

Table K-4-10.
Interaction Table for Carotid Bruits
Occupation Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Tables 15-21 and K-3-17)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
0 Pack-years	Low	43	4.6	0.47 (0.06,3.39)	0.453
	Medium	35	0.0		
	High	49	0.0		
>0-10 Pack-years	Low	51	5.9	0.47 (0.18,1.24)	0.125
	Medium	42	2.4		
	High	63	1.6		
>10 Pack-years	Low	70	0.0	2.50 (0.89,7.00)	0.082
	Medium	86	1.2		
	High	53	1.9		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Family History of Heart Disease: Tables 15-21 and K-3-17)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
No	Low	69	2.9	0.27 (0.03,2.65)	0.263
	Medium	74	0.0		
	High	73	0.0		
Yes	Low	95	3.2	1.06 (0.59,1.93)	0.841
	Medium	89	2.2		
	High	92	2.2		

Table K-4-10. (Continued)
Interaction Table for Carotid Bruits
Cholesterol Removed from Final Model

c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Family History of Heart Disease: Tables 15-21 and K-3-17)					
Current Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^b	p-Value
No	Low	110	1.8	0.39 (0.23,0.67)	0.001
	Medium	119	1.7		
	High	125	0.0		
Yes	Low	179	2.2	1.07 (0.70,1.62)	0.761
	Medium	161	2.5		
	High	156	2.6		

^a Relative risk for a twofold increase in initial dioxin.

^b Relative risk for a twofold increase in current dioxin.

Note: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

Model 6: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table K-4-11.
Interaction Table for Dorsalis Pedis Pulses
Diabetic Class Removed from Final Model

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Age: Tables 15-25 and K-3-20)					
Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Born ≥ 1942	Comparison	447	6.7		
	Background RH	126	4.8	0.65 (0.26,1.62)	0.355
	Low RH	84	4.8	0.68 (0.23,1.98)	0.478
	High RH	153	5.2	0.78 (0.34,1.75)	0.544
	Low plus High RH	237	5.1	0.74 (0.37,1.49)	0.399
Born < 1942	Comparison	596	8.2		
	Background RH	243	11.1	1.41 (0.83,2.35)	0.183
	Low RH	170	9.4	1.13 (0.62,2.07)	0.687
	High RH	105	16.2	2.07 (1.13,3.82)	0.019
	Low plus High RH	275	12.0	1.48 (0.92,2.38)	0.110

^a Relative risk and confidence interval relative to Comparisons.

Note: Model 3: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

Background (Ranch Hand): Current Dioxin ≤ 10 ppt.

Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.

High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Table K-4-12.
Interaction Table for Posterior Tibial Pulses
Occupation, HDL, Body Fat, and Diabetic Class Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Tables 15-26 and K-3-21)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log _e (Initial Dioxin)	
Stratum	Initial Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^a	p-Value
0-10 Pack-years	Low	96	1.0	1.22 (0.58,2.60)	0.600
	Medium	80	1.3		
	High	116	1.7		
>10 Pack-years	Low	71	9.9	0.78 (0.46,1.34)	0.372
	Medium	88	9.1		
	High	54	3.7		

Table K-4-12. (Continued)
Interaction Table for Posterior Tibial Pulses
Occupation, HDL, Body Fat, and Diabetic Class Removed from Final Model

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Current Cigarette Smoking: Tables 15-26 and K-3-21)					
Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^b	p-Value
0-Never Smoked	Comparison	277	0.7		
	Background RH	109	1.8	2.24 (0.97,5.19)	0.060
	Low RH	69	0.0	--	--
	High RH	67	0.0	--	--
	Low plus High RH	136	0.0	--	--
0-Former Smoker	Comparison	520	1.9		
	Background RH	170	2.4	1.20 (0.52,2.78)	0.670
	Low RH	123	3.3	1.47 (0.45,4.77)	0.519
	High RH	112	2.7	2.04 (0.92,4.50)	0.079
	Low plus High RH	235	3.0	1.70 (0.64,4.55)	0.290
>0-20 Cigarettes/Day	Comparison	149	2.0		
	Background RH	56	7.1	3.11 (1.34,7.21)	0.008
	Low RH	39	7.7	3.87 (0.89,16.76)	0.070
	High RH	49	12.2	11.83 (5.35,26.17)	<0.001
	Low plus High RH	88	10.2	6.98 (2.12,22.98)	0.001
>20 Cigarettes/Day	Comparison	97	9.3		
	Background RH	36	0.0	--	--
	Low RH	23	13.0	1.81 (0.40,8.27)	0.443
	High RH	31	12.9	1.97 (0.89,4.35)	0.095
	Low plus High RH	54	13.0	1.88 (0.51,6.94)	0.345

^a Relative risk*for a twofold increase in initial dioxin.

^b Relative risk and confidence interval relative to Comparisons.

--: Adjusted relative risk, confidence interval, and p-value not presented due to the sparse number of abnormalities.

Note: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

Model 3: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

Background (Ranch Hand): Current Dioxin ≤ 10 ppt.

Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.

High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Table K-4-13.
Interaction Table for Leg Pulses
Occupation and Diabetic Class Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Personality Type: Tables 15-27 and K-3-22)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log _e (Initial Dioxin)	
Stratum	Initial Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Type A	Low	78	14.1	0.80 (0.53,1.21)	0.282
	Medium	70	12.9		
	High	62	3.2		
Type B	Low	90	3.3	1.40 (1.05,1.87)	0.023
	Medium	102	12.7		
	High	109	11.0		

^a Relative risk for a twofold increase in initial dioxin.

Note: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

Table K-4-14.
Interaction Table for Peripheral Pulses
Occupation and Diabetic Class Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Personality Type: Tables 15-28 and K-3-23)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Type A	Low	78	14.1	0.80 (0.53,1.21)	0.282
	Medium	70	12.9		
	High	62	3.2		
Type B	Low	90	3.3	1.40 (1.05,1.87)	0.023
	Medium	102	12.7		
	High	109	11.0		

^a Relative risk for a twofold increase in initial dioxin.

Note: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

Table L-1-1.
Dependent Variable-Covariate Associations for the Hematology Assessment

Dependent Variable	Level	Age			Race		
		Born ≥ 1942	Born < 1942	p-Value	Black	Non-Black	p-Value
Red Blood Cell (RBC) Count (million/mm ³) (continuous) (discrete)		(n=2,224) r=-0.143 (n=950)	(n=1,274)	<0.001	(n=131) $\bar{x}$ =5.11	(n=2,093) $\bar{x}$ =5.01	0.021
	Abnormal Low	1.8%	3.5%	0.047	3.1%	2.8%	<0.001
	Abnormal High	1.3%	1.3%		5.3%	1.1%	
White Blood Cell (WBC) Count (thousand/mm ³) (continuous) ^a (discrete)		(n=2,224) r=-0.002 (n=950)	(n=1,274)	0.908	(n=131) $\bar{x}$ =6.58	(n=2,093) $\bar{x}$ =7.43	<0.001
	Abnormal Low	4.6%	3.0%	0.124	13.0%	3.1%	<0.001
	Abnormal High	5.5%	5.7%		3.1%	5.7%	
Hemoglobin (gm/dl) (continuous) (discrete)		(n=2,224) r=-0.089 (n=950)	(n=1,274)	<0.001	(n=131) $\bar{x}$ =15.41	(n=2,093) $\bar{x}$ =15.89	<0.001
	Abnormal Low	2.2%	3.0%	0.469	7.6%	2.3%	0.001
	Abnormal High	1.7%	2.0%		0.8%	1.9%	
Hematocrit (percent) (continuous) (discrete)		(n=2,224) r=-0.067 (n=950)	(n=1,274)	0.002	(n=131) $\bar{x}$ =45.48	(n=2,093) $\bar{x}$ =46.33	0.003
	Abnormal Low	1.1%	1.7%	0.254	3.8%	1.3%	0.048
Platelet Count (thousand/mm ³) (continuous) ^b (discrete)		(n=2,223) r=-0.114 (n=950)	(n=1,273)	<0.001	(n=131) $\bar{x}$ =247.2	(n=2,092) $\bar{x}$ =251.6	0.378
	Abnormal High	1.3%	1.0%	0.740	0.8%	1.2%	0.999
Prothrombin Time (seconds) (continuous) ^a (discrete)		(n=2,045) r=0.031 (n=899)	(n=1,146)	0.155	(n=123) $\bar{x}$ =12.09	(n=1,922) $\bar{x}$ =11.93	0.018
	High	0.2%	1.1%	0.033	0.8%	0.7%	0.999
RBC Morphology	Abnormal	(n=950) 38.8%	(n=1,274) 50.5%	<0.001	(n=131) 56.5%	(n=2,093) 44.8%	0.012
Absolute Neutrophils (segs) (thousand/mm ³) ^a		(n=2,224) r=0.006		0.765	(n=131) $\bar{x}$ =3.54	(n=2,093) $\bar{x}$ =4.28	<0.001

^aMeans transformed from natural logarithm scale; correlations based on natural logarithm versus covariate.

