Illinois Environmental Protection Agency

Bureau of Land • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

Leaking Underground Storage Tank Program
RBCA Input Parameters for Use with Tier 2 Calculations

A. Site Identification

IEMA Incident # (6- or 8-digit): _____ IEPA LPC # (10-digit): _____

Site Name: _____

Site Address (not a P.O. Box): _____

City: _____ County: _____ Zip Code: _____

Leaking UST Technical File

B. Tier 2 Calculation Information

Equation(s) Used (ex: R12, R14, R26): _____

Contact Information for Individual Who Performed Calculations: _____

_____

Land Use: _____ Soil Type: _____

Groundwater: ☐ Class I ☐ Class II

Mass Limit: ☐ Yes ☐ No If Yes, then Specify Acreage: ☐ 0.5 ☐ 1 ☐ 2 ☐ 5 ☐ 10 ☐ 30

Result from S17/S28 used in R26? ☐ Yes ☐ No Specify C_{source} from S17/S28 _____ mg/L

- **Mass Limit Acreage other than defaults must always be rounded up.**
- **Failure to use site-specific parameters where allowed could affect payment from the Underground Storage Tank Fund.**
- **Maps depicting source width, plume dimensions, distance, etc. must also be submitted.**
- **Inputs must be submitted in the designated unit.**

Symbol			Unit	Symbol		Unit
AT_c	=	70	yr	d	=	cm
AT_η	=		yr	D^{air}	=	cm^2/s
BW	=	70	kg	D^{water}	=	cm^2/s
C_{source}	=		mg/L	D_s^{eff}	=	cm^2/s
$C_{(x)}$	=		mg/L	ED	=	yr
$C_{(x)}/C_{source}$	=		unitless	EF	=	d/yr

Incident #: _____ Chemical: _____ Land Use: _____

Symbol			Unit
erf	=		unitless
f_{oc}	=		g/g
GW_{comp}	=		mg/L
GW_{source}	=		mg/L
H'	=		cm^3_{water}/cm^3_{air}
i	=		cm/cm
I	=	30	cm/yr
IR_{air}	=	20	m^3/d
IR_{soil}	=		mg/d
IR_w	=		L/d
K	=		cm/d for R15, R19, R26; cm/yr for R24
K_{oc}	=		cm^3/g or L/kg
k_s (non-ionizing organics)	=		cm^3_{water}/g_{soil}
k_s (ionizing organics)	=		cm^3_{water}/g_{soil}
k_s (inorganics)	=		cm^3_{water}/g_{soil}
L_s	=	100	cm
LF_{sw}	=		$(mg/L_{water})/(mg/kg_{soil})$
M	=	0.5	mg/cm^2
Pe	=	$6.9 \cdot 10^{-14}$	g/cm^2-s
RAF_d	=	0.5	unitless

Symbol			Unit
RAF_d (PNAs)	=	0.05	unitless
RAF_d (inorganics)	=	0	unitless
RAF_0	=	1.0	unitless
$RBSL_{air}$ (carcinogenic)	=		$\mu g/m^3$
$RBSL_{air}$ (noncarcinogenic)	=		$\mu g/m^3$
RfD_i	=		mg/kg-d
RfD_o	=		mg/kg-d
SA	=	3,160	cm^2/d
S_d	=		cm
S_w	=		cm
SF_i	=		$(mg/kg\text{-}d)^{-1}$
SF_o	=		$(mg/kg\text{-}d)^{-1}$
THQ	=	1	unitless
TR	=		unitless
U	=		cm/d
U_{air}	=	225	cm/s
U_{gw}	=		cm/yr
VF_p	=		kg/m^3
VF_{samb}	=		$(mg/m^3_{air})/mg/kg_{soil})$ or kg/m^3
VF_{ss}	=		kg/m^3

Incident #: _____ Chemical: _____ Land Use: _____

Symbol			Unit
W	=		cm
w	=		g_{water}/g_{soil}
X	=		cm
α_x	=		cm
α_y	=		cm
α_z	=		cm
δ_{air}	=	200	cm
δ_{gw}	=	200	cm

Symbol			Unit
θ_{as}	=		cm^3_{air}/cm^3_{soil}
θ_{ws}	=		cm^3_{water}/cm^3_{soil}
θ_T	=		cm^3/cm^3_{soil}
λ	=		d^{-1}
π	=	3.1416	
ρ_b	=		g/cm^3
ρ_w	=	1	g/cm^3
τ	=	$9.46 \cdot 10^8$	s

Equation		Result	Unit(s)
R1	=		mg/kg
R2	=		mg/kg
R7	=		mg/kg
R8	=		mg/kg
R12	=		mg/kg
R25	=		mg/L