SAKLAN ROAD SOIL ANALYTICAL RESULTS

STATISTICAL ANALYSIS OF ANALYTICAL RESULTS
Sample concentrations in parts per billion

	SURFACE STRATA									
Sample:	d1	d2	d3	d4	c1	c2	c3	c4	c5	c6
Aldrin	2.5	2.5	25	2.5	2.5	34	15	10	10	10

	MIDDLE STRATA						BOTTOM STRATA		
Sample:	G-12	G-18	G-27	G-42	G-45	G-70	G-18A	G-27A	G-70A
Aldrin	0.5	2.5	2.5	2.5	0.5	2.5	0.5	0.5	0.5

Mean from Surface Strata = 11.4   Surface strata samples fraction of total = 0.526
Mean from Middle Strata = 1.833   Surface strata samples fraction of total = 0.316
Mean from Bottom Strata = 0.5   Surface strata samples fraction of total = 0.158

Total Mean =   6.66 ppb   or   0.007 ppm

$1.15E+02$ = Variance of the surface strata
$1.07E+00$ = Variance of the middle strata
$0.00E+00$ = Variance of the bottom strata

Total Variance = $6.07E+01$

Std Deviation =   7.8

Standard Error =   1.79

T value =   1.330 (90% confidence interval)
UCL =   9.0 ppb   or   0.009 ppm

T value =   1.734 (95% confidence interval)
UCL =   9.8 ppb   or   0.01 ppm

For top 18 inches only - d1 thru G70

Simple Mean =   7.81 ppb

Variance = $9.20E+01$

Std Deviation =   9.6

Standard Error =   2.40

T value =   1.734 (95% confidence interval)
UCL =   12.0 ppb   or   0.012 ppm

SAKLAN ROAD SOIL ANALYTICAL RESULTS

STATISTICAL ANALYSIS OF ANALYTICAL RESULTS
Sample concentrations in parts per billion

	SURFACE STRATA									
Sample:	d1	d2	d3	d4	c1	c2	c3	c4	c5	c6
Lindane	120	17	25	24	13	79	33	10	10	10

	MIDDLE STRATA						BOTTOM STRATA		
Sample:	G-12	G-18	G-27	G-42	G-45	G-70	G-18A	G-27A	G-70A
Lindane	0.5	2.5	2.5	2.5	0.5	2.5	0.5	0.5	0.5

Mean from Surface Strata = 34.1   Surface strata samples fraction of total = 0.526
Mean from Middle Strata = 1.833   Surface strata samples fraction of total = 0.316
Mean from Bottom Strata = 0.5   Surface strata samples fraction of total = 0.158

Total Mean = 18.61 ppb   or   0.019 ppm

$1.34E+03$ = Variance of the surface strata
$1.07E+00$ = Variance of the middle strata
$0.00E+00$ = Variance of the bottom strata

Total Variance = $7.06E+02$

Std Deviation = 26.6

Standard Error = 6.09

T value = 1.330 (90% confidence interval)
UCL = 26.7 ppb   or   0.027 ppm

T value = 1.734 (95% confidence interval)
UCL = 29.2 ppb   or   0.029 ppm

For top 18 inches only - d1 thru G70

Simple Mean = 22.0 ppb

Variance = $1.06E+03$

Std Deviation = 32.63

Standard Error = 8.16

T value = 1.734 (95% confidence interval)
UCL = 36.14 ppb   or   0.036 ppm

70 year average concentration = 0.771 ppb

SAKLAN ROAD SOIL ANALYTICAL RESULTS

STATISTICAL ANALYSIS OF ANALYTICAL RESULTS
Sample concentrations in parts per billion

Sample:	SURFACE STRATA									
	d1	d2	d3	d4	c1	c2	c3	c4	c5	c6
DDTr	3450	2940	8040	5060	837	8700	2150	7020	255	1600

Sample:	MIDDLE STRATA						BOTTOM STRATA		
	G-12	G-18	G-27	G-42	G-45	G-70	G-18A	G-27A	G-70A
DDTr	7	118	271	35	7	422	7	7	29.3

Mean from Surface Strata = 4005   Surface strata samples fraction of total = 0.526

Mean from Middle Strata = 143.3   Surface strata samples fraction of total = 0.316

Mean from Bottom Strata = 14.43   Surface strata samples fraction of total = 0.158

Total Mean = 2155.542 ppb   or   2.156 ppm

9.25E+06 = Variance of the surface strata

2.87E+04 = Variance of the middle strata

1.66E+02 = Variance of the bottom strata

Total Variance = 4.88E+06

Std Deviation = 2209.1

Standard Error = 506.80

T value = 1.734 (95% confidence interval)

UCL = 3034.3 ppb   or   3.034 ppm

For top 18 inches only - d1 thru G70

Simple Mean = 2557 ppb

Variance = 9.29E+06

Std Deviation = 3048.11

Standard Error = 762.03

T value = 1.734 (95% confidence interval)

UCL = 3878.36 ppb or 3.878 ppm

70 year average concentration = 1152 ppb
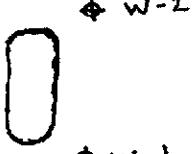
HALF LIFE CALCULATIONS

