

Supplementary Information for:

Potted plants do not improve indoor air quality: A review and analysis of reported VOC removal efficiencies

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Table S1. CADR_p calculation details for decay experiments which provided an initial and final VOC concentration. Calculations follow Equation 3 in the main text.

Ref	VOC	plant	C ₀	C _t	units	C _t /C ₀	time (h)	CADR _p (m ³ /h)
Aydogan and Montoya (2011)								
	Formaldehyde	Hedra Helix	-	-	-	0.33	0.93	8.8E-02
	Formaldehyde	Chrysanthemum Morifolium	-	-	-	0.33	0.38	2.2E-01
	Formaldehyde	Dieffenbachia Compacta	-	-	-	0.33	0.57	1.5E-01
	Formaldehyde	Epipremnum Aurenium	-	-	-	0.33	0.50	1.6E-01
Orwell et al. (2004)								
	Benzene	Hedra Helix	50	11.2	µg/m ³	0.22	24	1.3E-02
	Benzene	Chrysanthemum Morifolium	50	0.7	µg/m ³	0.01	24	3.8E-02
	Benzene	Dieffenbachia Compacta	50	10.3	µg/m ³	0.21	24	1.4E-02
	Benzene	Epipremnum Aurenium	50	21.8	µg/m ³	0.44	24	7.5E-03
	Benzene	Chrysanthemum Morifolium	50	9.1	µg/m ³	0.18	24	1.5E-02
	Benzene	Dieffenbachia Compacta	50	22.5	µg/m ³	0.45	24	7.2E-03
	Benzene	Epipremnum Aurenium	50	15.5	µg/m ³	0.31	24	1.1E-02
Orwell et al. (2006)								
	Toluene	Sweet Chico	0.2	0.1	ppm	0.50	3.0	5.0E-02
	Toluene	Sweet Chico	1	0.5	ppm	0.50	3.2	4.7E-02
	Toluene	Sweet Chico	10	5	ppm	0.50	3.9	3.8E-02
	Toluene	Sweet Chico	100	50	ppm	0.50	12.0	1.2E-02
	Xylene	Sweet Chico	0.2	0.1	ppm	0.50	4.5	3.3E-02
	Xylene	Sweet Chico	1	0.5	ppm	0.50	6.5	2.3E-02
	Xylene	Sweet Chico	10	5	ppm	0.50	16.8	8.9E-03
	Xylene	Sweet Chico	100	50	ppm	0.50	51.4	2.9E-03
	Toluene	Janet Craig	0.2	0.1	ppm	0.50	2.2	6.8E-02
	Toluene	Janet Craig	1	0.5	ppm	0.50	2.3	6.5E-02
	Toluene	Janet Craig	10	5	ppm	0.50	4.6	3.3E-02
	Toluene	Janet Craig	100	50	ppm	0.50	7.2	2.1E-02
	Xylene	Janet Craig	0.2	0.1	ppm	0.50	32.2	4.6E-03
	Xylene	Janet Craig	1	0.5	ppm	0.50	16.9	8.9E-03
	Xylene	Janet Craig	10	5	ppm	0.50	7.8	1.9E-02
	Xylene	Janet Craig	100	50	ppm	0.50	11.9	1.3E-02
	Toluene in mixture	Janet Craig	0.2	0.1	ppm	0.50	4.8	3.1E-02
	Toluene in mixture	Janet Craig	1	0.5	ppm	0.50	3.0	5.0E-02
	Toluene in mixture	Janet Craig	10	5	ppm	0.50	4.7	3.2E-02
	Toluene in mixture	Janet Craig	100	50	ppm	0.50	11.4	1.3E-02
	Xylene in mixture	Janet Craig	0.2	0.1	ppm	0.50	5.0	3.0E-02
	Xylene in mixture	Janet Craig	1	0.5	ppm	0.50	5.3	2.8E-02
	Xylene in mixture	Janet Craig	10	5	ppm	0.50	9.6	1.6E-02
	Xylene in mixture	Janet Craig	100	50	ppm	0.50	19.3	7.8E-03
Wolverton et al. (1989)								
	Formaldehyde	Mass Cane	-	-	-	0.30	24	3.9E-02
	Formaldehyde	Pot Mum	-	-	-	0.39	24	3.1E-02
	Formaldehyde	Gerber Daisy	-	-	-	0.50	24	2.3E-02
	Formaldehyde	Warneckei	-	-	-	0.50	24	2.3E-02
	Formaldehyde	Ficus	-	-	-	0.53	24	2.1E-02
	Benzene	English Ivy	-	-	-	0.10	24	7.4E-02
	Benzene	Janet Craig	-	-	-	0.22	24	4.9E-02
	Benzene	Golden Pothos	-	-	-	0.27	24	4.3E-02
	Benzene	Peace Lily	-	-	-	0.21	24	5.2E-02

