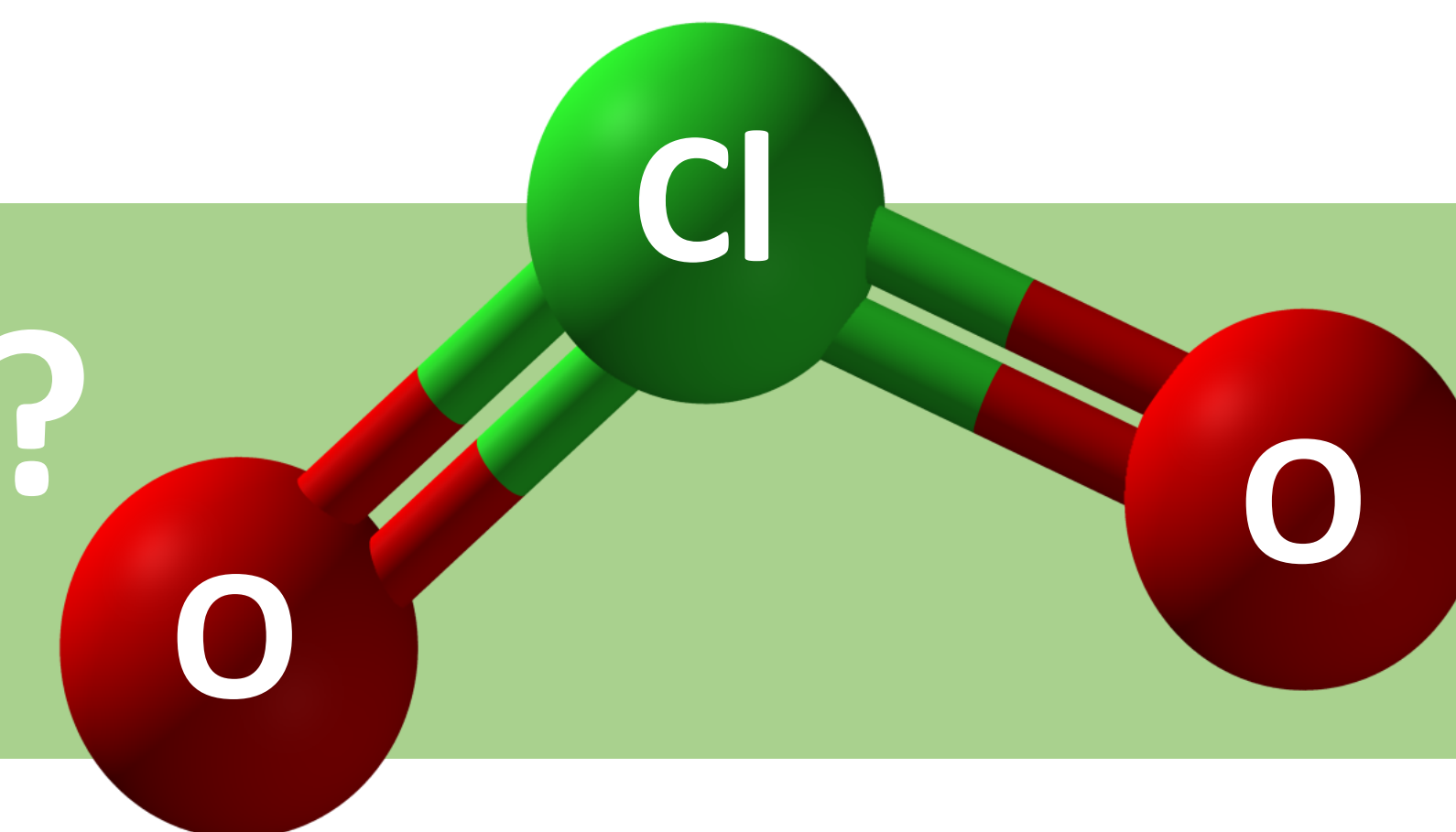


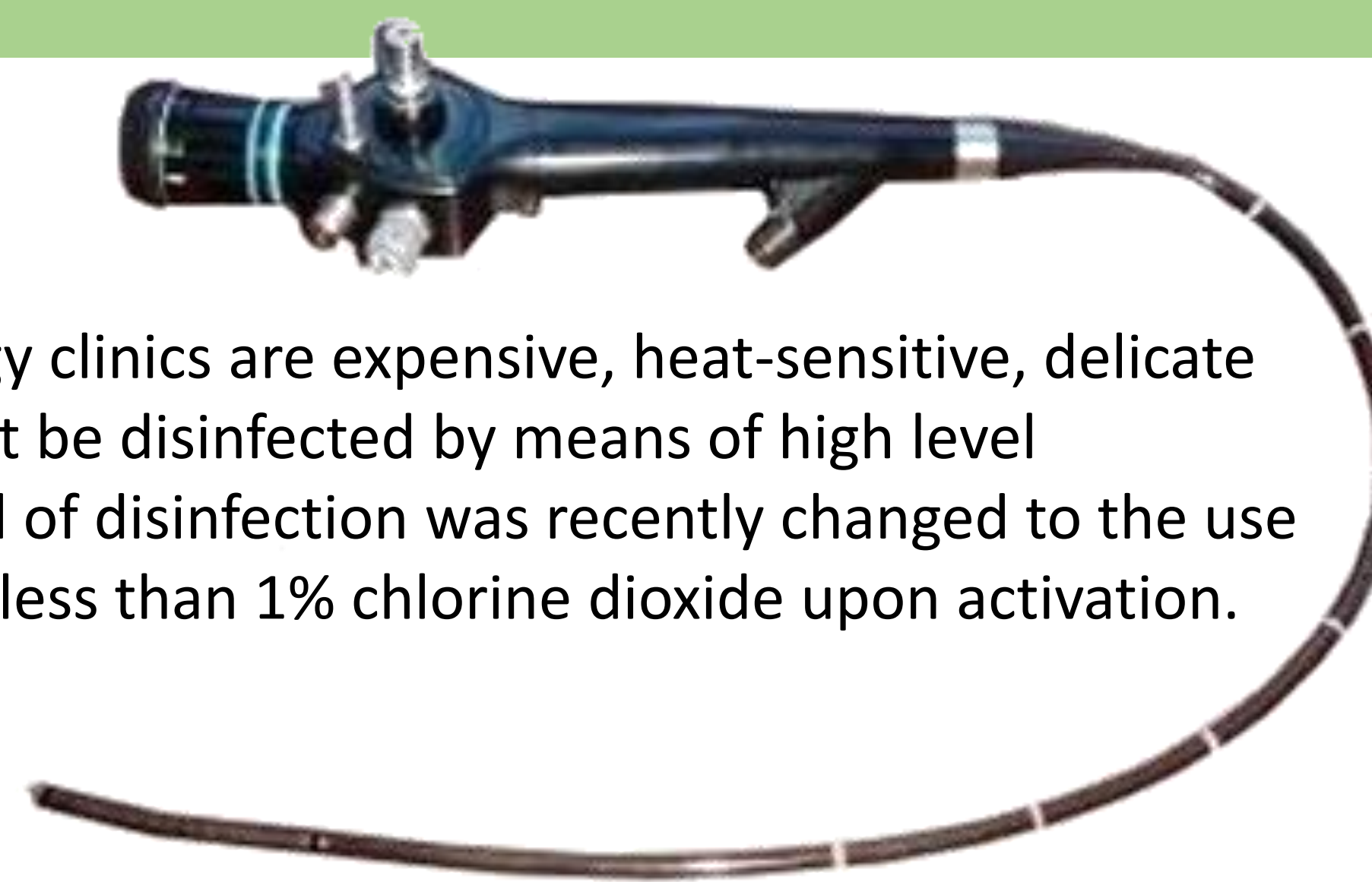
Are those Disinfecting Wipes safe for you?

Managing Occupational Exposures of Healthcare Workers Using Chlorine Dioxide Wipes



BACKGROUND

Non-lumened flexible nasoendoscopes used in Otolaryngology clinics are expensive, heat-sensitive, delicate instruments that cannot be sterilized in an autoclave but must be disinfected by means of high level disinfection (HLD). In Singapore General Hospital, the method of disinfection was recently changed to the use of commercial chemical-impregnated wipes which generates less than 1% chlorine dioxide upon activation.



AIM

The aim of this project is to evaluate the use of these wipes on potential exposure of healthcare workers (HCWs) to airborne chlorine dioxide during disinfection.

