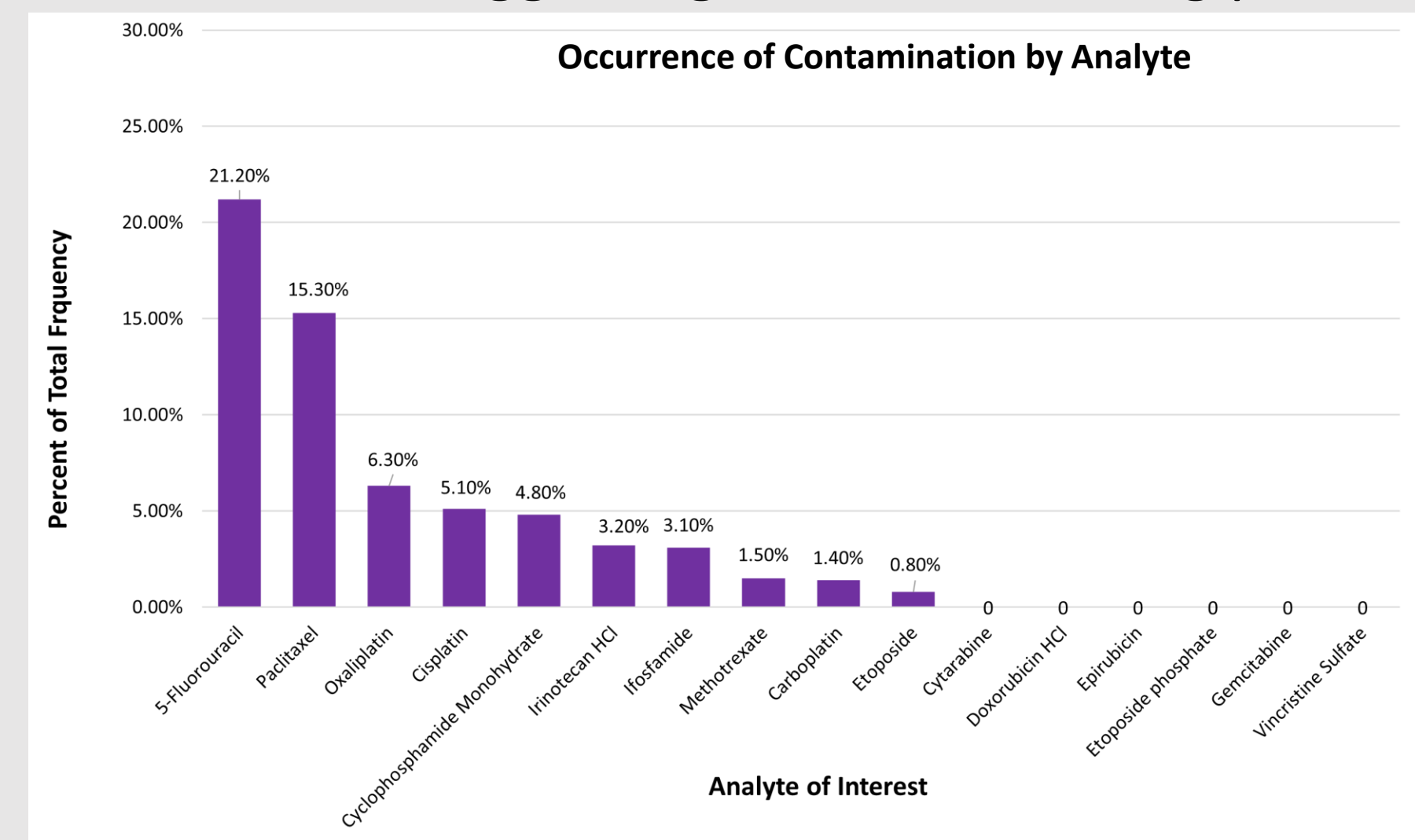


## Interventions

- HD contamination in US hospitals and outpatient facilities using surface wipe sampling kits after implementing of an air-cleaning CSTD was evaluated. Pre-CSTD implementation baseline data were not available.
- Wipe test collection was performed in pharmacy and nursing areas. The sampling was conducted every six months over three years, targeting up to five HDs with a detection threshold of 5 ng.
- Data from 43 facilities were consolidated into 18 health systems and 507 areas into nine locations (i.e pharmacy, nursing area, storage bins, patient admin/floor). Results were categorized by occurrence, mean level of contamination by HDs, and physical location of sample collection.

## Results/ Evaluation

- From 2018 to 2022, 5,531 wipe analyses were performed. **There were 246 contaminated samples (4.45%)**, ranging from 5.1 to 3,430.0 ng, with a mean of 54.8 ng. Contamination varied across hospitals, peaking at 25%. Overall, 5-Fluorouracil had the highest occurrence of contamination (21.2%) with a mean of 105.4 ng. After removing an outlier, Paclitaxel showed the highest contamination level (79.4ng).
- A p-value of <0.0001 suggests location as a significant predictor of level of contamination. **Patient Admin/Rooms had the highest contamination (28.8%)** while staging locations in compounding pharmacies had the lowest (0.6 %).
- **Most hospitals (95.6%) had low or undetectable contamination.** Data showed that 11 institutions consistently had contamination below 5%, suggesting best HD handling practices at these facilities.



## Discussion

- This RWD evaluation suggested that preparing and administering HDs using air-cleaning CSTDs shows low surface contamination thus decreasing the potential HD exposure to healthcare workers. Level of contamination was highly variable across locations likely due to HDs handling and cleaning practices at a particular facility.
- This emphasizes the need for standardized handling and cleaning practices and strictly defined standards for acceptable limits for handling HDs on surface contamination.
- Some institutions had extremely low surface contamination suggesting a potential use of best clinical practices at those facilities. Additional research is needed to enhance safety measures and minimize HD exposure risks to patients and the oncology nurses.

## Takeaways

- Obtaining baseline wipe data prior to the initiation of a CSTD and at regular intervals, will enable facilities to better document implementation and program success.
- The utilization of a CSTD at the point-of-care could decrease HD exposure for nurses, patients, and ancillary staff.
- Best Practices for HD handling should be standardized in all compounding and administration areas.

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## Contact/ Disclosures

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