	Benzene	Chinese Evergreen	-	-	-	0.52	24	2.1E-02
	Benzene	Marginata	-	-	-	0.21	24	5.1E-02
	Benzene	Mother-in-law's Tongue	-	-	-	0.47	24	2.4E-02
	Benzene	Warneckei	-	-	-	0.30	24	3.9E-02
	TCE	English Ivy	-	-	-	0.89	24	3.8E-03
	TCE	Janet Craig	-	-	-	0.83	24	6.3E-03
	TCE	Golden Pothos	-	-	-	0.91	24	3.1E-03
	TCE	Peace Lily	-	-	-	0.77	24	8.5E-03
	TCE	Warneckei	-	-	-	0.80	24	7.3E-03
	TCE	Marginata	-	-	-	0.87	24	4.6E-03
	TCE	Mother-in-law's Tongue	-	-	-	0.87	24	4.7E-03
Yang et al. (2009)	Benzene	Hemigraphis alternata	30.9	28.9	mg/m ³	0.94	1	6.8E-04
	Benzene	Hedra helix	30.9	29.7	mg/m ³	0.96	1	4.0E-04
	Benzene	Tradescantia pallida	30.9	29.9	mg/m ³	0.97	1	3.4E-04
	Benzene	Asparagus densiflorus	30.9	30.0	mg/m ³	0.97	1	3.1E-04
	Benzene	Hoya carnosa	30.9	29.9	mg/m ³	0.97	1	3.5E-04
	Benzene	Ficus benjamina	30.9	30.1	mg/m ³	0.97	1	2.8E-04
	Benzene	Polyscias fruticosa	30.9	30.2	mg/m ³	0.98	1	2.5E-04
	Benzene	Fittonia argyroneura	30.9	29.1	mg/m ³	0.94	1	6.3E-04
	Benzene	Sansevieria trifasciata	30.9	30.3	mg/m ³	0.98	1	2.1E-04
	Benzene	Guzmania	30.9	30.1	mg/m ³	0.97	1	2.7E-04
	Benzene	Anthurium andreanum	30.9	30.1	mg/m ³	0.97	1	2.8E-04
	TCE	Hemigraphis alternata	59.1	55.7	mg/m ³	0.94	1	6.2E-04
	TCE	Hedra helix	59.1	56.5	mg/m ³	0.96	1	4.8E-04
	TCE	Tradescantia pallida	59.1	56.8	mg/m ³	0.96	1	4.2E-04
	TCE	Asparagus densiflorus	59.1	56.6	mg/m ³	0.96	1	4.6E-04
	TCE	Hoya carnosa	59.1	56.5	mg/m ³	0.96	1	4.8E-04
	TCE	Ficus benjamina	59.1	56.7	mg/m ³	0.96	1	4.4E-04
	TCE	Polyscias fruticosa	59.1	57.1	mg/m ³	0.97	1	3.7E-04
	TCE	Fittonia argyroneura	59.1	55.7	mg/m ³	0.94	1	6.1E-04
	TCE	Sansevieria trifasciata	59.1	57.4	mg/m ³	0.97	1	3.1E-04
	TCE	Guzmania	59.1	56.9	mg/m ³	0.96	1	3.9E-04
	TCE	Anthurium andreanum	59.1	56.9	mg/m ³	0.96	1	4.0E-04
	Toluene	Hemigraphis alternata	36.4	34.4	mg/m ³	0.95	1	5.8E-04
	Toluene	Hedra helix	36.4	34.8	mg/m ³	0.96	1	4.8E-04
	Toluene	Tradescantia pallida	36.4	35.7	mg/m ³	0.98	1	2.0E-04
	Toluene	Asparagus densiflorus	36.4	35.1	mg/m ³	0.97	1	3.7E-04
	Toluene	Hoya carnosa	36.4	34.7	mg/m ³	0.95	1	5.1E-04
	Toluene	Ficus benjamina	36.4	34.5	mg/m ³	0.95	1	5.7E-04
	Toluene	Polyscias fruticosa	36.4	34.8	mg/m ³	0.96	1	4.8E-04
	Toluene	Fittonia argyroneura	36.4	35.2	mg/m ³	0.97	1	3.4E-04
	Toluene	Sansevieria trifasciata	36.4	35.5	mg/m ³	0.97	1	2.8E-04
	Toluene	Guzmania	36.4	35.3	mg/m ³	0.97	1	3.2E-04
	Toluene	Anthurium andreanum	36.4	34.9	mg/m ³	0.96	1	4.4E-04
Yoo et al. (2006)	Benzene	S wallisii	3.21	2.94	mg/m ³	0.92	1	2.5E-02
	Benzene	S podophyllum	3.21	2.94	mg/m ³	0.91	1	2.6E-02
	Benzene	C rhombifolia	3.21	3.05	mg/m ³	0.95	1	1.5E-02
	Benzene	H helix	3.21	3.03	mg/m ³	0.94	1	1.6E-02
	Toluene	S wallisii	3.79	3.47	mg/m ³	0.92	1	2.5E-02
	Toluene	S podophyllum	3.79	3.48	mg/m ³	0.92	1	2.4E-02
	Toluene	C rhombifolia	3.79	3.50	mg/m ³	0.92	1	2.2E-02
	Toluene	H helix	3.79	3.49	mg/m ³	0.92	1	2.4E-02
Zhang et al. (2018)	Benzene	†Pothos Ivy	-	-	-	0.25	192	2.9E-04
	Chloroform	†Pothos Ivy	-	-	-	0.18	72	9.5E-04