^bMeans transformed from square root scale; correlations based on square root versus covariate.

Note: Correlations (r) are based on total sample and are not category specific.

Table L-1-1. (Continued)
Dependent Variable-Covariate Associations for the Hematology Assessment

Dependent Variable	Level	Occupation			p-Value
		Officer	Enlisted Flyer	Enlisted Groundcrew	
Red Blood Cell (RBC) Count (million/mm ³) (continuous) (discrete)		(n=865) $\bar{x}$ =4.96	(n=363) $\bar{x}$ =5.02	(n=996) $\bar{x}$ =5.07	<0.001
	Abnormal Low	3.9%	1.9%	2.1%	0.029
	Abnormal High	0.7%	1.7%	1.7%	
White Blood Cell (WBC) Count (thousand/mm ³) (continuous) ^a (discrete)		(n=865) $\bar{x}$ =6.95	(n=363) $\bar{x}$ =7.77	(n=996) $\bar{x}$ =7.62	<0.001
	Abnormal Low	4.1%	4.1%	3.2%	0.002
	Abnormal High	3.4%	8.8%	6.3%	
Hemoglobin (gm/dl) (continuous) (discrete)		(n=865) $\bar{x}$ =15.78	(n=363) $\bar{x}$ =15.90	(n=996) $\bar{x}$ =15.93	0.007
	Abnormal Low	3.1%	2.5%	2.3%	0.617
	Abnormal High	2.1%	1.1%	1.9%	
Hematocrit (percent) (continuous) (discrete)		(n=865) $\bar{x}$ =45.98	(n=363) $\bar{x}$ =46.42	(n=996) $\bar{x}$ =46.49	0.001
	Abnormal Low	2.0%	1.4%	1.0%	0.220
Platelet Count (thousand/mm ³) (continuous) ^b (discrete)		(n=864) $\bar{x}$ =243.9	(n=363) $\bar{x}$ =251.9	(n=996) $\bar{x}$ =257.6	<0.001
	Abnormal High	0.5%	1.1%	1.7%	0.040
Prothrombin Time (seconds) (continuous) ^a (discrete)		(n=793) $\bar{x}$ =11.92	(n=327) $\bar{x}$ =11.97	(n=925) $\bar{x}$ =11.95	0.519
	High	1.0%	1.2%	0.3%	0.133
RBC Morphology	Abnormal	(n=865) 47.3%	(n=363) 49.0%	(n=996) 42.7%	0.046
Absolute Neutrophils (segs) (thousand/mm ³) ^a		(n=865) $\bar{x}$ =3.96	(n=363) $\bar{x}$ =4.45	(n=996) $\bar{x}$ =4.40	<0.001

^aMeans transformed from natural logarithm scale; correlations based on natural logarithm versus covariate.

^bMeans transformed from square root scale; correlations based on square root versus covariate.

Note: Correlations (r) are based on total sample and are not category specific.

Table L-1-1. (Continued)
Dependent Variable-Covariate Associations for the Hematology Assessment

Dependent Variable	Level	Current Cigarette Smoking (cigarettes/day)				p-Value
		0-Never	0-Former	>0-20	>20	
Red Blood Cell (RBC) Count (million/mm ³) (continuous) (discrete)		(n=2,222) r=0.083				<0.001
		(n=608)	(n=1,054)	(n=349)	(n=211)	
	Abnormal Low	2.6%	3.5%	1.4%	1.9%	0.423
	Abnormal High	1.0%	1.3%	1.7%	1.4%	
White Blood Cell (WBC) Count (thousand/mm ³) (continuous) ^a (discrete)		(n=2,222) r=0.438				<0.001
		(n=608)	(n=1,054)	(n=349)	(n=211)	
	Abnormal Low	6.3%	3.8%	0.9%	0.0%	<0.001
	Abnormal High	0.7%	2.0%	13.5%	24.6%	
Hemoglobin (gm/dl) (continuous) (discrete)		(n=2,222) r=0.227				<0.001
		(n=608)	(n=1,054)	(n=349)	(n=211)	
	Abnormal Low	3.0%	3.2%	2.0%	0.0%	<0.001
	Abnormal High	0.7%	1.0%	4.0%	5.7%	
Hematocrit (percent) (continuous) (discrete)		(n=2,222) r=0.239				<0.001
		(n=608)	(n=1,054)	(n=349)	(n=211)	
	Abnormal Low	1.6%	2.0%	0.3%	0.0%	0.032
Platelet Count (thousand/mm ³) (continuous) ^b (discrete)		(n=2,221) r=0.109				<0.001
		(n=607)	(n=1,054)	(n=349)	(n=211)	
	Abnormal High	0.8%	0.8%	1.4%	3.3%	0.011
Prothrombin Time (seconds) (continuous) ^a (discrete)		(n=2,043) r=-0.140				<0.001
		(n=558)	(n=966)	(n=319)	(n=200)	
	High	0.5%	1.1%	0.3%	0.0%	0.194
RBC Morphology	Abnormal	(n=608) 45.2%	(n=1,054) 47.4%	(n=349) 42.4%	(n=211) 41.7%	0.242
Absolute Neutrophils (segs) (thousand/mm ³) ^a		(n=2,222) r=0.426				<0.001

^aMeans transformed from natural logarithm scale; correlations based on natural logarithm versus covariate.

^bMeans transformed from square root scale; correlations based on square root versus covariate.

Note: Correlations (r) are based on total sample and are not category specific.

Table L-1-1. (Continued)
Dependent Variable-Covariate Associations for the Hematology Assessment

Dependent Variable	Level	Lifetime Cigarette Smoking History (pack-years)			
		0	>0-10	>10	p-Value
Red Blood Cell (RBC) Count (million/mm ³) (continuous) (discrete)			(n=2,221) r=-0.029		0.169
		(n=608)	(n=679)	(n=934)	
	Abnormal Low	2.6%	2.1%	3.4%	0.293
	Abnormal High	1.0%	1.0%	1.7%	
White Blood Cell (WBC) Count (thousand/mm ³) (continuous) ^a (discrete)			(n=2,221) r=0.245		<0.001
		(n=608)	(n=679)	(n=934)	
	Abnormal Low	6.3%	3.2%	2.3%	<0.001
	Abnormal High	0.7%	5.2%	9.1%	
Hemoglobin (gm/dl) (continuous) (discrete)			(n=2,221) r=0.057		0.007
		(n=608)	(n=679)	(n=934)	
	Abnormal Low	3.0%	2.5%	2.6%	0.103
	Abnormal High	0.7%	1.9%	2.6%	
Hematocrit (percent) (continuous) (discrete)			(n=2,221) r=0.072		<0.001
		(n=608)	(n=679)	(n=934)	
	Abnormal Low	1.6%	2.1%	0.9%	0.118
Platelet Count (thousand/mm ³) (continuous) ^b (discrete)			(n=2,220) r=0.091		<0.001
		(n=607)	(n=679)	(n=934)	
	Abnormal High	0.8%	1.3%	1.2%	0.683
Prothrombin Time (seconds) (continuous) ^a (discrete)			(n=2,042) r=-0.060		0.007
		(n=558)	(n=641)	(n=843)	
	High	0.5%	0.9%	0.7%	0.719
RBC Morphology		(n=608)	(n=679)	(n=934)	
	Abnormal	45.2%	45.8%	45.5%	0.979
Absolute Neutrophils (segs) (thousand/mm ³) ^a			(n=2,221) r=0.242		<0.001

^aMeans transformed from natural logarithm scale; correlations based on natural logarithm versus covariate.

^bMeans transformed from square root scale; correlations based on square root versus covariate.

Note: Correlations (r) are based on total sample and are not category specific.

