Supporting Information:

Chlorine dioxide reactions with indoor materials during building disinfection: surface uptake

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Experimental Setup

A schematic of the experimental system is shown in Figure S1.

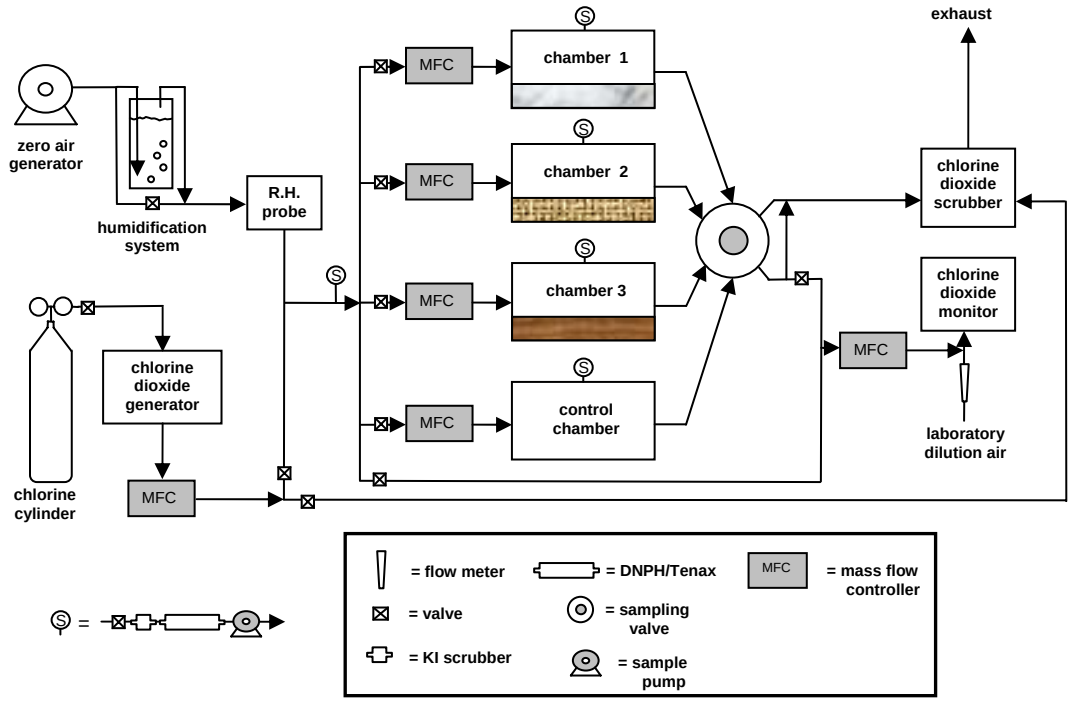

Figure S1. Schematic of experimental system.

Duplicate Experiments

The deposition velocities for independent duplicate experiments are shown in Figure S2. The general trends were consistent between duplicate experiments. The chlorine dioxide deposition velocity was greatest for medium density fiberboard and lowest for linoleum. For each duplicate experiment the deposition velocities for the final five hours of the disinfection stage were within 30-40% of the final five hour deposition velocities from the original experiment. The differences in final deposition velocities were likely due to variations in input chlorine dioxide concentrations and subsequent effects on numerical back-calculation of deposition velocity (Equation 2).