†Plant was genetically modified to enhance VOC uptake

Table S2. CADR_p calculation details for decay experiments which provided a timeseries of VOC concentrations. Calculations follow Equation 3 in the main text.

Ref	VOC	plant	C ₀	C _t	units	C _t /C ₀	time (h)	CADR _p (m ³ /h)	Avg. CADR _p (m ³ /h)
Irga et al. (2013)	Benzene	plant+soil	-	-	-	0.57	24	3.7E-04	3.7E-04
				-	-	0.29	48	4.1E-04	
				-	-	0.18	72	3.8E-04	
				-	-	0.15	96	3.1E-04	
	Benzene	plant+water	-	-	-	0.79	24	1.6E-04	1.9E-04
				-	-	0.55	48	2.0E-04	
				-	-	0.41	72	2.0E-04	
				-	-	0.27	96	2.2E-04	
Kim et al. (2008)	Formaldehyde	Ficus Japonica	-	-	-	0.65	1	4.2E-01	4.1E-01
				-	-	0.50	1.6	4.2E-01	
				-	-	0.41	2	4.3E-01	
				-	-	0.26	3	4.3E-01	
				-	-	0.19	4	4.0E-01	
				-	-	0.15	5	3.6E-01	
	Formaldehyde	Ficus Japonica	-	-	-	0.77	1	2.5E-01	2.7E-01
				-	-	0.58	2	2.6E-01	
				-	-	0.50	2.5	2.6E-01	
				-	-	0.42	3	2.8E-01	
				-	-	0.30	4	2.9E-01	
				-	-	0.20	5	3.1E-01	
	Formaldehyde	Ficus Benjamina	-	-	-	0.72	1	3.1E-01	3.6E-01
				-	-	0.50	2.05	3.2E-01	
				-	-	0.51	2	3.2E-01	
				-	-	0.31	3	3.7E-01	
				-	-	0.19	4	4.1E-01	
				-	-	0.11	5	4.3E-01	
	Formaldehyde	Ficus Benjamina	-	-	-	0.72	1	3.1E-01	2.6E-01
				-	-	0.58	2	2.6E-01	
				-	-	0.50	2.67	2.4E-01	
				-	-	0.46	3	2.5E-01	
				-	-	0.36	4	2.4E-01	
				-	-	0.28	5	2.4E-01	
Kim et al. (2010)	Formaldehyde	Araucaria heterophylla	2462	2046	μg/m ³	0.83	1	1.9E-01	1.2E-01
				1849	μg/m ³	0.75	2	1.4E-01	
				1740	μg/m ³	0.71	3	1.2E-01	
				1696	μg/m ³	0.69	4	9.3E-02	
				1696	μg/m ³	0.69	5	7.5E-02	
	Formaldehyde	Cupressus macrocarpa	2462	2190	μg/m ³	0.89	1	1.2E-01	9.1E-02
				2026	μg/m ³	0.82	2	9.7E-02	
				1863	μg/m ³	0.76	3	9.3E-02	
				1795	μg/m ³	0.73	4	7.9E-02	
				1754	μg/m ³	0.71	5	6.8E-02	
	Formaldehyde	Cycas revoluta	2462	1801	μg/m ³	0.73	1	3.1E-01	3.6E-01
				1359	μg/m ³	0.55	2	3.0E-01	
				845	μg/m ³	0.34	3	3.6E-01	
				550	μg/m ³	0.22	4	3.7E-01	
				219	μg/m ³	0.09	5	4.8E-01	