Table L-1-1. (Continued)
Dependent Variable-Covariate Associations for the Hematology Assessment

Dependent Variable	Level	Age			Race		
		Born ≥1942	Born <1942	p-Value	Black	Non-Black	p-Value
Absolute Neutrophils (bands) (thousand/mm ³) (continuous) ^a (discrete)	Nonzero	(n=1,852) r=0.035		0.133	(n=88) $\bar{x}$ =0.185	(n=1,764) $\bar{x}$ =0.261	0.003
	Zero	(n=950) 17.4%	(n=1,274) 16.3%	0.520	(n=131) 32.8%	(n=2,093) 15.7%	<0.001
Absolute Lymphocytes (thousand/mm ³) ^a		(n=2,224) r=-0.019		0.375	(n=131) $\bar{x}$ =2.15	(n=2,093) $\bar{x}$ =2.08	0.332
Absolute Monocytes (thousand/mm ³) ^b		(n=2,224) r=0.013		0.530	(n=131) $\bar{x}$ =0.459	(n=2,093) $\bar{x}$ =0.491	0.151
Absolute Eosinophils (thousand/mm ³) (continuous) ^a (discrete)	Nonzero	(n=1,965) r=-0.001		0.978	(n=118) $\bar{x}$ =0.189	(n=1,847) $\bar{x}$ =0.220	0.021
	Zero	(n=950) 11.3%	(n=1,274) 11.9%	0.675	(n=131) 9.9%	(n=2,093) 11.8%	0.622
Absolute Basophils (thousand/mm ³) (continuous) ^a (discrete)	Nonzero	(n=1,219) r=-0.009		0.768	(n=65) $\bar{x}$ =0.091	(n=1,154) $\bar{x}$ =0.101	0.178
	Zero	(n=950) 43.6%	(n=1,274) 46.4%	0.203	(n=131) 50.4%	(n=2,093) 44.9%	0.254

^aMeans transformed from natural logarithm scale; correlations based on natural logarithm versus covariate.

^bMeans transformed from square root scale; correlations based on square root versus covariate.

Note: Correlations (r) are based on total sample and are not category specific.

Table L-1-1. (Continued)
Dependent Variable-Covariate Associations for the Hematology Assessment

Dependent Variable	Level	Occupation			p-Value
		Officer	Enlisted Flyer	Enlisted Groundcrew	
Absolute Neutrophils (bands) (thousand/mm ³) (continuous) ^a (discrete)	Nonzero	(n=732) $\bar{x}$ =0.255	(n=301) $\bar{x}$ =0.267	(n=819) $\bar{x}$ =0.255	0.730
	Zero	(n=865) 15.4%	(n=363) 17.1%	(n=996) 17.8%	0.378
Absolute Lymphocytes (thousand/mm ³) ^a		(n=865) $\bar{x}$ =1.94	(n=363) $\bar{x}$ =2.24	(n=996) $\bar{x}$ =2.16	<0.001
Absolute Monocytes (thousand/mm ³) ^b		(n=865) $\bar{x}$ =0.485	(n=363) $\bar{x}$ =0.490	(n=996) $\bar{x}$ =0.493	0.775
Absolute Eosinophils (thousand/mm ³) (continuous) ^a (discrete)	Nonzero	(n=756) $\bar{x}$ =0.215	(n=326) $\bar{x}$ =0.229	(n=883) $\bar{x}$ =0.217	0.484
	Zero	(n=865) 12.6%	(n=363) 10.2%	(n=996) 11.4%	0.449
Absolute Basophils (thousand/mm ³) (continuous) ^a (discrete)	Nonzero	(n=478) $\bar{x}$ =0.097	(n=202) $\bar{x}$ =0.106	(n=539) $\bar{x}$ =0.101	0.126
	Zero	(n=865) 44.7%	(n=363) 44.4%	(n=996) 45.9%	0.832

^aMeans transformed from natural logarithm scale; correlations based on natural logarithm versus covariate.

^bMeans transformed from square root scale; correlations based on square root versus covariate.

Note: Correlations (r) are based on total sample and are not category specific.

Table L-1-1. (Continued)
Dependent Variable-Covariate Associations for the Hematology Assessment

Dependent Variable	Level	Current Cigarette Smoking (cigarettes/day)				p-Value
		0-Never	0-Former	>0-20	>20	
Absolute Neutrophils (bands) (thousand/mm ³) (continuous) ^a (discrete)	Nonzero		(n=1,850) r=0.229			<0.001
	Zero	(n=608) 17.8%	(n=1,054) 17.9%	(n=349) 13.5%	(n=211) 13.3%	0.110
Absolute Lymphocytes (thousand/mm ³) ^a			(n=2,222) r=0.164			<0.001
Absolute Monocytes (thousand/mm ³) ^b			(n=2,222) r=0.184			<0.001
Absolute Eosinophils (thousand/mm ³) (continuous) ^a (discrete)	Nonzero		(n=1,963) r=0.147			<0.001
	Zero	(n=608) 13.2%	(n=1,054) 11.0%	(n=349) 10.6%	(n=211) 12.3%	0.526
Absolute Basophils (thousand/mm ³) (continuous) ^a (discrete)	Nonzero		(n=1,218) r=0.199			<0.001
	Zero	(n=608) 44.7%	(n=1,054) 43.3%	(n=349) 47.3%	(n=211) 52.6%	0.074

^aMeans transformed from natural logarithm scale; correlations based on natural logarithm versus covariate.

^bMeans transformed from square root scale; correlations based on square root versus covariate.

Note: Correlations (r) are based on total sample and are not category specific.

Table L-1-1. (Continued)
Dependent Variable-Covariate Associations for the Hematology Assessment

Dependent Variable	Level	Lifetime Cigarette Smoking History (pack-years)			p-Value
		0	>0-10	>10	
Absolute Neutrophils (bands) (thousand/mm ³) (continuous) ^a (discrete)	Nonzero		(n=1,849) r=0.129		<0.001
	Zero	(n=608) 17.8%	(n=679) 18.9%	(n=934) 14.6%	0.055
Absolute Lymphocytes (thousand/mm ³) ^a			(n=2,221) r=0.087		<0.001
Absolute Monocytes (thousand/mm ³) ^b			(n=2,221) r=0.109		<0.001
Absolute Eosinophils (thousand/mm ³) (continuous) ^a (discrete)	Nonzero		(n=1,962) r=0.080		<0.001
	Zero	(n=608) 13.2%	(n=679) 10.3%	(n=934) 11.7%	0.283
Absolute Basophils (thousand/mm ³) (continuous) ^a (discrete)	Nonzero		(n=1,217) r=0.105		<0.001
	Zero	(n=608) 44.7%	(n=679) 44.5%	(n=934) 46.0%	0.794

^aMeans transformed from natural logarithm scale; correlations based on natural logarithm versus covariate.

^bMeans transformed from square root scale; correlations based on square root versus covariate.

Note: Correlations (r) are based on total sample and are not category specific.

APPENDIX L-2.

Interaction Tables for the Hematology Assessment

This appendix contains exposure analyses results of interactions between covariates and group or dioxin. Results are presented for separate strata of the covariate and include sample sizes, percent abnormal, relative risks, confidence intervals, and p-values for discrete dependent variables. Sample sizes, adjusted means, differences of adjusted means and confidence intervals or adjusted slopes and standard errors, and p-values are given for continuous dependent variables. Means are transformed back to the original scale, if necessary. Chapter 7, Statistical Methods, provides further details on the analytical approaches used in the interaction analyses. The covariate involved in the interaction and a reference to the analysis table in Chapter 16 are given in the heading of each subtable. A summary of the interactions described in this appendix follows.

Appendix L-2 Table	Chapter 16 Table	Dependent Variable	Model	Covariate
L-2-1	16-3	Red Blood Cell (RBC) Count (Continuous)	1 3	Current Cigarette Smoking Current Cigarette Smoking
L-2-2	16-5	White Blood Cell (WBC) Count (Continuous)	1 2 4 5 6	Race Race, Occupation Race Race Race
L-2-3	16-6	White Blood Cell (WBC) Count (Discrete)	4 5 6	Race Race Race
L-2-4	16-7	Hemoglobin (Continuous)	1 3	Current Cigarette Smoking, Lifetime Cigarette Smoking History Current Cigarette Smoking, Lifetime Cigarette Smoking History
L-2-5	16-9	Hematocrit (Continuous)	1 3	Current Cigarette Smoking, Lifetime Cigarette Smoking History Current Cigarette Smoking, Lifetime Cigarette Smoking History
L-2-6	16-13	Prothrombin Time (Continuous)	3	Age
L-2-7	16-14	Prothrombin Time (Discrete)	4	Lifetime Cigarette Smoking History
L-2-8	16-16	Absolute Neutrophils (segs)	2 4 5 6	Race Race Race Race

Appendix L-2 Table	Chapter 16 Table	Dependent Variable	Model	Covariate
L-2-9	16-17	Absolute Neutrophils (bands)	2	Lifetime Cigarette Smoking History, Occupation
			3	Lifetime Cigarette Smoking History
			4	Lifetime Cigarette Smoking History
			5	Lifetime Cigarette Smoking History
			6	Lifetime Cigarette Smoking History
L-2-10	16-19	Absolute Monocytes	1	Race
L-2-11	16-20	Absolute Eosinophils	2	Age, Occupation
			6	Occupation
L-2-12	16-21	Absolute Basophils	5	Race
			6	Race

