

Evaluation of Vial Transfer Devices for Containment of Hazardous Drug Vapors



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Background

Medical personnel have been examining the issues of exposure to hazardous medications and prevention. Malformations, spontaneous abortions, and stillbirths have been associated with exposures to cytostatic agents. Closed-system drug transfer devices are recommended by the National Institute for Occupational Safety and Health (NIOSH) for the containment of hazardous drugs. The purpose of this study is to examine available products utilized for drug-transfer to determine which device prevents the escape of vapor meeting the NIOSH definition of closed.

Methods

Nine drug-transfer devices were tested:

- ❖ Spiros™ Male Connector and Clave® (ICU Medical Inc.)
- ❖ Vial Adapter and Clave® (ICU Medical Inc.)
- ❖ B. Braun OnGuard™ System (Teva Medical Ltd.)
- ❖ Chemo Mini-Spike Plus™ Dispensing Pin (B. Braun Medical Inc.)
- ❖ Alaris' Smart Site® (Cardinal Health)
- ❖ CyTwo-Fer (Baxa)
- ❖ CHEMO-AIDE (Baxter)
- ❖ Chemoprotect Spike® (Codan US Corporation)
- ❖ PhaSeal® Protector 50 & Injector Luer Lock (Carmel Pharma)

Titanium tetrachloride (TiCl₄) was used to simulate gas-containing active drug. Titanium tetrachloride generates very visible smoke when it comes into contact with moisture in the air. It was placed into glass vials attached to the above transfer devices to determine which system prevents the escape of vapor.

Results/Conclusions

Only the PhaSeal® System prevented the release of titanium smoke out of the closed-system drug transfer device.

Only the PhaSeal® System met the NIOSH definition of a closed-system drug transfer device.

References

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American Society of Health System Pharmacists.

ASHP guidelines on handling hazardous drugs.

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PhaSeal® by Carmel Pharma



Chemo Mini-Spike Plus™ Dispensing Pin by B. Braun Medical Inc.



Spiros™ Male Connector and Clave® by ICU Medical Inc.



Vial Adapter and Clave® by ICU Medical Inc.



B. Braun OnGuard™ System by Teva Medical Ltd.



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