Formaldehyde	Dizygotheca elegantissima	2462	2084	$\mu\text{g}/\text{m}^3$	0.85	1	1.7E-01	1.5E-01
			1776	$\mu\text{g}/\text{m}^3$	0.72	2	1.6E-01	
			1572	$\mu\text{g}/\text{m}^3$	0.64	3	1.5E-01	
			1408	$\mu\text{g}/\text{m}^3$	0.57	4	1.4E-01	
			1316	$\mu\text{g}/\text{m}^3$	0.53	5	1.3E-01	
Formaldehyde	Dracaena concinna	2462	2114	$\mu\text{g}/\text{m}^3$	0.86	1	1.5E-01	2.0E-01
			1711	$\mu\text{g}/\text{m}^3$	0.69	2	1.8E-01	
			1309	$\mu\text{g}/\text{m}^3$	0.53	3	2.1E-01	
			1040	$\mu\text{g}/\text{m}^3$	0.42	4	2.2E-01	
			826	$\mu\text{g}/\text{m}^3$	0.34	5	2.2E-01	
Formaldehyde	Dracaena deremensis	2462	2075	$\mu\text{g}/\text{m}^3$	0.84	1	1.7E-01	1.2E-01
			1744	$\mu\text{g}/\text{m}^3$	0.71	2	1.7E-01	
			1744	$\mu\text{g}/\text{m}^3$	0.71	3	1.2E-01	
			1744	$\mu\text{g}/\text{m}^3$	0.71	4	8.6E-02	
			1744	$\mu\text{g}/\text{m}^3$	0.71	5	6.9E-02	
Formaldehyde	Dracaena fragrans	2462	2097	$\mu\text{g}/\text{m}^3$	0.85	1	1.6E-01	1.2E-01
			1823	$\mu\text{g}/\text{m}^3$	0.74	2	1.5E-01	
			1731	$\mu\text{g}/\text{m}^3$	0.70	3	1.2E-01	
			1686	$\mu\text{g}/\text{m}^3$	0.68	4	9.5E-02	
			1686	$\mu\text{g}/\text{m}^3$	0.68	5	7.6E-02	
Formaldehyde	Eugenia myrtifolia	2462	1886	$\mu\text{g}/\text{m}^3$	0.77	1	2.7E-01	2.0E-01
			1526	$\mu\text{g}/\text{m}^3$	0.62	2	2.4E-01	
			1382	$\mu\text{g}/\text{m}^3$	0.56	3	1.9E-01	
			1328	$\mu\text{g}/\text{m}^3$	0.54	4	1.5E-01	
			1310	$\mu\text{g}/\text{m}^3$	0.53	5	1.3E-01	
Formaldehyde	Ficus benjamin	2462	1792	$\mu\text{g}/\text{m}^3$	0.73	1	3.2E-01	3.2E-01
			1334	$\mu\text{g}/\text{m}^3$	0.54	2	3.1E-01	
			911	$\mu\text{g}/\text{m}^3$	0.37	3	3.3E-01	
			629	$\mu\text{g}/\text{m}^3$	0.26	4	3.4E-01	
			523	$\mu\text{g}/\text{m}^3$	0.21	5	3.1E-01	
Formaldehyde	Ficus elastica	2462	2048	$\mu\text{g}/\text{m}^3$	0.83	1	1.8E-01	2.1E-01
			1697	$\mu\text{g}/\text{m}^3$	0.69	2	1.9E-01	
			1303	$\mu\text{g}/\text{m}^3$	0.53	3	2.1E-01	
			1034	$\mu\text{g}/\text{m}^3$	0.42	4	2.2E-01	
			765	$\mu\text{g}/\text{m}^3$	0.31	5	2.3E-01	
Formaldehyde	Gardenia jasminoides	2462	2074	$\mu\text{g}/\text{m}^3$	0.84	1	1.7E-01	1.4E-01
			1698	$\mu\text{g}/\text{m}^3$	0.69	2	1.9E-01	
			1580	$\mu\text{g}/\text{m}^3$	0.64	3	1.5E-01	
			1533	$\mu\text{g}/\text{m}^3$	0.62	4	1.2E-01	
			1522	$\mu\text{g}/\text{m}^3$	0.62	5	9.6E-02	
Formaldehyde	Hedera helix	2462	2241	$\mu\text{g}/\text{m}^3$	0.91	1	9.4E-02	7.1E-02
			2091	$\mu\text{g}/\text{m}^3$	0.85	2	8.2E-02	
			1993	$\mu\text{g}/\text{m}^3$	0.81	3	7.0E-02	
			1940	$\mu\text{g}/\text{m}^3$	0.79	4	6.0E-02	
			1914	$\mu\text{g}/\text{m}^3$	0.78	5	5.0E-02	
Formaldehyde	Hoya cornosa	2462	2320	$\mu\text{g}/\text{m}^3$	0.94	1	6.0E-02	4.5E-02
			2243	$\mu\text{g}/\text{m}^3$	0.91	2	4.7E-02	
			2166	$\mu\text{g}/\text{m}^3$	0.88	3	4.3E-02	
			2101	$\mu\text{g}/\text{m}^3$	0.85	4	4.0E-02	
			2057	$\mu\text{g}/\text{m}^3$	0.84	5	3.6E-02	
Formaldehyde	Pachira aquatic	2462	1970	$\mu\text{g}/\text{m}^3$	0.80	1	2.2E-01	2.2E-01