Appendix L-2 Table	Chapter 16 Table	Dependent Variable	Model	Covariate
L-2-1	16-3	Red Blood Cell (RBC) (Continuous)	1	Current Cigarette Smoking
			3	Current Cigarette Smoking
L-2-2	16-5	White Blood Cell (WBC) (Continuous)	1	Race
			3	Race, Occupation
			4	Race
			5	Race
			6	Race
L-2-3	16-6	White Blood Cell (WBC) (Continuous)	4	Race
			5	Race
			6	Race
L-2-4	16-7	Hemoglobin (Continuous)	1	Current Cigarette Smoking
			3	Lifetime Cigarette Smoking History
			3	Current Cigarette Smoking
L-2-5	16-9	Hemoglobin (Continuous)	1	Current Cigarette Smoking
			3	Lifetime Cigarette Smoking History
			3	Current Cigarette Smoking
L-2-6	16-13	Prothrombin Time (Continuous)	3	Age
L-2-7	16-14	Prothrombin Time (Discrete)	4	Lifetime Cigarette Smoking History
L-2-8	16-16	Absolute Neutrophils (egs)	2	Race
			4	Race
			5	Race
			6	Race

Table L-2-1.
Interaction Table for Red Blood Cell (RBC) Count (million/mm³)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Current Cigarette Smoking: Table 16-3)						
Stratum	Occupational Category	Group	n	Adjusted Mean	Difference of Adjusted Means (95% C.I.)	p-Value
<i>0-Never Smoked</i>	<i>All</i>	<i>Ranch Hand</i>	<i>254</i>	<i>5.036</i>	<i>-0.028 (-0.089,0.033)</i>	<i>0.373</i>
		<i>Comparison</i>	<i>354</i>	<i>5.064</i>		
<i>0-Former Smoker</i>	<i>All</i>	<i>Ranch Hand</i>	<i>436</i>	<i>5.000</i>	<i>-0.043 (-0.090,0.004)</i>	<i>0.070</i>
		<i>Comparison</i>	<i>617</i>	<i>5.044</i>		
<i>> 0-20 Cigarettes/Day</i>	<i>All</i>	<i>Ranch Hand</i>	<i>158</i>	<i>5.067</i>	<i>-0.006 (-0.087,0.074)</i>	<i>0.879</i>
		<i>Comparison</i>	<i>191</i>	<i>5.074</i>		
<i>> 20 Cigarettes/Day</i>	<i>All</i>	<i>Ranch Hand</i>	<i>97</i>	<i>5.163</i>	<i>0.094 (-0.010,0.197)</i>	<i>0.076</i>
		<i>Comparison</i>	<i>114</i>	<i>5.070</i>		
<i>0-Never Smoked</i>	<i>Officer</i>	<i>Ranch Hand</i>	<i>134</i>	<i>4.986</i>	<i>-0.003 (-0.087,0.081)</i>	<i>0.940</i>
		<i>Comparison</i>	<i>194</i>	<i>4.989</i>		
	<i>Enlisted Flyer</i>	<i>Ranch Hand</i>	<i>25</i>	<i>5.058</i>	<i>-0.048 (-0.256,0.159)</i>	<i>0.647</i>
		<i>Comparison</i>	<i>27</i>	<i>5.107</i>		
	<i>Enlisted Groundcrew</i>	<i>Ranch Hand</i>	<i>95</i>	<i>5.064</i>	<i>-0.061 (-0.162,0.039)</i>	<i>0.231</i>
		<i>Comparison</i>	<i>133</i>	<i>5.125</i>		
<i>0-Former Smoker</i>	<i>Officer</i>	<i>Ranch Hand</i>	<i>178</i>	<i>4.972</i>	<i>-0.036 (-0.110,0.038)</i>	<i>0.339</i>
		<i>Comparison</i>	<i>242</i>	<i>5.008</i>		
	<i>Enlisted Flyer</i>	<i>Ranch Hand</i>	<i>84</i>	<i>4.967</i>	<i>-0.104 (-0.213,0.005)</i>	<i>0.062</i>
		<i>Comparison</i>	<i>106</i>	<i>5.071</i>		
	<i>Enlisted Groundcrew</i>	<i>Ranch Hand</i>	<i>174</i>	<i>5.031</i>	<i>-0.023 (-0.096,0.049)</i>	<i>0.527</i>
		<i>Comparison</i>	<i>269</i>	<i>5.054</i>		
<i>> 0-20 Cigarettes/Day</i>	<i>Officer</i>	<i>Ranch Hand</i>	<i>33</i>	<i>5.060</i>	<i>0.011 (-0.170,0.192)</i>	<i>0.906</i>
		<i>Comparison</i>	<i>35</i>	<i>5.049</i>		
	<i>Enlisted Flyer</i>	<i>Ranch Hand</i>	<i>28</i>	<i>4.948</i>	<i>-0.150 (-0.328,0.028)</i>	<i>0.099</i>
		<i>Comparison</i>	<i>47</i>	<i>5.098</i>		
	<i>Enlisted Groundcrew</i>	<i>Ranch Hand</i>	<i>97</i>	<i>5.117</i>	<i>0.032 (-0.073,0.136)</i>	<i>0.552</i>
		<i>Comparison</i>	<i>109</i>	<i>5.085</i>		
<i>> 20 Cigarettes/Day</i>	<i>Officer</i>	<i>Ranch Hand</i>	<i>18</i>	<i>5.241</i>	<i>0.229 (0.007,0.452)</i>	<i>0.044</i>
		<i>Comparison</i>	<i>30</i>	<i>5.012</i>		
	<i>Enlisted Flyer</i>	<i>Ranch Hand</i>	<i>25</i>	<i>5.259</i>	<i>0.167 (-0.054,0.389)</i>	<i>0.138</i>
		<i>Comparison</i>	<i>21</i>	<i>5.092</i>		
	<i>Enlisted Groundcrew</i>	<i>Ranch Hand</i>	<i>54</i>	<i>5.109</i>	<i>0.009 (-0.129,0.148)</i>	<i>0.896</i>
		<i>Comparison</i>	<i>63</i>	<i>5.099</i>		

Table L-2-1. (Continued)
Interaction Table for Red Blood Cell (RBC) Count (million/mm³)
(Continuous)

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Current Cigarette Smoking: Table 16-3)					
Stratum	Dioxin Category	n	Adjusted Mean	Difference of Adjusted Mean vs. Comparisons (95% C.I.)	p-Value
0-Never Smoked	Comparison	282	5.068		
	Background RH	108	5.036	-0.032 (-0.116,0.052)	0.459
	Low RH	72	5.051	-0.017 (-0.114,0.080)	0.732
	High RH	65	4.992	-0.075 (-0.179,0.028)	0.154
	Low plus High RH	137	5.023	-0.045 (-0.122,0.033)	0.258
0-Former Smoker	Comparison	528	5.044		
	Background RH	168	4.996	-0.048 (-0.114,0.018)	0.156
	Low RH	126	5.004	-0.040 (-0.113,0.033)	0.282
	High RH	113	5.001	-0.043 (-0.121,0.034)	0.277
	Low plus High RH	239	5.003	-0.042 (-0.099,0.016)	0.159
> 0-20 Cigarettes/Day	Comparison	152	5.086		
	Background RH	59	5.169	0.083 (-0.031,0.196)	0.154
	Low RH	38	4.978	-0.109 (-0.242,0.025)	0.112
	High RH	49	5.055	-0.031 (-0.153,0.090)	0.613
	Low plus High RH	87	5.021	-0.065 (-0.164,0.034)	0.198
> 20 Cigarettes/Day	Comparison	97	5.095		
	Background RH	35	5.263	0.168 (0.022,0.313)	0.024
	Low RH	23	5.181	0.086 (-0.085,0.257)	0.325
	High RH	31	5.093	-0.002 (-0.154,0.150)	0.981
	Low plus High RH	54	5.131	0.035 (-0.090,0.161)	0.579

Note: Model 3: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

Background (Ranch Hand): Current Dioxin ≤ 10 ppt.

Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.

