

Appendix A Supplementary nomenclature

Symbols

m	: Total mass of the contaminant in the vapor–solid system
t	: Desorption reaction time of the contaminant
Δt	: Time interval between t and $t - 1$
m_0	: Initial mass of the contaminant in the paper
m_t	: Mass of the contaminant in the paper at t
M_t	: Total amount of desorption of the contaminant at t
k	: Total desorption reaction rate of the contaminant at the vapor–solid equilibrium
B_0	: Theoretical initial GC peak area of the contaminant in the headspace at $t = 0$
B_t	: Theoretical GC peak area of the contaminant in the headspace at t
ΔB_t	: Increase in the net GC peak area (related to contaminant desorption) from the time $(t - \Delta t)$ to t
C_G	: Concentration of the contaminant in the vapor phase
C_S	: Concentration of the contaminant in the solid phase (paper)
H_c	: Henry's Law constant
V_G	: Volume of the headspace
V_S	: Volume of the paper sample
φ	: Volumetric flow fraction for each extraction
ρ	: Ratio of the headspace pressures before and after venting
x	: Ratio constant
C_{G_n}	: Concentration of the contaminant in the vapor phase at the n th headspace sampling
C_{G_0}	: Intercept of Eq. 10 (concentration of the contaminant in the vapor phase at the $t = 0$ headspace sampling)
n	: Headspace extraction number
q	: Slope of Eq. 10
ΔC_{G_n}	: Amount of the contaminant desorbed between the $(n - 1)$ th and n th headspace samplings
A_0	: GC peak area for the ambient above a blank sample
A_n	: Detected GC peak area at the n th headspace measurement
f	: Response factor in the headspace GC measurement
ΔA_n	: Net change in the GC signal (related to contaminant desorption) between the $(n - 1)$ th and n th headspace measurements
Δm_n	: Change in mass of the contaminant between the $(n - 1)$ th and n th headspace samplings
j	: Headspace extraction cycle time
k_1	: Positive reaction rate constant
k_{-1}	: Reverse reaction rate constant
t_e	: Time for the system to reach the vapor–solid equilibrium
C_0	: Saturated initial concentration of the contaminant in the paper
C_t	: Total concentration of desorption of the contaminant at t
C_{t_e}	: Concentration of the contaminant in the vapor phase at equilibrium