			1518	µg/m ³	0.62	2	2.4E-01	
			1271	µg/m ³	0.52	3	2.2E-01	
			1025	µg/m ³	0.42	4	2.2E-01	
			820	µg/m ³	0.33	5	2.2E-01	
Formaldehyde	Polyscias balfouriana	2462	1993	µg/m ³	0.81	1	2.1E-01	1.7E-01
			1651	µg/m ³	0.67	2	2.0E-01	
			1506	µg/m ³	0.61	3	1.6E-01	
			1380	µg/m ³	0.56	4	1.4E-01	
			1344	µg/m ³	0.55	5	1.2E-01	
Formaldehyde	Rhapsis excelsa	2462	2023	µg/m ³	0.82	1	2.0E-01	1.5E-01
			1817	µg/m ³	0.74	2	1.5E-01	
			1605	µg/m ³	0.65	3	1.4E-01	
			1414	µg/m ³	0.57	4	1.4E-01	
			1238	µg/m ³	0.50	5	1.4E-01	
Formaldehyde	Serissa foetida	2462	2419	µg/m ³	0.98	1	1.8E-02	1.4E-02
			2384	µg/m ³	0.97	2	1.6E-02	
			2360	µg/m ³	0.96	3	1.4E-02	
			2345	µg/m ³	0.95	4	1.2E-02	
			2338	µg/m ³	0.95	5	1.0E-02	
Formaldehyde	Zamia pumila	2462	2045	µg/m ³	0.83	1	1.9E-01	1.6E-01
			1709	µg/m ³	0.69	2	1.8E-01	
			1473	µg/m ³	0.60	3	1.7E-01	
			1346	µg/m ³	0.55	4	1.5E-01	
			1264	µg/m ³	0.51	5	1.3E-01	
Formaldehyde	Aglaonema modestum	2462.4	2204.7	µg/m ³	0.90	1	1.1E-01	8.6E-02
			2032.9	µg/m ³	0.83	2	9.6E-02	
			1904.05	µg/m ³	0.77	3	8.6E-02	
			1818.15	µg/m ³	0.74	4	7.6E-02	
			1792.38	µg/m ³	0.73	5	6.4E-02	
Formaldehyde	Anthurium andraeanum	2462.4	2104.64	µg/m ³	0.85	1	1.6E-01	1.5E-01
			2115.82	µg/m ³	0.86	2	7.6E-02	
			1456.2	µg/m ³	0.59	3	1.8E-01	
			1277.32	µg/m ³	0.52	4	1.6E-01	
			1098.44	µg/m ³	0.45	5	1.6E-01	
Formaldehyde	Asplenium nidus	2462.4	1585.65	µg/m ³	0.64	1	4.4E-01	3.9E-01
			1134.75	µg/m ³	0.46	2	3.9E-01	
			733.95	µg/m ³	0.30	3	4.0E-01	
			558.6	µg/m ³	0.23	4	3.7E-01	
			383.25	µg/m ³	0.16	5	3.7E-01	
Formaldehyde	Calathea makoyana	2462.4	2160.6	µg/m ³	0.88	1	1.3E-01	1.0E-01
			1959.4	µg/m ³	0.80	2	1.1E-01	
			1808.5	µg/m ³	0.73	3	1.0E-01	
			1783.35	µg/m ³	0.72	4	8.1E-02	
			1733.05	µg/m ³	0.70	5	7.0E-02	
Formaldehyde	Chlorophytum bichetii	2462.4	2186.03	µg/m ³	0.89	1	1.2E-01	1.3E-01
			1938.25	µg/m ³	0.79	2	1.2E-01	
			1652.35	µg/m ³	0.67	3	1.3E-01	
			1461.75	µg/m ³	0.59	4	1.3E-01	
			1271.15	µg/m ³	0.52	5	1.3E-01	
Formaldehyde	Clivia miniata	2462.4	2155.24	µg/m ³	0.88	1	1.3E-01	1.0E-01
			1935.84	µg/m ³	0.79	2	1.2E-01	
			1804.2	µg/m ³	0.73	3	1.0E-01	