High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Table L-2-2.
Interaction Table for White Blood Cell (WBC) Count (thousand/mm³)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Race: Table 16-5)						
Stratum	Occupational Category	Group	n	Adjusted Mean^a	Difference of Adjusted Means (95% C.I.)^b	p-Value^c
Black	All	<i>Ranch Hand</i>	56	5.87	-0.55 --	0.035
		<i>Comparison</i>	75	6.42		
Non-Black	All	<i>Ranch Hand</i>	889	7.19	0.07 --	0.346
		<i>Comparison</i>	1,201	7.12		
Black	Officer	Ranch Hand	7	5.41	-2.27 --	0.008
		Comparison	6	7.68		
	Enlisted Flyer	Ranch Hand	10	5.70	-0.62 --	0.292
		Comparison	15	6.32		
	Enlisted Groundcrew	Ranch Hand	39	6.19	-0.35 --	0.277
		Comparison	54	6.54		
Non-Black	Officer	Ranch Hand	356	6.86	0.07 --	0.556
		Comparison	495	6.79		
	Enlisted Flyer	Ranch Hand	152	7.20	-0.04 --	0.847
		Comparison	186	7.24		
	Enlisted Groundcrew	Ranch Hand	381	7.48	0.12 --	0.329
		Comparison	520	7.37		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Race: Table 16-5)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Adjusted Mean^a	Adjusted Slope (Std. Error)^d	p-Value
Black	Low	17	5.10	0.1066 (0.0411)	0.010
	Medium	10	6.84		
	High	9	6.91		
Non-Black	Low	157	7.25	-0.0033 (0.0411)	0.742
	Medium	162	7.25		
	High	162	7.15		

Table L-2-2. (Continued)
Interaction Table for White Blood Cell (WBC) Count (thousand/mm³)
(Continuous)

c) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 16-5)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Adjusted Mean^a	Adjusted Slope (Std. Error)^d	p-Value
Officer	Low	77	6.27	0.0926 (0.0418)	0.027
	Medium	33	6.80		
	High	1	9.33		
Enlisted Flyer	Low	36	6.53	-0.0317 (0.0226)	0.160
	Medium	43	6.59		
	High	31	6.30		
Enlisted Groundcrew	Low	61	6.74	0.0032 (0.0110)	0.775
	Medium	96	6.75		
	High	139	6.78		

d) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-5)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean^a	Adjusted Slope (Std. Error)^d	p-Value
Black	Low	12	5.79	0.0615 (0.0302)	0.042
	Medium	22	5.48		
	High	17	6.78		
Non-Black	Low	279	7.15	-0.0014 (0.0068)	0.837
	Medium	277	7.18		
	High	280	7.11		

Table L-2-2. (Continued)
Interaction Table for White Blood Cell (WBC) Count (thousand/mm³)
(Continuous)

e) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-5)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean^a	Adjusted Slope (Std. Error)^d	p-Value
Black	Low	13	5.65	0.0634 (0.0269)	0.019
	Medium	23	5.54		
	High	15	7.04		
Non-Black	Low	283	7.12	-0.0011 (0.0057)	0.850
	Medium	274	7.17		
	High	279	7.15		

f) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-5)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean^a	Adjusted Slope (Std. Error)^d	p-Value
Black	Low	13	5.69	0.0607 (0.0270)	0.025
	Medium	23	5.56		
	High	15	7.04		
Non-Black	Low	282	7.15	-0.0036 (0.0062)	0.568
	Medium	274	7.17		
	High	279	7.11		

^a Transformed from natural logarithm scale.

^b Difference of means after transformation to original scale; confidence interval on difference of means not presented because analysis was performed on natural logarithm scale.

^c P-value is based on difference of means on natural logarithm scale.

^d Slope and standard error based on natural logarithm of WBC count versus log₂ dioxin.

Note: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

Model 4: Low = ≤ 8.1 ppt; Medium = > 8.1-20.5 ppt; High = > 20.5 ppt.

Models 5 and 6: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table L-2-3.
Interaction Table for White Blood Cell (WBC) Count
(Discrete)

a) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-6)									
Analysis Results for Log₂ (Current Dioxin + 1)									
Stratum	Current Dioxin	n	Percent			Abnormal Low vs. Normal		Abnormal High vs. Normal	
			Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.)^a	p-Value	Adj. Relative Risk (95% C.I.)^a	p-Value
Non-Black	Low	279	2.9	91.4	5.7	1.17 (0.85,1.61)	0.340	0.80 (0.65,0.99)	0.037
	Medium	277	2.9	89.9	7.2				
	High	280	3.9	90.4	5.7				
Black	Low	12	25.0	66.7	8.3	0.50 (0.23,1.09)	0.080	--	--
	Medium	22	22.7	77.3	0.0				
	High	17	0.0	100.0	0.0				

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-6)									
Analysis Results for Log₂ (Current Dioxin + 1)									
Stratum	Current Dioxin	n	Percent			Abnormal Low vs. Normal		Abnormal High vs. Normal	
			Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.)^a	p-Value	Adj. Relative Risk (95% C.I.)^a	p-Value
Non-Black	Low	283	2.8	91.9	5.3	1.19 (0.90,1.57)	0.232	0.87 (0.74,1.03)	0.098
	Medium	274	3.3	89.1	7.7				
	High	279	3.6	90.7	5.7				
Black	Low	13	23.1	69.2	7.7	0.54 (0.27,1.08)	0.081	--	--
	Medium	23	21.7	78.3	0.0				
	High	15	0.0	100.0	0.0				

Table L-2-3. (Continued)
Interaction Table for White Blood Cell (WBC) Count
(Discrete)

c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-6)									
Stratum	Current Dioxin	n	Analysis Results for Log ₂ (Current Dioxin + 1)						
			Percent			Abnormal Low vs. Normal		Abnormal High vs. Normal	
			Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.) ^a	p-Value	Adj. Relative Risk (95% C.I.) ^a	p-Value
Non-Black	Low	282	2.8	91.8	5.3	1.17 (0.87,1.57)	0.301	0.84 (0.71,1.00)	0.047
	Medium	274	3.3	89.1	7.7				
	High	279	3.6	90.7	5.7				
Black	Low	13	23.1	69.2	7.7	0.54 (0.27,1.08)	0.081	--	--
	Medium	23	21.7	78.3	0.0				
	High	15	0.0	100.0	0.0				

^a Relative risk for a twofold increase in current dioxin.

--: Relative risk, confidence interval, and p-value not presented due to the sparse number of abnormalities.

Note: Model 4: Low = ≤ 8.1 ppt; Medium = > 8.1-20.5 ppt; High = > 20.5 ppt.

Models 5 and 6: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table L-2-4.
Interaction Table for Hemoglobin (gm/dl)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Current Cigarette Smoking: Table 16-7)						
Stratum	Occupational Category	Group	n	Adjusted Mean	Difference of Adjusted Means (95% C.I.)	p-Value
0-Never Smoked	All	<i>Ranch Hand</i>	<i>254</i>	<i>15.49</i>	-0.02 (-0.18,0.14)	0.775
		<i>Comparison</i>	<i>354</i>	<i>15.51</i>		
0-Former Smoker	All	<i>Ranch Hand</i>	<i>436</i>	<i>15.47</i>	-0.05 (-0.17,0.07)	0.437
		<i>Comparison</i>	<i>617</i>	<i>15.51</i>		
> 0-20 Cigarettes/Day	All	<i>Ranch Hand</i>	<i>158</i>	<i>15.90</i>	0.04 (-0.17,0.25)	0.732
		<i>Comparison</i>	<i>191</i>	<i>15.86</i>		
> 20 Cigarettes/Day	All	<i>Ranch Hand</i>	<i>97</i>	<i>16.30</i>	0.17 (-0.10,0.44)	0.221
		<i>Comparison</i>	<i>114</i>	<i>16.14</i>		
0-Never Smoked	Officer	Ranch Hand	134	15.44	-0.01 (-0.23,0.21)	0.910
		Comparison	194	15.45		
	Enlisted Flyer	Ranch Hand	25	15.63	0.22 (-0.32,0.77)	0.421
		Comparison	27	15.41		
	Enlisted Groundcrew	Ranch Hand	95	15.47	-0.10 (-0.36,0.16)	0.456
		Comparison	133	15.57		
0-Former Smoker	Officer	Ranch Hand	178	15.46	-0.02 (-0.21,0.17)	0.831
		Comparison	242	15.48		
	Enlisted Flyer	Ranch Hand	84	15.36	-0.23 (-0.51,0.06)	0.119
		Comparison	106	15.59		
	Enlisted Groundcrew	Ranch Hand	174	15.50	0.00 (-0.19,0.19)	0.974
		Comparison	269	15.50		
> 0-20 Cigarettes/Day	Officer	Ranch Hand	33	16.15	0.40 (-0.08,0.87)	0.102
		Comparison	35	15.76		
	Enlisted Flyer	Ranch Hand	28	15.68	-0.20 (-0.67,0.26)	0.390
		Comparison	47	15.88		
	Enlisted Groundcrew	Ranch Hand	97	15.87	-0.01 (-0.29,0.26)	0.928
		Comparison	109	15.88		
> 20 Cigarettes/Day	Officer	Ranch Hand	18	16.36	0.46 (-0.13,1.04)	0.124
		Comparison	30	15.90		
	Enlisted Flyer	Ranch Hand	25	16.59	0.19 (-0.39,0.77)	0.520
		Comparison	21	16.39		
	Enlisted Groundcrew	Ranch Hand	54	16.17	0.02 (-0.35,0.38)	0.928
		Comparison	63	16.16		

