

# Implementation of measures to reduce chemical contamination by cytotoxics in a centralised Chemotherapy Reconstitution Unit : are they effective?

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## Introduction

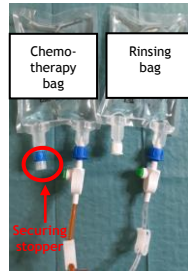
To assess the chemical contamination of the Chemotherapy Reconstitution Unit (CRU) surfaces, we sampled the interior and exterior of the isolators (9 points) in July 2019.

- Evidence of contamination by several molecules, particularly on the preparations release bench
- Implementation of corrective actions (October 2019)
- September 2020 : new samples to evaluate the effectiveness of these measures 1 year after their implementation (12 points because new points have been tested)

## Material and Methods

- ✓ Sampling kits provided by the establishment performing the assays
- ✓ Samples taken by the **same person** during the 2 campaigns
- ✓ Solid phase extraction and then UPLC-MS/MS determination
- ✓ Dosing of **6 molecules**: 5-FU, gemcitabine, ifosfamide, cyclophosphamide, doxorubicin, epirubicin
- ✓ Corrective measures implemented:

- **stopper** on the injection site of the bags at the end of the preparation
- **drapes** on the release bench (daily)



- systematic weekly **cleaning** of isolators with a **detergent** in addition to the daily cleaning with the bactericidal/fungicidal/virucidal/sporicidal product

## Results

Location	Ifosfamide (pg/cm <sup>2</sup> )		Gemcitabine (pg/cm <sup>2</sup> )		Cyclophosphamide (pg/cm <sup>2</sup> )		5 FU (pg/cm <sup>2</sup> )		Doxorubicin (pg/cm <sup>2</sup> )		Epirubicin (pg/cm <sup>2</sup> )	
Date	07/2019	09/2020	07/2019	09/2020	07/2019	09/2020	07/2019	09/2020	07/2019	09/2020	07/2019	09/2020
Preparation bench	7,45	ND	37	4,6	36,85	5,5	41	ND	ND	ND	ND	ND
Preparations release bench	296,11	2,5	112	0,8	513,06	7,9	22914	ND	ND	ND	ND	ND
Isolator 1	101,06 79,85	105,1	152 1430	12,7	132,54 568,77	99,2	ND ND	ND	ND	ND	ND	ND
Isolator 2	4,91 18,16	ND	4 12	ND	2,04 3,55	2,5	272 ND	ND	ND	ND	ND	ND
Non-toxic isolator	ND	ND	6	ND	ND	ND	ND	ND	ND	ND	ND	ND

In **green** : improvement

In **red** : no improvement

2019: 2 samples on the work surface of each isolator (right and left); 2020: only one sample in each isolator (cost reduction + desire to test other points)

2 samples taken on the gloves of the isolators are not presented here because they were not repeated in 2020 (limited interest because of regular changes + contamination similar to the rest of the isolator interior)

→ Overall reduction of contamination

→ Reduction of the contamination of the release bench >98% (all molecules)

NB: The new points tested in 2020 (phones, handles, coolers) are contaminated

## Discussion - Conclusion

- ✓ Decrease in chemical contamination between 2019 and 2020 on most of the points tested → good effectiveness of the measures
- ✓ Suggested approach to reduce contamination inside the isolators: cleaning the spikes of the vials with a compress before putting them in the residue bin
- ✓ Creation of a protocolized cleaning schedule (including handles, telephones, etc.)
- ✓ Reminder of the importance of wearing nitrile gloves
- ✓ Systematic annual follow-up implemented.