			1738.38	µg/m ³	0.71	4	8.7E-02	
			1716.44	µg/m ³	0.70	5	7.2E-02	
Formaldehyde	Dieffenbachia amoena	2462.4	1985.76	µg/m ³	0.81	1	2.2E-01	2.2E-01
			1562.08	µg/m ³	0.63	2	2.3E-01	
			1297.28	µg/m ³	0.53	3	2.1E-01	
			1032.48	µg/m ³	0.42	4	2.2E-01	
			820.64	µg/m ³	0.33	5	2.2E-01	
Formaldehyde	Epipremnum aureum	2462.4	1870.2	µg/m ³	0.76	1	2.8E-01	2.1E-01
			1503.6	µg/m ³	0.61	2	2.5E-01	
			1334.4	µg/m ³	0.54	3	2.0E-01	
			1221.6	µg/m ³	0.50	4	1.8E-01	
			1221.6	µg/m ³	0.50	5	1.4E-01	
Formaldehyde	Haemaria discolor	2462.4	2308.72	µg/m ³	0.94	1	6.4E-02	4.8E-02
			2195.72	µg/m ³	0.89	2	5.7E-02	
			2146	µg/m ³	0.87	3	4.6E-02	
			2100.8	µg/m ³	0.85	4	4.0E-02	
			2078.2	µg/m ³	0.84	5	3.4E-02	
Formaldehyde	Howea belmoreana	2462.4	2016.24	µg/m ³	0.82	1	2.0E-01	1.5E-01
			1833.72	µg/m ³	0.74	2	1.5E-01	
			1590.36	µg/m ³	0.65	3	1.5E-01	
			1468.68	µg/m ³	0.60	4	1.3E-01	
			1387.56	µg/m ³	0.56	5	1.1E-01	
Formaldehyde	Peperomia clusiifolia	2462.4	1940.38	µg/m ³	0.79	1	2.4E-01	1.7E-01
			1709.72	µg/m ³	0.69	2	1.8E-01	
			1503.34	µg/m ³	0.61	3	1.6E-01	
			1381.94	µg/m ³	0.56	4	1.4E-01	
			1321.24	µg/m ³	0.54	5	1.2E-01	
Formaldehyde	Philodendron selloum	2462.4	1696.5	µg/m ³	0.69	1	3.7E-01	2.7E-01
			1365.3	µg/m ³	0.55	2	2.9E-01	
			1137.6	µg/m ³	0.46	3	2.6E-01	
			1013.4	µg/m ³	0.41	4	2.2E-01	
			889.2	µg/m ³	0.36	5	2.0E-01	
Formaldehyde	Phoenix roebelenii	2462.4	1593.21	µg/m ³	0.65	1	4.4E-01	4.1E-01
			1055.14	µg/m ³	0.43	2	4.2E-01	
			724.02	µg/m ³	0.29	3	4.1E-01	
			475.68	µg/m ³	0.19	4	4.1E-01	
			351.51	µg/m ³	0.14	5	3.9E-01	
Formaldehyde	Saintpaulia ionantha	2462.4	2374.8	µg/m ³	0.96	1	3.6E-02	3.1E-02
			2301.8	µg/m ³	0.93	2	3.4E-02	
			2243.4	µg/m ³	0.91	3	3.1E-02	
			2199.6	µg/m ³	0.89	4	2.8E-02	
			2166.75	µg/m ³	0.88	5	2.6E-02	
Formaldehyde	Sansevieria trifasciata	2462.4	2233.6	µg/m ³	0.91	1	9.8E-02	7.9E-02
			2062	µg/m ³	0.84	2	8.9E-02	
			1947.6	µg/m ³	0.79	3	7.8E-02	
			1861.8	µg/m ³	0.76	4	7.0E-02	
			1804.6	µg/m ³	0.73	5	6.2E-02	
Formaldehyde	Spathiphyllum wallisii	2462.4	1826.44	µg/m ³	0.74	1	3.0E-01	2.7E-01
			1435.08	µg/m ³	0.58	2	2.7E-01	