Table L-2-4. (Continued)
Interaction Table for Hemoglobin (gm/dl)
(Continuous)

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Lifetime Cigarette Smoking History: Table 16-7)						
Stratum	Occupational Category	Group	n	Adjusted Mean	Difference of Adjusted Means (95% C.I.)	p-Value
0 Pack-years	All	<i>Ranch Hand</i>	254	15.63	-0.02 (-0.19,0.14)	0.776
		<i>Comparison</i>	354	15.65		
> 0-10 Pack-years	All	<i>Ranch Hand</i>	297	15.71	0.08 (-0.07,0.24)	0.282
		<i>Comparison</i>	382	15.63		
> 10 Pack-years	All	<i>Ranch Hand</i>	394	15.59	-0.05 (-0.18,0.08)	0.454
		<i>Comparison</i>	540	15.64		
0 Pack-years	Officer	<i>Ranch Hand</i>	134	15.42	-0.00 (-0.23,0.22)	0.967
		<i>Comparison</i>	194	15.43		
	Enlisted Flyer	<i>Ranch Hand</i>	25	15.71	0.21 (-0.34,0.77)	0.451
		<i>Comparison</i>	27	15.49		
	Enlisted Groundcrew	<i>Ranch Hand</i>	95	15.53	-0.10 (-0.37,0.17)	0.486
		<i>Comparison</i>	133	15.62		
> 0-10 Pack-years	Officer	<i>Ranch Hand</i>	95	15.69	0.16 (-0.10,0.43)	0.226
		<i>Comparison</i>	141	15.53		
	Enlisted Flyer	<i>Ranch Hand</i>	53	15.51	-0.30 (-0.68,0.08)	0.118
		<i>Comparison</i>	60	15.81		
	Enlisted Groundcrew	<i>Ranch Hand</i>	149	15.72	0.17 (-0.06,0.39)	0.140
		<i>Comparison</i>	181	15.56		
> 10 Pack-years	Officer	<i>Ranch Hand</i>	134	15.69	0.01 (-0.22,0.24)	0.936
		<i>Comparison</i>	166	15.68		
	Enlisted Flyer	<i>Ranch Hand</i>	84	15.73	-0.01 (-0.29,0.28)	0.969
		<i>Comparison</i>	114	15.74		
	Enlisted Groundcrew	<i>Ranch Hand</i>	176	15.70	-0.05 (-0.25,0.14)	0.588
		<i>Comparison</i>	260	15.75		

Table L-2-4. (Continued)
Interaction Table for Hemoglobin (gm/dl)
(Continuous)

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Current Cigarette Smoking: Table 16-7)					
Stratum	Dioxin Category	n	Adjusted Mean	Difference of Adjusted Mean vs. Comparisons (95% C.I.)	p-Value
0-Never Smoked	Comparison	282	15.51		
	Background RH	108	15.46	-0.05 (-0.27,0.17)	0.639
	Low RH	72	15.50	-0.01 (-0.27,0.24)	0.918
	High RH	65	15.48	-0.03 (-0.30,0.24)	0.828
	Low plus High RH	137	15.49	-0.02 (-0.22,0.18)	0.837
0-Former Smoker	Comparison	528	15.54		
	Background RH	168	15.47	-0.07 (-0.24,0.10)	0.433
	Low RH	126	15.39	-0.15 (-0.34,0.04)	0.111
	High RH	113	15.62	0.08 (-0.12,0.28)	0.437
	Low plus High RH	239	15.50	-0.04 (-0.19,0.11)	0.568
>0-20 Cigarettes/Day	Comparison	152	15.86		
	Background RH	59	16.14	0.28 (-0.02,0.57)	0.065
	Low RH	38	15.74	-0.11 (-0.46,0.23)	0.519
	High RH	49	15.83	-0.03 (-0.34,0.29)	0.858
	Low plus High RH	87	15.79	-0.07 (-0.32,0.19)	0.614
>20 Cigarettes/Day	Comparison	97	16.19		
	Background RH	35	16.56	0.37 (0.00,0.75)	0.053
	Low RH	23	16.32	0.13 (-0.32,0.58)	0.566
	High RH	31	16.10	-0.08 (-0.48,0.32)	0.684
	Low plus High RH	54	16.20	0.01 (-0.32,0.34)	0.961

Table L-2-4. (Continued)
Interaction Table for Hemoglobin (gm/dl)
(Continuous)

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Lifetime Cigarette Smoking History: Table 16-7)					
Stratum	Dioxin Category	n	Adjusted Mean	Difference of Adjusted Mean vs. Comparisons (95% C.I.)	p-Value
0 Pack-years	Comparison	282	15.68		
	Background RH	108	15.64	-0.04 (-0.27,0.18)	0.720
	Low RH	72	15.67	-0.02 (-0.27,0.24)	0.900
	High RH	65	15.64	-0.05 (-0.33,0.23)	0.743
	Low plus High RH	137	15.65	-0.03 (-0.24,0.18)	0.768
>0-10 Pack-years	Comparison	322	15.66		
	Background RH	108	15.83	0.17 (-0.05,0.39)	0.128
	Low RH	69	15.62	-0.05 (-0.31,0.21)	0.709
	High RH	93	15.69	0.02 (-0.21,0.26)	0.855
	Low plus High RH	162	15.66	-0.01 (-0.20,0.18)	0.933
>10 Pack-years	Comparison	455	15.65		
	Background RH	154	15.63	-0.02 (-0.20,0.16)	0.823
	Low RH	118	15.52	-0.13 (-0.33,0.07)	0.192
	High RH	100	15.71	0.06 (-0.16,0.27)	0.601
	Low plus High RH	218	15.61	-0.05 (-0.20,0.11)	0.575

Note: Model 3: RH = Ranch Hand.

Comparison: Current Dioxin $\leq$ 10 ppt.

Background (Ranch Hand): Current Dioxin $\leq$ 10 ppt.

Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin $\leq$ 143 ppt.

High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Table L-2-5.
Interaction Table for Hematocrit (percent)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Current Cigarette Smoking: Table 16-9)						
Stratum	Occupational Category	Group	n	Adjusted Mean	Difference of Adjusted Means (95% C.I.)	p-Value
0-Never Smoked	All	Ranch Hand	254	45.38	-0.06 (-0.56,0.43)	0.810
		Comparison	354	45.44		
0-Former Smoker	All	Ranch Hand	436	45.29	-0.15 (-0.53,0.23)	0.441
		Comparison	617	45.44		
> 0-20 Cigarettes/Day	All	Ranch Hand	158	46.73	0.02 (-0.63,0.67)	0.957
		Comparison	191	46.72		
> 20 Cigarettes/Day	All	Ranch Hand	97	47.92	0.51 (-0.33,1.34)	0.235
		Comparison	114	47.41		
0-Never Smoked	Officer	Ranch Hand	134	45.12	-0.05 (-0.73,0.62)	0.878
		Comparison	194	45.17		
	Enlisted Flyer	Ranch Hand	25	45.89	0.77 (-0.90,2.44)	0.367
		Comparison	27	45.12		
	Enlisted Groundcrew	Ranch Hand	95	45.46	-0.28 (-1.09,0.53)	0.501
		Comparison	133	45.73		
0-Former Smoker	Officer	Ranch Hand	178	45.26	-0.03 (-0.63,0.56)	0.909
		Comparison	242	45.29		
	Enlisted Flyer	Ranch Hand	84	44.97	-0.63 (-1.51,0.25)	0.161
		Comparison	106	45.60		
	Enlisted Groundcrew	Ranch Hand	174	45.42	-0.05 (-0.63,0.54)	0.875
		Comparison	269	45.47		
> 0-20 Cigarettes/Day	Officer	Ranch Hand	33	47.43	1.21 (-0.25,2.68)	0.103
		Comparison	35	46.21		
	Enlisted Flyer	Ranch Hand	28	46.14	-0.64 (-2.08,0.80)	0.382
		Comparison	47	46.79		
	Enlisted Groundcrew	Ranch Hand	97	46.72	-0.18 (-1.02,0.66)	0.670
		Comparison	109	46.90		
> 20 Cigarettes/Day	Officer	Ranch Hand	18	48.12	1.57 (-0.22,3.37)	0.086
		Comparison	30	46.54		
	Enlisted Flyer	Ranch Hand	25	48.72	0.50 (-1.30,2.29)	0.586
		Comparison	21	48.23		
	Enlisted Groundcrew	Ranch Hand	54	47.58	-0.01 (-1.13,1.11)	0.989
		Comparison	63	47.59		

