

Cyclophosphamide and Ifosfamide Contamination of Surface Water

In the last few years, scientists have developed technology to accurately test for cyclophosphamide and ifosfamide in surface water around the world. Neither cyclophosphamide nor ifosfamide can be effectively removed by any existing wastewater treatment technology or drinking water purification processes (>95% passes through intact).

Source Location	Sample Concentration		Reference
	Cyclophosphamide	Ifosfamide	
Hospital WW			
Freiberg University Hospital German cancer facility- Freiberg	<LOD - 40 ng/L	<LOD - 2060 ng/L	Kümmerer et al. 2010
Municipal WW			
Germany	146 ng/L	24 ng/L	Steger-Hartmann et al. 1996
Montreal, Canada ¹	<i>Influent from south</i> <i>Influent from north</i> <i>Effluent (total)</i>	9 ng/L <LOD <LOD	Garcia-Ac et al. 2009
Zurich Werdholzli, Switzerland ²	<i>Influent</i> <i>Effluent</i>	2-5 ng/L 2.1 - 4 ng/L	Buerge et al. 2006
Mannedorf, Switzerland ³	<i>Influent</i> <i>Effluent</i>	11 ng/L 10 ng/L	
Wadenswil, Switzerland ⁴	<i>Influent</i>	6 ng/L	
Landfill Effluent			
Stuttgart, Germany	97-192 ng/L	32-42 ng/L	Jjemba 2008
Surface Water			
Germany	0.6-0.7 ng/L	0.6-1 ng/L	Kümmerer et al. 2010
Lake Geneva	0.07 ng/L	0.05 ng/L	Buerge et al. 2006
Limmat at outflow of Lake Geneva	0.05 ng/L	0.05 ng/L	
Limmat downstream WWTP, Lake Geneva	0.15 ng/L	0.08 ng/L	

Notes

- 1 - Handles 50% of wastewater treated in Quebec; 7.6 Mm³/day
 - 2 - Handles wastewater from large city (Zurich) with several oncology hospitals; 0.19 - 0.32 Mm³/day
 - 3 - Handles wastewater from city (Mannedorf) with one specialty oncology hospital; 0.015 Mm³/day
 - 4 - Handles wastewater from small city (Wadenswil) with no oncology hospitals
- all use 3 or 4 stage (mechanical, biological, chemical and filtration)

References

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