			1092.64	µg/m ³	0.44	3	2.7E-01	
			945.88	µg/m ³	0.38	4	2.4E-01	
			652.36	µg/m ³	0.26	5	2.7E-01	
Formaldehyde	Syngonium podophyllum	2462.4	2046.56	µg/m ³	0.83	1	1.8E-01	2.5E-01
			1576.48	µg/m ³	0.64	2	2.2E-01	
			1124.48	µg/m ³	0.46	3	2.6E-01	
			780.96	µg/m ³	0.32	4	2.9E-01	
			545.92	µg/m ³	0.22	5	3.0E-01	
Formaldehyde	Tillandsia cyanea	2462.4	2109.12	µg/m ³	0.86	1	1.5E-01	1.2E-01
			1925.12	µg/m ³	0.78	2	1.2E-01	
			1763.2	µg/m ³	0.72	3	1.1E-01	
			1645.44	µg/m ³	0.67	4	1.0E-01	
			1557.12	µg/m ³	0.63	5	9.2E-02	
Formaldehyde	Zamioculcas zamiifolia	2462.4	1978.68	µg/m ³	0.80	1	2.2E-01	1.7E-01
			1696.51	µg/m ³	0.69	2	1.9E-01	
			1494.96	µg/m ³	0.61	3	1.7E-01	
			1374.03	µg/m ³	0.56	4	1.5E-01	
			1293.41	µg/m ³	0.53	5	1.3E-01	
Kim et al. (2016)								
toluene	Schefflera actinophylla	62.5	51.5	µg/m ³	0.82	3	6.5E-02	6.8E-02
			43.0	µg/m ³	0.69	6	6.2E-02	
			35.0	µg/m ³	0.56	9	6.4E-02	
			28.0	µg/m ³	0.45	12	6.7E-02	
			22.5	µg/m ³	0.36	15	6.8E-02	
			17.5	µg/m ³	0.28	18	7.1E-02	
			14.0	µg/m ³	0.22	21	7.1E-02	
			11.0	µg/m ³	0.18	24	7.2E-02	
m,p-xylene	Schefflera actinophylla	33	30.5	µg/m ³	0.92	3	2.6E-02	3.0E-02
			28.5	µg/m ³	0.86	6	2.4E-02	
			26.0	µg/m ³	0.79	9	2.6E-02	
			23.5	µg/m ³	0.71	12	2.8E-02	
			21.0	µg/m ³	0.64	15	3.0E-02	
			18.5	µg/m ³	0.56	18	3.2E-02	
			16.0	µg/m ³	0.48	21	3.4E-02	
			14.5	µg/m ³	0.44	24	3.4E-02	
o-xylene	Schefflera actinophylla	17.5	16.5	µg/m ³	0.94	3	2.0E-02	2.5E-02
			15.5	µg/m ³	0.89	6	2.0E-02	
			14.5	µg/m ³	0.83	9	2.1E-02	
			13.5	µg/m ³	0.77	12	2.2E-02	
			12.0	µg/m ³	0.69	15	2.5E-02	
			10.5	µg/m ³	0.60	18	2.8E-02	
			9.5	µg/m ³	0.54	21	2.9E-02	
			8.0	µg/m ³	0.46	24	3.3E-02	
toluene	Ficus benghalensis	49.5	39.0	µg/m ³	0.79	3	7.9E-02	7.4E-02
			32.0	µg/m ³	0.65	6	7.3E-02	
			25.5	µg/m ³	0.52	9	7.4E-02	
			21.0	µg/m ³	0.42	12	7.1E-02	
			16.5	µg/m ³	0.33	15	7.3E-02	
			13.0	µg/m ³	0.26	18	7.4E-02	
			10.5	µg/m ³	0.21	21	7.4E-02	
			8.5	µg/m ³	0.17	24	7.3E-02	