Table L-2-5. (Continued)
Interaction Table for Hematocrit (percent)
(Continuous)

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Lifetime Cigarette Smoking History: Table 16-9)						
Stratum	Occupational Category	Group	n	Adjusted Mean	Difference of Adjusted Means (95% C.I.)	p-Value
0 Pack-years	All	<i>Ranch Hand</i>	254	15.63	-0.03 (-0.20,0.13)	0.687
		<i>Comparison</i>	354	15.67		
>0-10 Pack-years	All	<i>Ranch Hand</i>	297	15.72	0.09 (-0.06,0.24)	0.251
		<i>Comparison</i>	382	15.63		
>10 Pack-years	All	<i>Ranch Hand</i>	394	15.57	-0.05 (-0.18,0.08)	0.431
		<i>Comparison</i>	540	15.62		
0 Pack-years	Officer	Ranch Hand	134	15.38	-0.03 (-0.25,0.20)	0.812
		Comparison	194	15.41		
	Enlisted Flyer	Ranch Hand	25	15.70	0.23 (-0.33,0.79)	0.420
		Comparison	27	15.47		
	Enlisted Groundcrew	Ranch Hand	95	15.58	-0.10 (-0.37,0.17)	0.455
		Comparison	133	15.69		
>0-10 Pack-years	Officer	Ranch Hand	95	15.68	0.19 (-0.07,0.46)	0.152
		Comparison	141	15.49		
	Enlisted Flyer	Ranch Hand	53	15.49	-0.31 (-0.69,0.07)	0.105
		Comparison	60	15.80		
	Enlisted Groundcrew	Ranch Hand	149	15.78	0.17 (-0.06,0.39)	0.142
		Comparison	181	15.62		
>10 Pack-years	Officer	Ranch Hand	134	15.62	0.00 (-0.23,0.24)	0.989
		Comparison	166	15.62		
	Enlisted Flyer	Ranch Hand	84	15.71	-0.01 (-0.30,0.28)	0.947
		Comparison	114	15.72		
	Enlisted Groundcrew	Ranch Hand	176	15.72	-0.05 (-0.25,0.14)	0.605
		Comparison	260	15.77		

Table L-2-5. (Continued)
Interaction Table for Hematocrit (percent)
(Continuous)

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Current Cigarette Smoking: Table 16-9)					
Stratum	Dioxin Category	n	Adjusted Mean	Difference of Adjusted Mean vs. Comparisons (95% C.I.)	p-Value
0-Never Smoked	Comparison	282	45.54		
	Background RH	108	45.45	-0.08 (-0.77,0.61)	0.817
	Low RH	72	45.46	-0.07 (-0.85,0.71)	0.858
	High RH	65	45.39	-0.15 (-1.01,0.72)	0.741
	Low plus High RH	137	45.43	-0.11 (-0.74,0.53)	0.741
0-Former Smoker	Comparison	528	45.47		
	Background RH	168	45.23	-0.23 (-0.77,0.31)	0.396
	Low RH	126	44.91	-0.55 (-1.14,0.04)	0.066
	High RH	113	45.82	0.36 (-0.27,0.99)	0.268
	Low plus High RH	239	45.34	-0.12 (-0.59,0.34)	0.605
> 0-20 Cigarettes/Day	Comparison	152	46.68		
	Background RH	59	47.43	0.75 (-0.18,1.68)	0.114
	Low RH	38	46.07	-0.61 (-1.68,0.47)	0.268
	High RH	49	46.46	-0.21 (-1.21,0.78)	0.671
	Low plus High RH	87	46.29	-0.39 (-1.19,0.42)	0.346
> 20 Cigarettes/Day	Comparison	97	47.62		
	Background RH	35	48.74	1.13 (-0.04,2.29)	0.059
	Low RH	23	47.96	0.34 (-1.03,1.72)	0.625
	High RH	31	46.92	-0.69 (-1.94,0.55)	0.276
	Low plus High RH	54	47.37	-0.25 (-1.27,0.77)	0.629

Table L-2-5. (Continued)
Interaction Table for Hematocrit (percent)
(Continuous)

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Lifetime Cigarette Smoking History: Table 16-9)					
Stratum	Dioxin Category	n	Adjusted Mean	Difference of Adjusted Mean vs. Comparisons (95% C.I.)	p-Value
0 Pack-years	Comparison	282	46.01		
	Background RH	108	45.93	-0.07 (-0.76,0.62)	0.836
	Low RH	72	45.96	-0.04 (-0.83,0.74)	0.911
	High RH	65	45.86	-0.15 (-1.02,0.72)	0.733
	Low plus High RH	137	45.91	-0.10 (-0.73,0.54)	0.769
>0-10 Pack-years	Comparison	322	45.88		
	Background RH	108	46.48	0.60 (-0.08,1.28)	0.082
	Low RH	69	45.74	-0.14 (-0.93,0.65)	0.724
	High RH	93	46.08	0.19 (-0.53,0.92)	0.602
	Low plus High RH	162	45.93	0.05 (-0.54,0.64)	0.868
>10 Pack-years	Comparison	455	45.93		
	Background RH	154	45.79	-0.14 (-0.70,0.43)	0.635
	Low RH	118	45.36	-0.56 (-1.18,0.05)	0.072
	High RH	100	45.94	0.01 (-0.66,0.68)	0.973
	Low plus High RH	218	45.63	-0.30 (-0.79,0.19)	0.229

Note: Model 3: RH = Ranch Hand.

Comparison: Current Dioxin $\leq$ 10 ppt.

Background (Ranch Hand): Current Dioxin $\leq$ 10 ppt.

Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin $\leq$ 143 ppt.

High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Table L-2-6.
Interaction Table for Prothrombin Time (seconds)
(Continuous)

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Age: Table 16-13)						
Stratum	Dioxin Category	n	Adjusted Mean	Difference of Adjusted Mean vs. Comparisons (95% C.I.)		p-Value
Born ≥ 1942	Comparison	426	11.99			
	Background RH	121	12.07	0.07 --		0.132
	Low RH	75	11.83	-0.16 --		0.006
	High RH	146	11.94	-0.06 --		0.193
	Low plus High RH	221	11.90	-0.09 --		0.015
Born < 1942	Comparison	551	11.95			
	Background RH	220	11.98	0.03 --		0.448
	Low RH	159	11.96	0.01 --		0.820
	High RH	94	11.98	0.03 --		0.596
	Low plus High RH	253	11.97	0.02 --		0.645

Note: Model 3: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

Background (Ranch Hand): Current Dioxin ≤ 10 ppt.

Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.

High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Table L-2-7.
Interaction Table for Prothrombin Time
(Discrete)

a) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Lifetime Cigarette Smoking History: Table 16-14)					
Current Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent High	Adjusted Relative Risk (95% C.I.) ^c	p-Value
0 Pack-years	Low	77	1.3	0.36 (0.06,2.01)	0.243
	Medium	76	1.3		
	High	76	0.0		
>0-10 Pack-years	Low	83	1.2	0.74 (0.26,2.11)	0.575
	Medium	74	1.4		
	High	97	0.0		
>10 Pack-years	Low	108	0.0	1.89 (0.59,6.01)	0.281
	Medium	120	1.7		
	High	104	1.0		

^a Relative risk for a twofold increase in current dioxin.

Note: Model 4: Low = ≤ 8.1 ppt; Medium = > 8.1-20.5 ppt; High = > 20.5 ppt.

Table L-2-8.
Interaction Table for Absolute Neutrophils (segs) (thousand/mm³)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Race: Table 16-16)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^b	p-Value
Black	Low	17	2.680	0.1138 (0.0559)	0.042
	Medium	10	3.531		
	High	9	3.540		
Non-Black	Low	157	4.158	-0.0049 (0.0135)	0.714
	Medium	162	4.003		
	High	162	4.003		

b) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-16)					
Current Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^b	p-Value
Black	Low	12	2.698	0.0905 (0.0405)	0.026
	Medium	22	2.751		
	High	17	3.464		
Non-Black	Low	279	3.996	0.0030 (0.0092)	0.743
	Medium	277	3.998		
	High	280	4.051		

c) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-16)					
Current Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^b	p-Value
Black	Low	13	2.684	0.0944 (0.0362)	0.009
	Medium	23	2.776		
	High	15	3.544		
Non-Black	Low	283	3.985	0.0015 (0.0077)	0.846
	Medium	274	4.006		
	High	279	4.052		

Table L-2-8. (Continued)
Interaction Table for Absolute Neutrophils (segs) (thousand/mm³)

d) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-16)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean^a	Adjusted Slope (Std. Error)^b	p-Value
Black	Low	13	2.695	0.0932 (0.0363)	0.010
	Medium	23	2.781		
	High	15	3.540		
Non-Black	Low	282	3.993	0.0003 (0.0084)	0.970
	Medium	274	4.006		
	High	279	4.035		

^a Transformed from natural logarithm scale.

