



**Hazardous Drug Clean™ (HDClean™) Test Results  
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**INTRODUCTION:**

Hazardous Drug Clean™ (HDClean™) is a dual component towelette that uses a simple procedure to remove all detectable hazardous drugs from surfaces in the work environment.

Hazardous drugs, such as antineoplastic agents or chemotherapy, are harmful to both cancer and normal cells. Healthcare workers who are exposed to hazardous drugs as part of their work practice should take precaution to eliminate or reduce exposure as much as possible. Pharmacists who prepare these hazardous drugs or nurses who may prepare and/or administer them are the two occupational groups who have the highest exposure potential to hazardous drugs. In addition, laboratory staff working with hazardous drugs as part of manufacturing, formulation or research may also be exposed to these agents.

Historical ChemoGLO™ wipe studies show that 80-90% of hospital and pharmacy related sites evaluated for hazardous drug surface residue have at least one area of detectable hazardous drug surface contamination. Further ChemoGLO™ wipe studies have shown that hazardous drug residue will stay on surfaces, even with daily cleaning of those surfaces, long after the actual contamination occurs. In one study, it was shown that the detectable hazardous drug residue was a result of a spill that had occurred more than 10 months prior to the testing date. These results show the potential risk for employee exposure occurs not just at the time of the spill, but repeatedly over time as employees come into contact with these areas on a daily basis.

HDClean™ uses specialized cleaning solutions to remove all detectable hazardous drug residues on surfaces, regardless of the quantity or length of time the contamination has been present.

## **HDClean™ TESTING PROCEDURES:**

Studies were performed to evaluate the ability of HDClean™ to remove chemotherapeutic agents from bench top surfaces. Six separate 2 ft x 2 ft (4 ft<sup>2</sup>) areas were each contaminated with 5-FU, cyclophosphamide, ifosfamide, docetaxel, paclitaxel and cisplatin. The exposure of each drug on each 4 ft<sup>2</sup> site was 1,000 ng/mL. Three areas were cleaned with HDClean™ towelettes prior to sampling with ChemoGLO™ wipe methods. In addition, three areas were not cleaned prior to sampling with ChemoGLO™ wipe methods.

The HDClean™ dual component towelettes were used to clean three contaminated areas using the standard cleaning procedure. For this procedure, HDClean™ towelette #1 was used to clean each area first and then HDClean™ towelette #2 was used to clean each area. This procedure was repeated a second time on each contaminated area.

Standard ChemoGLO™ wipe methods and procedures were used to sample the contaminated areas after using HDClean™ (n=3) and without cleaning (n=3). The ChemoGLO™ Wipe Kit contains 12 wiping swabs and 12 vials of the ChemoGLO™ wipe solution. Each area is wiped with two swabs, one horizontal and one vertical, to ensure that all of the latent drug is picked up in those two samples. This horizontal and vertical wipe of the same area was performed for each contaminated area. Complete ChemoGLO™ wiping and analytical methods are described at [www.chemoglo.com](http://www.chemoglo.com).

The ChemoGLO™ wipe samples were then analyzed using the ChemoGLO™ chromatography tandem-mass spectrometry (LC-MS/MS) assay for 5-FU, cyclophosphamide, ifosfamide, docetaxel, and paclitaxel, and inductively coupled plasma mass spectrometry (ICP-MS) assay for cisplatin. The LC-MS/MS assays for 5-FU, cyclophosphamide, ifosfamide, docetaxel, and paclitaxel had a lower limit of quantification for each drug of 10 ng/mL. The ICP-MS assay had a lower limit of quantification for cisplatin of 1 ng/mL.

## **HDClean™ RESULTS:**

The concentrations of 5-FU, cyclophosphamide, ifosfamide, docetaxel, paclitaxel and cisplatin at each area without cleaning (n=3) were 900 to 1,000 ng/mL.

The concentrations of 5-FU, cyclophosphamide, ifosfamide, docetaxel, paclitaxel and cisplatin at each area (n=3) after cleaning with HDClean™ were all non-detectable.

These results substantiate that HDClean™ removes the hazardous drug residue from surfaces contaminated with 5-FU, cyclophosphamide, ifosfamide, docetaxel, paclitaxel and cisplatin. The broad range of chemical and solubility characteristics of the drugs tested suggests that HDClean™ can be used to successfully remove a wide variety of hazardous drugs in hospitals, pharmacies, nursing units and laboratories.