Safe Handling of Hazardous Drugs - Wipe Sampling

Emma Hooks, Director, Environmental Health & Safety, Regulatory Compliance
Barnes-Jewish Hospital, St. Louis, MO

Description
In 2017, Barnes-Jewish Hospital completed an assessment of hazardous drug risk, in accordance with regulatory and consensus guidelines, including those defined by the United States Pharmacopeial Convention (USP) 800 and the National Institute for Occupational Safety and Health (NIOSH). Assessment included activity-specific safe work practices, engineering controls & personal protective equipment for each hazardous drug dosage formulation.

During the assessment, a database providing a list of hazardous drugs was created, detailing determined exposure risk, engineering controls and required PPE, for all handling and manipulation activities. Hazardous drug policies, procedures and training materials were developed and implemented based on established database.

To determine a baseline of existing conditions and later measure effectiveness of established protocols, a wipe sampling program was implemented in late 2017. As a result, a Certified Industrial Hygienist (CIH) established initial sampling program was implemented in late 2017. As a result, a Certified Industrial Hygienist (CIH) established initial sampling program.

Purpose
While completing an assessment of hazardous drug risk in 2017, Barnes-Jewish Hospital recognized need to adopt recommendations from USP 800, NIOSH and the Occupational Safety & Health Administration (OSHA) and perform objective environmental wipe sampling for hazardous drug surface residue. Sampling results used to develop summary of existing conditions and determine areas of emphasis when implementing hazardous drug management procedures. Additionally, baseline data to be combined with subsequent wipe sampling events to determine effectiveness of implemented management procedures.

USP 800 recommends environmental wipe sampling for hazardous drug surface residue initially as a benchmark, and at least every six (6) months thereafter, to verify containment. If measurable contamination is detected, USP 800 further recommends action be taken to identify the cause and corrective actions be implemented to properly contain the hazardous drug. Additionally, repeat sampling recommended to validate effectiveness of corrective actions.

Methods
When completing the assessment of risk, the multidisciplinary BJH Hazardous Drug Committee identified representative locations for wipe sampling and retained the services of a CIH to perform sampling. CIH assessment included activity-specific safe work practices, engineering controls & personal protective equipment for each hazardous drug dosage formulation.

For more information, please contact:
Emma Hooks, Director
Environmental Health & Safety, Regulatory Compliance
Barnes-Jewish Hospital
One Barnes-Jewish Hospital Place
St. Louis, MO 63110
(314) 768-4002

Outcomes
Of the initial sampled locations, only two (2) had any measurable concentration of hazardous drug residue. Both results were below 1 nanogram (ng) per cm². Detections were both within the non-sterile, hazardous drug storage and compounding room in the main pharmacy.

Cyclophosphamide was found on the ledge of a storage carousel and Tacrolimus was present inside a biological safety cabinet on a preparation surface. Lab results were used to develop baseline data and determine areas of emphasis for management protocols. Following implementation of protocols, verification sampling was completed. Semi-annual sampling and subsequent verification sampling continue at the facility.

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Ashley Anstaett, Burns & McDonnell Engineering, Co., Saint Louis, Missouri
For more information, please contact:
Emma Hooks, Director
Environmental Health & Safety, Regulatory Compliance
Barnes-Jewish Hospital
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St. Louis, MO 63110
(314) 768-4002

References:
1) American Industrial Hygiene Association
2) National Institute for Occupational Safety and Health
3) OSHA Technical Manual, Section 6, Chapter 2
4) United States Pharmacopeial Convention (USP) 797
5) United States Pharmacopeial Convention (USP) 800