Half Life Calculations													
Decay Rate = Ln 2 / half life													
Final Concentration = (Initial Concentration) x (e) to the negative power (rate x time)													
Average Concentration = (inverse of time) x (integral over time of the (initial concentration) x (e) to the negative power (rate x time))													
Lindane													
Lindane initial concentration (Upper Confidence Limit) =	29.2	ppb		(All stratified samples)									
	36.1	ppb		(Upper 18 inches, non-stratified)									
Decay Rate (in years) = ln 2 / (378 days / 365 days per year) =	0.6693												
Final Concentration =	29.2	ppb	x	e to the (	-0.6693	x	70	years)	=	1.31E-19	ppb		
	36.1	ppb	x	e to the (	-0.6693	x	70	years)	=	1.62E-19	ppb		
Average Concentration =	1 / 70	times the integral	29.2	ppb	x	e to the (	-0.6693	x	70	years)	=	0.623	ppb
	1 / 70	times the integral	36.1	ppb	x	e to the (	-0.6693	x	70	years)	=	0.771	ppb
DDTr													
DDTr initial concentration (Upper Confidence Limit) =	3034	ppb		(All stratified samples)									
	3878	ppb		(Upper 18 inches, non-stratified)									
Decay Rate (in years) = ln 2 / 15 =	0.0462												
Final Concentration =	3034	ppb	x	e to the (	-0.0462	x	70	years)	=	1.31E-19	ppb		
	3878	ppb	x	e to the (	-0.0462	x	70	years)	=	1.62E-19	ppb		
Average Concentration =	1 / 70	times the integral	3034	ppb	x	e to the (	-0.0462	x	70	years)	=	901	ppb
	1 / 70	times the integral	3878	ppb	x	e to the (	-0.0462	x	70	years)	=	1152	ppb

Chemical Exposures - Saklan Road Property

Chemical	Concentration (mg/kg):																	
		Aldrin	0.012	mg/kg														
		Lindane	0.00077	mg/kg														
		DDTr	1.15	mg/kg														
Exposure for Aldrin:																		
Inhalation:	0.012	mg/kg	X	12	gr/hr-m2	X	0.001	kg/gr	X	2.78E-10	hr/us	X	8093	m2	X 500 us/m3 X 6.7 m3/day	=	1.09E-06	mg/day
Ingestion:	0.012	mg/kg	X	0.15	gr/day	X	0.001	kg/gr								=	1.8E-06	mg/day
Dermal:	0.012	mg/kg	X	0.45	gr/day	X	0.001	kg/gr	X	10%	dermal adsorption					=	5.4E-07	mg/day
															Total Exposure:		3.43E-06	mg/day
Exposure for Lindane:																		
Inhalation:	8E-04	mg/kg	X	12	gr/hr-m2	X	0.001	kg/gr	X	2.78E-10	hr/us	X	8093	m2	X 500 us/m3 X 6.7 m3/day	=	6.96E-08	mg/day
Ingestion:	8E-04	mg/kg	X	0.15	gr/day	X	0.001	kg/gr								=	1.16E-07	mg/day
Dermal:	8E-04	mg/kg	X	0.45	gr/day	X	0.001	kg/gr	X	10%	dermal adsorption					=	3.47E-08	mg/day
															Total Exposure:		2.2E-07	mg/day
Exposure for DDTr:																		
Inhalation:	1.15	mg/kg	X	12	gr/hr-m2	X	0.001	kg/gr	X	2.78E-10	hr/us	X	8093	m2	X 500 us/m3 X 6.7 m3/day	=	0.000104	mg/day
Ingestion:	1.15	mg/kg	X	0.15	gr/day	X	0.001	kg/gr								=	0.000173	mg/day
Dermal:	1.15	mg/kg	X	0.45	gr/day	X	0.001	kg/gr	X	5%	dermal adsorption					=	2.59E-05	mg/day
															Total Exposure:		0.000302	mg/day
Assumptions:																		
1)	Averages for Lindane and DDTr include half-life calculations																	
2)	Assumptions as noted on bottom of pg 2, June 24, 1991 report																	

SHORT TERM EXPOSURE (FROM AIR EMMISSIONS)

Chemical	Concentration (mg/kg):														
			Aldrin	0.012	mg/kg										
			Lindane	0.036	mg/kg										
			DDTr	3.87	mg/kg										
Short Term Exposure															
Aldrin															
Emission Rate =	0.012	mg	12	g		kg		hr	8093	m2	=	0.0003	mg
		kg		hr-m2	1000	g	3600	sec					sec
Emission Factor =	0.00032	mg			sec	500	us	=	1.6E-07	mg			
		sec	1000	000	us		m3			m3			
Lindane															
Emission Rate =	0.036	mg	12	g		kg		hr	8093	m2	=	0.001	mg
		kg		hr-m2	1000	g	3600	sec					sec
Emission Factor =	0.00097	mg			sec	500	us	=	4.9E-07	mg			
		sec	1000	000	us		m3			m3			
DDTr															
Emission Rate =	3.87	mg	12	g		kg		hr	8093	m2	=	0.1044	mg
		kg		hr-m2	1000	g	3600	sec					sec
Emission Factor =	0.1044	mg			sec	500	us	=	5.2E-05	mg			
		sec	1000	000	us		m3			m3			

N

W-2

W-1

TC-1