m,p-xylene	Ficus benghalensis	27.5	23.5	µg/m ³	0.85	3	5.2E-02	3.7E-02
			22.0	µg/m ³	0.80	6	3.7E-02	
			20.0	µg/m ³	0.73	9	3.5E-02	
			18.0	µg/m ³	0.65	12	3.5E-02	
			16.5	µg/m ³	0.60	15	3.4E-02	
			15.0	µg/m ³	0.55	18	3.4E-02	
			13.5	µg/m ³	0.49	21	3.4E-02	
			12.5	µg/m ³	0.45	24	3.3E-02	
o-xylene	Ficus benghalensis	16	14.0	µg/m ³	0.88	3	4.5E-02	3.7E-02
			12.5	µg/m ³	0.78	6	4.1E-02	
			11.5	µg/m ³	0.72	9	3.7E-02	
			10.5	µg/m ³	0.66	12	3.5E-02	
			9.5	µg/m ³	0.59	15	3.5E-02	
			8.5	µg/m ³	0.53	18	3.5E-02	
			7.5	µg/m ³	0.47	21	3.6E-02	
			7.0	µg/m ³	0.44	24	3.4E-02	

Table S3. CADR_p calculation details for flow-through experiments. Calculations follow Equation 5 in the main text.

Ref	removal bin	average removal	number of instances	CADR _p (m ³ /h)
Liu et al. (2007)	60-80%	70%	3	2.8E-01
	20-40%	30%	17	5.1E-02
	10-20%	15%	17	2.1E-02
	0.1-10%	5%	13	6.3E-03

References

- Aydogan, A., and Montoya, L.D. (2011). Formaldehyde removal by common indoor plant species and various growing media. *Atmospheric Environment* 45, 2675–2682.
- Irga, P.J., Torpy, F.R., and Burchett, M.D. (2013). Can hydroculture be used to enhance the performance of indoor plants for the removal of air pollutants? *Atmospheric Environment* 77, 267–271.
- Kim, K.J., Kil, M.J., Song, J.S., Yoo, E.H., Son, K.-C., and Kays, S.J. (2008). Efficiency of Volatile Formaldehyde Removal by Indoor Plants: Contribution of Aerial Plant Parts versus the Root Zone. *J. Amer. Soc. Hort. Sci.* 133, 521–526.
- Kim, K.J., Jeong, M.I., Lee, D.W., Song, J.S., Kim, H.D., Yoo, E.H., Jeong, S.J., Han, S.W., Kays, S.J., Lim, Y.-W., et al. (2010). Variation in Formaldehyde Removal Efficiency among Indoor Plant Species. *HortScience* 45, 1489–1495.
- Kim, K.J., Kim, H.J., Khalekuzzaman, M., Yoo, E.H., Jung, H.H., and Jang, H.S. (2016). Removal ratio of gaseous toluene and xylene transported from air to root zone via the stem by indoor plants. *Environ Sci Pollut Res* 23, 6149–6158.
- Liu, Y.-J., Mu, Y.-J., Zhu, Y.-G., Ding, H., and Crystal Arens, N. (2007). Which ornamental plant species effectively remove benzene from indoor air? *Atmospheric Environment* 41, 650–654.
- Orwell, R.L., Wood, R.L., Tarran, J., Torpy, F., and Burchett, M.D. (2004). Removal of Benzene by the Indoor Plant/Substrate Microcosm and Implications for Air Quality. *Water, Air, & Soil Pollution* 157, 193–207.
- Orwell, R.L., Wood, R.A., Burchett, M.D., Tarran, J., and Torpy, F. (2006). The Potted-Plant Microcosm Substantially Reduces Indoor Air VOC Pollution: II. Laboratory Study. *Water, Air, and Soil Pollution* 177, 59–80.
- Wolverton, B.C., Johnson, A., and Bounds, K. (1989). *Interior Landscape Plants for Indoor Air Pollution Abatement*.
- Yang, D.S., Pennisi, S.V., Son, K.-C., and Kays, S.J. (2009). Screening Indoor Plants for Volatile Organic Pollutant Removal Efficiency. *HortScience* 44, 1377–1381.
- Yoo, M.H., Kwon, Y.J., Son, K.-C., and Kays, S.J. (2006). Efficacy of Indoor Plants for the Removal of Single and Mixed Volatile Organic Pollutants and Physiological Effects of the Volatiles on the Plants. *Journal of the American Society for Horticultural Science* 131, 452–458.
- Zhang, L., Routsong, R., and Strand, S.E. (2019). Greatly Enhanced Removal of Volatile Organic Carcinogens by a Genetically Modified Houseplant, Pothos Ivy (*Epipremnum aureum*) Expressing the Mammalian Cytochrome P450 2e1 Gene. *Environ. Sci. Technol.* 53, 325–331.