UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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MEMORANDUM

SUBJECT: Review of Interim Summary of a Cloransulam-methyl Aerobic Degradation Study in Soils Collected from the Iowa Flufanacet (FOE-5043) Perspective Groundwater Study Site.

FROM: E. Laurence Libelo, Ph.D. Environmental Engineer
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THROUGH: Mah Shamim, Ph.D., Chief
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Analysis of the preliminary data submitted shows that there is a statistically significant difference in the aerobic soil metabolism reaction rate constants measured on soil from the control plot and flufanacet-treated plot. Mean rate constants for the control plot and the treated site were 0.038 (sd.= 0.004) and 0.034 (sd.= 0.0028) respectively. These correspond to calculated half-lives of 17.9 and 20.4 days, a difference of about 12%.

Based on this study the soil at the site has been affected by prior studies conducted at the site. However, the measured effect is small and should not preclude using the site for the proposed Prospective Groundwater Study. The difference in degradation rates, while statistically significant, is small relative to the variation in soil metabolism rates observed in studies on soils from different areas. Care should be taken to consider these results in the analysis and interpretation of the proposed groundwater study.

Information on the degradation products should be included in the final report.

t-test Thursday, March 11, 1999, 15:30:24

Data source: Janesville, IA Site

Normality Test: Passed (P > 0.200)

Equal Variance Test: Passed (P = 0.214)

Group Name	N	Missing	Mean	Std Dev	SEM
Control	6	0	-0.0387	0.00403	0.00165
Treated	6	0	-0.0340	0.00276	0.00113

Difference -0.00467

t = -2.340 with 10 degrees of freedom. (P = 0.041)

99 percent confidence interval for difference of means: -0.0110 to 0.00165

The difference in the mean values of the two groups is greater than would be expected by chance; there is a statistically significant difference between the input groups (P = 0.041).

Power of performed test with alpha = 0.050: 0.474

CONTROL PLOT

Site	day	% Applied	Ln % Appl	
C1	0	93.4	4.537	k = 0.033
	0	92.7	4.529	R Squared = 0.99
	3	94.3	4.546	
	7	76.7	4.340	
	14	55.1	4.009	
	28	36	3.584	
	42	24.8	3.211	
C2	0	93.2	4.535	k = 0.040
	3	89.4	4.493	R Squared = 1.0
	3	91.2	4.513	
	7	75.5	4.324	
	14	53.1	3.972	
	28	31.7	3.456	
	42	18.8	2.934	
C3	0	94.1	4.544	k = 0.043
	3	91.4	4.515	R Squared = 0.99
	7	78.8	4.367	
	7	75.8	4.328	
	14	51.9	3.949	
	28	32.5	3.481	
	42	16	2.773	
C4	0	93.4	4.537	k = 0.036
	3	91.2	4.513	R Squared = 0.99
	7	76.4	4.336	
	14	58	4.060	
	14	60.2	4.098	
	28	32.8	3.490	
	42	22.7	3.122	
C5	0	93.2	4.535	k = 0.043
	3	89	4.489	R Squared = 0.99
	7	74.2	4.307	
	14	53.8	3.985	
	28	25.8	3.250	
	28	27.1	3.300	
	42	17.7	2.874	
C6	0	95.5	4.559	k = 0.037
	3	92.1	4.523	R Squared = 0.99
	7	76.8	4.341	
	14	56.8	4.040	
	28	30.1	3.405	
	42	20.2	3.006	
	42	23.1	3.140	

Flufanacet Treated Plot

Site	day	% Applied	Ln % Appl	
T1	0	95	4.554	k = 0.034
	0	91.4	4.515	R Squared = 0.95
	3	88.4	4.482	
	7	72.5	4.284	
	14	46	3.829	
	28	30.6	3.421	
	42	24.8	3.211	
T2	0	94	4.543	k = 0.036
	3	89	4.489	R Squared = 0.94
	3	90.6	4.506	
	7	73.9	4.303	
	14	59.2	4.081	
	28	28.8	3.360	
	42	27.5	3.314	
T3	0	94.6	4.550	k = 0.033
	3	88.4	4.482	R Squared = 0.98
	7	78.3	4.361	
	7	76.8	4.341	
	14	54.1	3.991	
	28	34.3	3.535	
	42	25.4	3.235	
T4	0	93.9	4.542	k = 0.038
	3	90.9	4.510	R Squared = 0.98
	7	76	4.331	
	14	51.7	3.945	
	14	51.6	3.944	
	28	30	3.401	
	42	20.7	3.030	
T5	0	89.9	4.499	k = 0.035
	3	88.8	4.486	R Squared = 0.95
	7	77.6	4.352	
	14	48.6	3.884	
	28	31.9	3.463	
	28	28	3.332	
	42	23.9	3.174	
T6	0	94.4	4.548	k = 0.030
	3	91.5	4.516	R Squared = 0.99
	7	82.2	4.409	
	14	60.3	4.099	
	28	37.5	3.624	
	42	28	3.332	
	42	29	3.367	