METHODOLOGY

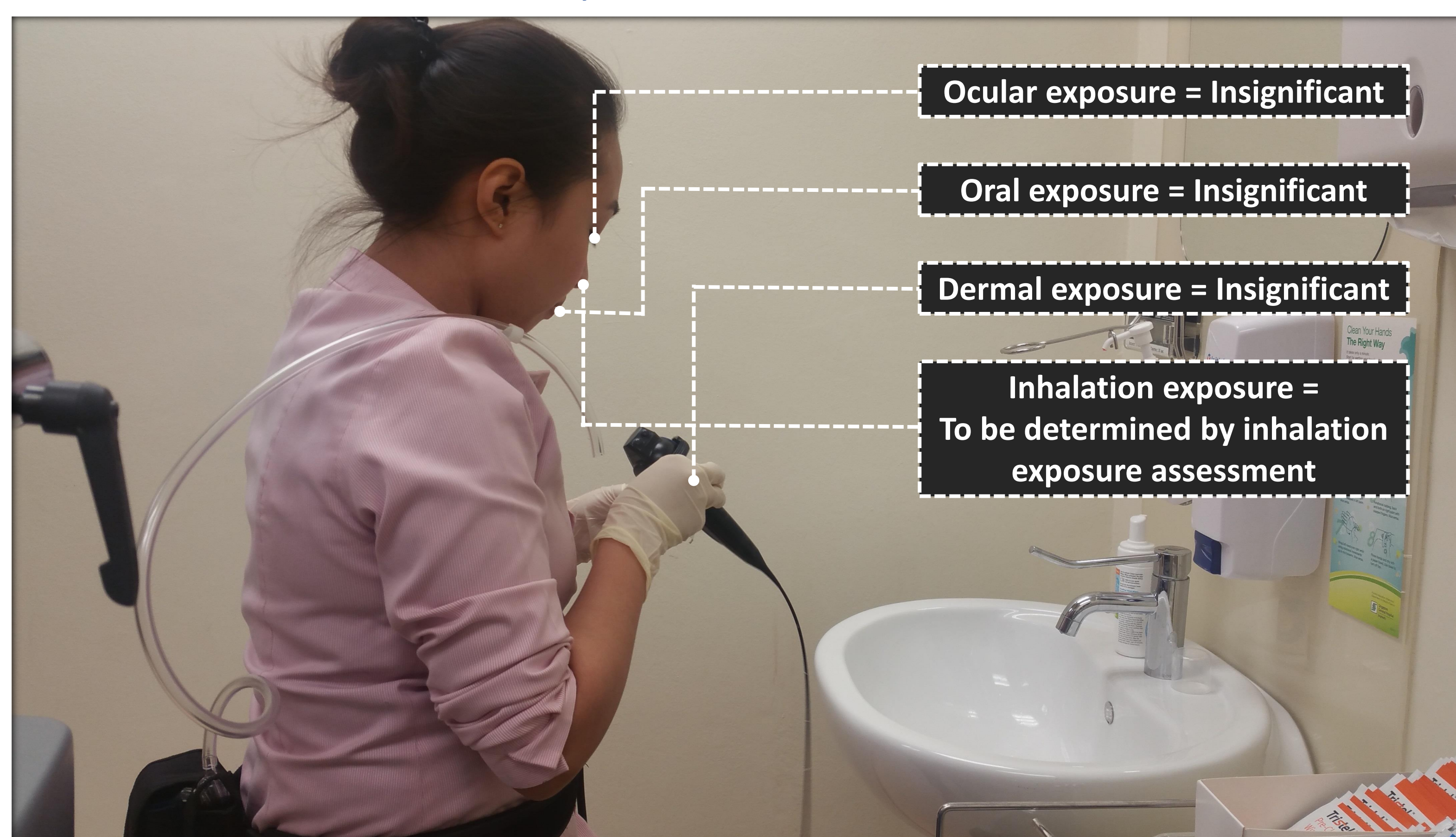
1. Hazard Identification

1a. Review of safety data sheet

CHLORINE DIOXIDE

EINECS	CAS	CLP Classification	Percent
233-162-8	10049-04-4	Acute Tox. 3: H301; Skin Corr. 1B: H314; Aquatic Acute 1: H400	<1%