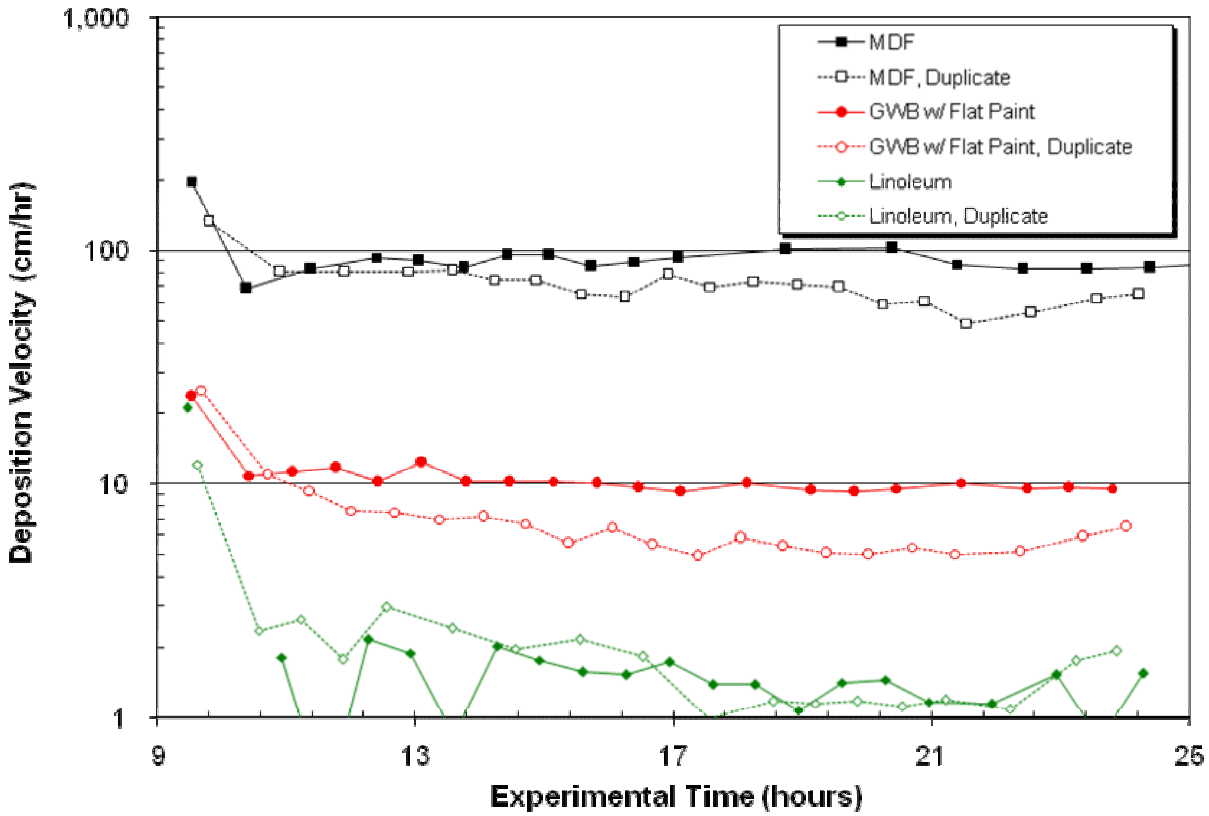

Figure S2. Deposition velocities for duplicate experiments.

Transport-Limited Deposition Velocities

Transport-limited deposition velocities were determined for ozone in a parallel study using the same experimental system, chamber air flow conditions, and nearly identical materials as those discussed here (14). Since transport-limited deposition velocity depends largely on the nature of the air flow conditions (15) and slightly on molecular size, v_t values for chlorine dioxide were calculated from ozone v_t values by accounting for differing diffusion constants. The transport-limited deposition velocities for materials for which such calculations were possible are listed in Table S1.

Table S1. Transport-limited deposition velocities for chlorine dioxide.

	Graph Label	Transport Limited Deposition Velocities
Flooring Materials		**(cm/hr)**
Level loop carpet	Carpet, LL	309
Non-level loop carpet	Carpet, NLL	*
Non-level loop carpet (aged)	Aged Carpet, NLL	308
PVC-backed carpet	Carpet, PVC	126
Linoleum	Linoleum	154
Linoleum with polish	Linoleum w/ Polish	*
Vinyl composition tile	VCT	125
Vinyl composition tile with polish	VCT w/ Polish	*
Concrete	Concrete	*
Concrete with sealer	Concrete w/ Sealer	529
Wall and Ceiling Materials		
Gypsum wallboard backing[1]	GWB Backing	231
Gypsum wallboard with Flat acrylic paint[1]	GWB w/ Flat Paint	*
Gypsum wallboard with Satin acrylic paint[1]	GWB w/ Satin Paint	*
Gypsum wallboard with wallpaper (PVC coated)[1]	GWB w/ Wallpaper	163
Acoustic ceiling tile[1]	Ceiling Tile	331
HVAC duct and liner	HVAC Duct	305
HVAC duct and liner (aged)	Aged HVAC Duct	252
Other Office Materials		
Medium density fiberboard[1]	MDF	174
Medium density fiberboard with laminate[1]	MDF w/ Laminate	*
Particle board[1]	Particle Board	197
Office partition[2]	Office Partition	531
Painted metal (file cabinet)[2]	Filing Cabinet	*
Paper (50 stacked sheets, copier paper)	Paper	*
Paper (50 stacked sheets, copier paper with toner)	Paper w/ Toner	*

*Not Measured.