

Abstract:

BACKGROUND: Cytotoxic drugs constitute an important workplace hazard in the hospital environment. Our aim was to conduct an environmental assessment of hazardous drugs in the Oncology Center of Cyprus.

METHODS: Wipe samples were obtained from 42 workplace areas of the Oncology Center including two pairs of gloves in an initial assessment, while 10 samples were obtained at follow-up 3 years later. Potential contamination with cyclophosphamide (CP), ifosfamide (IF) and 5-fluorouracil (5-FU) and other cytotoxic medications was examined using the GC-MSMS system (CP, IF) and the HPLC system with UV detection (5-FU) method, respectively.

RESULTS: Wipe sample contamination was detected at 11.9% and 15% in the initial and follow-up assessment, respectively. Both pairs of gloves assessed were free from contamination. The results showed contamination with cyclophosphamide on the work space inside the isolator, on a day-care office phone and on the central pharmacy bench. Ifosfamide was only detected on the floor of a patient's room. Contamination with 5-fluorouracil was found only on the surface of a prepared IV infusion bag. The levels of contamination in the positive samples ranged from 0.05 to 10.12 ng/cm².

CONCLUSIONS: The overall percentage of sample contamination at the Oncology Center was very low compared to other centers around the world. In addition, the detected levels of contamination with cytotoxic drugs were relatively low with the exception of the workspace inside the biological safety cabinet. These results in both assessments may reflect the implementation of comprehensive control measures including employee training, technological equipment and effective cleaning procedures.

Reference:

Soteriades, E.S., Economidou, S.C., Tsivitanidou, A., Polyviou, P., Lorimer, A., Katodritis, N. and Theophanous-Kitiri, S. (2020) Environmental assessment of cytotoxic drugs in the Oncology Center of Cyprus. *PLoS One*. 15(3), p.e0216098. doi: 10.1371/journal.pone.0216098.

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