1b. Observation of work activity



2. Inhalation Exposure Assessment

2a. Development of sampling strategy for air monitoring

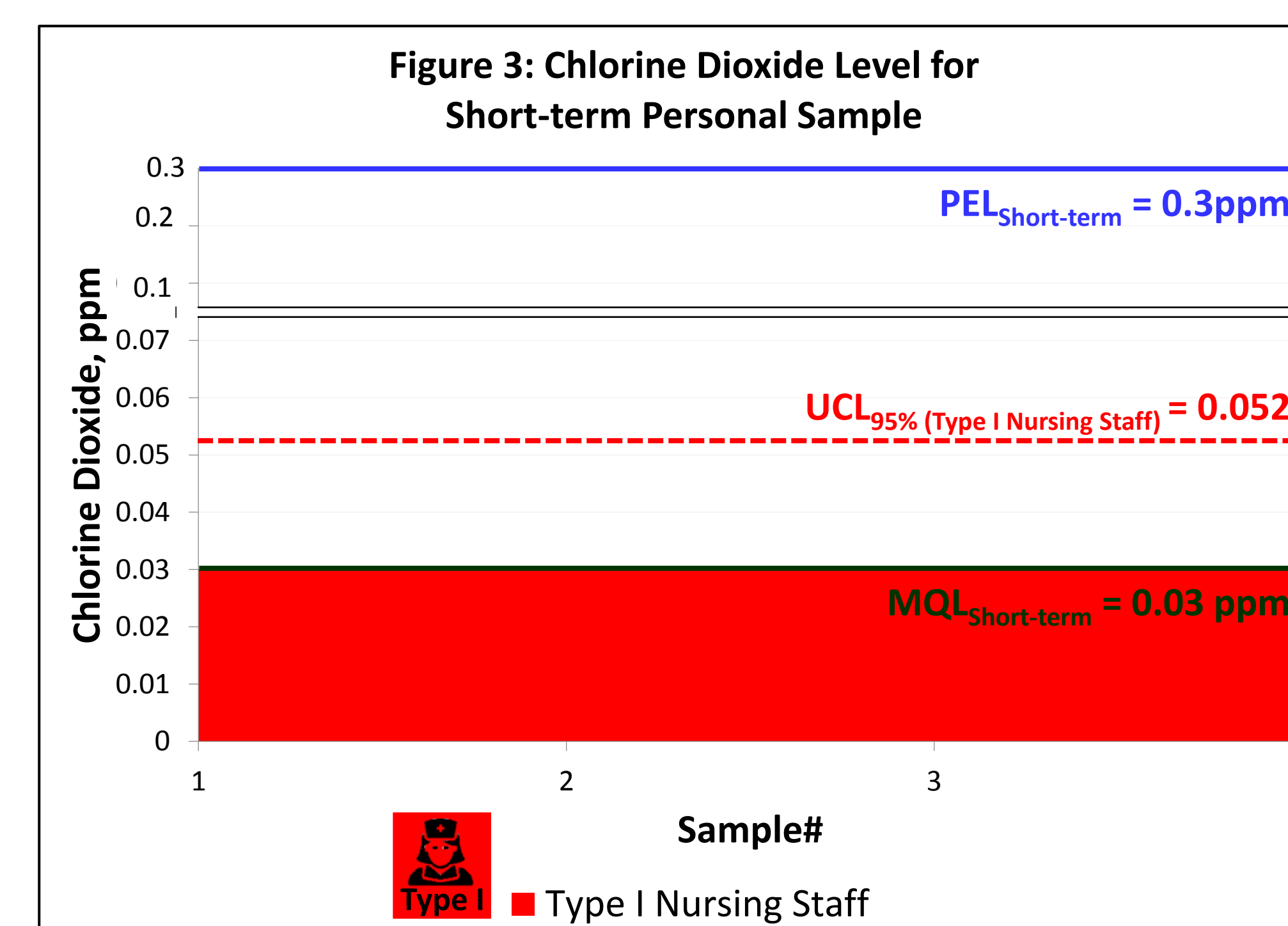
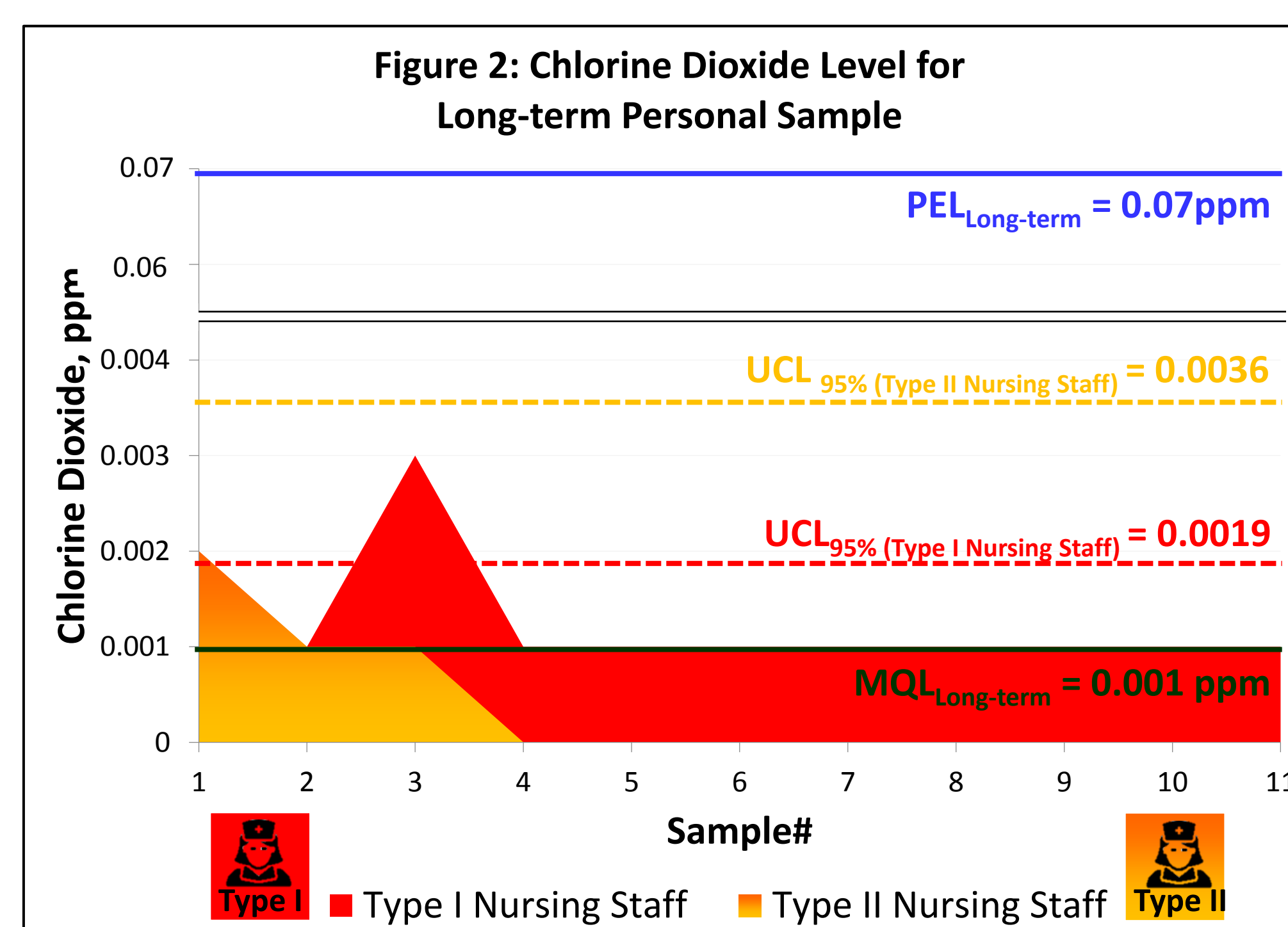
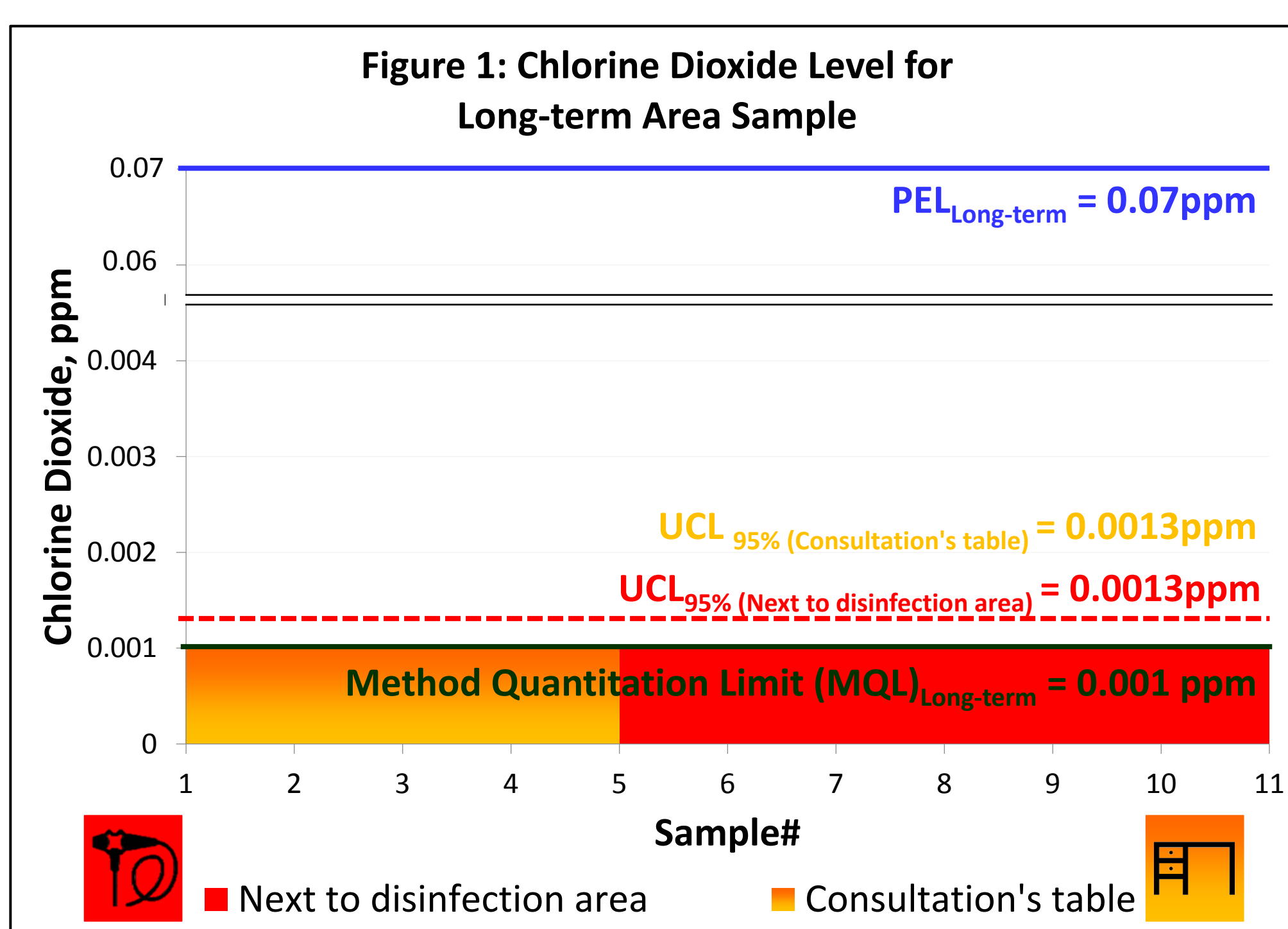
Similar Exposure Group (SEG)	Task	Predicted Exposure Level Ranking (Highest to Lowest)	Type of sample	Personal	Area
Type I Nursing Staff	Perform high level disinfection (HLD) of nasoendoscopes	1	Monitoring Duration	Long-term (10 hours)	Short-term (15 mins)
Type II Nursing Staff	Assist doctor in the same consultation room where HLD was performed	2	Type of Personal / Area Sample	Worst Case Type I	Worst Case Type II
Doctor	Provide consultation in the same room where HLD was performed	3	#SEG / #Location	34	24
Housekeeper	Collect waste (include used activated wipes) from consultation room to designated area	4	No. of sample	11	3

2b. Air monitoring (Method: OSHA ID-202)



RESULT

The chlorine dioxide concentrations and upper confidence limit at 95% confidence level ($UCL_{95\%}$) for long-term (10 hours) and short-term (15 mins) personal samples and long-term (10 hours) area samples collected were all below the permissible exposure limits (PELs) as stipulated in the Workplace Safety and Health (General Provisions) Regulation, First Schedule: Permissible Exposure Levels of Toxic Substances for Chlorine dioxide.



CONCLUSION

The study presented evidence that the exposure of HCWs to chlorine dioxide during high-level disinfection of flexible nasoendoscopes were deemed insignificant. Despite the insignificant exposure of HCW to chlorine dioxide during nasoendoscope disinfection, risk control measures should be maintained for this activity and those would be

- To maintain a minimum of 10 air change per hour (ACH) at those rooms where HLD is performed;
- Staff to perform the HLD with the chemical-impregnated wipes away from breathing zone;
- To conduct refresher training to reinforce the HCWs with the proper skills to perform the HLD safely.