^b Slope and standard error based on natural logarithm scale of absolute neutrophils (segs) versus log₂ dioxin.

Note: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

Model 4: Low = ≤ 8.1 ppt; Medium = > 8.1-20.5 ppt; High = > 20.5 ppt.

Models 5 and 6: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table L-2-9.
Interaction Table for Absolute Neutrophils (bands)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Table 16-17)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Percent Zero	Adjusted Relative Risk (95% C.I.)^a	p-Value
0 Pack-years	Low	47	21.3	0.71 (0.49,1.03)	0.075
	Medium	39	20.5		
	High	51	9.8		
>0-10 Pack-years	Low	52	25.0	0.88 (0.64,1.21)	0.429
	Medium	44	9.1		
	High	66	16.7		
>10 Pack-years	Low	75	14.7	1.15 (0.87,1.52)	0.317
	Medium	89	18.0		
	High	54	20.4		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 16-17)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Adjusted Mean^b	Adjusted Slope (Std. Error)^c	p-Value
Officer	Low	63	0.195	0.3524 (0.1420)	0.014
	Medium	27	0.300		
	High	1	0.337		
Enlisted Flyer	Low	27	0.084	0.0002 (0.0754)	0.998
	Medium	39	0.091		
	High	27	0.092		
Enlisted Groundcrew	Low	50	0.163	-0.0532 (0.0371)	0.152
	Medium	78	0.150		
	High	116	0.143		

Table L-2-9. (Continued)
Interaction Table for Absolute Neutrophils (bands)

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Lifetime Cigarette Smoking History: Table 16-17)					
Stratum	Dioxin Category	n	Percent Zero	Adjusted Relative Risk (95% C.I.)^d	p-Value
0 Pack-years	Comparison	282	18.1		
	Background RH	108	18.5	1.10 (0.62,1.96)	0.738
	Low RH	72	20.8	1.15 (0.60,2.21)	0.672
	High RH	65	12.3	0.59 (0.26,1.32)	0.199
	Low plus High RH	137	16.8	0.87 (0.50,1.50)	0.610
>0-10 Pack-years	Comparison	322	19.6		
	Background RH	108	21.3	1.14 (0.66,1.97)	0.638
	Low RH	69	21.7	1.04 (0.37,2.93)	0.947
	High RH	93	14.0	0.67 (0.19,2.34)	0.532
	Low plus High RH	162	17.3	0.83 (0.37,1.86)	0.645
>10 Pack-years	Comparison	455	13.4		
	Background RH	154	13.0	0.98 (0.57,1.69)	0.946
	Low RH	118	13.6	1.00 (0.36,2.74)	0.998
	High RH	100	22.0	1.82 (0.55,6.05)	0.325
	Low plus High RH	218	17.4	1.36 (0.62,2.97)	0.447

d) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Lifetime Cigarette Smoking History: Table 16-17)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Zero	Adjusted Relative Risk (95% C.I.)^e	p-Value
0 Pack-years	Low	83	21.7	0.81 (0.63,1.04)	0.098
	Medium	84	15.5		
	High	78	15.4		
>0-10 Pack-years	Low	90	20.0	0.97 (0.79,1.19)	0.773
	Medium	79	26.6		
	High	101	11.9		
>10 Pack-years	Low	118	11.0	1.22 (1.00,1.49)	0.052
	Medium	136	16.2		
	High	118	19.5		

Table L-2-9. (Continued)
Interaction Table for Absolute Neutrophils (bands)

e) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Lifetime Cigarette Smoking History: Table 16-17)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Zero	Adjusted Relative Risk (95% C.I.)^c	p-Value
0 Pack-years	Low	87	21.8	0.84 (0.67,1.04)	0.102
	Medium	83	16.9		
	High	75	13.3		
>0-10 Pack-years	Low	93	21.5	0.98 (0.82,1.17)	0.811
	Medium	77	23.4		
	High	100	13.0		
>10 Pack-years	Low	116	12.1	1.16 (0.98,1.38)	0.085
	Medium	137	16.1		
	High	119	18.5		

f) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Lifetime Cigarette Smoking History: Table 16-17)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Zero	Adjusted Relative Risk (95% C.I.)^c	p-Value
0 Pack-years	Low	87	21.8	0.85 (0.69,1.06)	0.159
	Medium	83	16.9		
	High	75	13.3		
>0-10 Pack-years	Low	93	21.5	1.00 (0.83,1.20)	0.990
	Medium	77	23.4		
	High	100	13.0		
>10 Pack-years	Low	115	12.2	1.20 (1.00,1.44)	0.053
	Medium	137	16.1		
	High	119	18.5		

^a Relative risk for a twofold increase in initial dioxin.

^b Transformed from natural logarithm scale.

^c Slope and standard error based on natural logarithm of absolute neutrophils vs. log₂ dioxin.

^d Relative risk and confidence interval relative to Comparisons.

^e Relative risk for a twofold increase in current dioxin.

Note: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

Model 3: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

Background (Ranch Hand): Current Dioxin ≤ 10 ppt.

Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.

High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Model 4: Low = ≤ 8.1 ppt; Medium = > 8.1-20.5 ppt; High = > 20.5 ppt.

Models 5 and 6: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table L-2-10.
Interaction Table for Absolute Monocytes (thousand/mm³)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Race: Table 16-19)						
Stratum	Occupational Category	Group	n	Adjusted Mean^a	Difference of Adjusted Means (95% C.I.)^b	p-Value^c
Black	All	Ranch Hand	56	0.391	-0.077 --	0.058
		Comparison	75	0.469		
Non-Black	All	Ranch Hand	889	0.466	0.012 --	0.259
		Comparison	1,201	0.454		
Black	Officer	Ranch Hand	7	0.319	-0.129 --	0.288
		Comparison	6	0.447		
	Enlisted Flyer	Ranch Hand	10	0.405	-0.062--	0.515
		Comparison	15	0.467		
	Enlisted Groundcrew	Ranch Hand	39	0.402	-0.070 --	0.152
		Comparison	54	0.472		
Non-Black	Officer	Ranch Hand	356	0.473	0.016 --	0.334
		Comparison	495	0.457		
	Enlisted Flyer	Ranch Hand	152	0.448	-0.003 --	0.916
		Comparison	186	0.451		
	Enlisted Groundcrew	Ranch Hand	381	0.466	0.014 --	0.384
		Comparison	520	0.452		

^a Transformed from square root scale.

^b Difference of means after transformation to original scale; confidence interval on difference of means not presented because analysis was performed on square root scale.

^c P-value is based on difference of means on square root scale.

Table L-2-11.
Interaction Table for Absolute Eosinophils

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Age: Table 16-20)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Percent Zero	Adjusted Relative Risk (95% C.I.)^a	p-Value
Born ≥ 1942	Low	55	12.7	0.88 (0.64,1.21)	0.434
	Medium	72	12.5		
	High	110	9.1		
Born < 1942	Low	119	10.9	1.23 (0.89,1.71)	0.203
	Medium	100	10.0		
	High	61	11.5		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 16-20)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Percent Zero	Adjusted Relative Risk (95% C.I.)^a	p-Value
Officer	Low	77	15.6	0.19 (0.05,0.77)	0.020
	Medium	33	3.0		
	High	1	0.0		
Enlisted Flyer	Low	36	11.1	0.41 (0.18,0.93)	0.033
	Medium	43	9.3		
	High	31	3.2		
Enlisted Groundcrew	Low	61	6.6	1.30 (1.00,1.69)	0.054
	Medium	96	14.6		
	High	139	11.5		

Table L-2-11. (Continued)
Interaction Table for Absolute Eosinophils

c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 16-20)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Zero	Adjusted Relative Risk (95% C.I.)^b	p-Value
Officer	Low	190	8.4	1.29 (0.87,1.91)	0.205
	Medium	136	10.3		
	High	19	10.5		
Enlisted Flyer	Low	32	12.5	0.68 (0.43,1.06)	0.088
	Medium	56	10.7		
	High	61	4.9		
Enlisted Groundcrew	Low	74	10.8	1.19 (0.98,1.43)	0.075
	Medium	105	10.5		
	High	214	12.2		

^a Relative risk for a twofold increase in initial dioxin.

^b Relative risk for a twofold increase in current dioxin.

Note: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.
 Model 6: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table L-2-12.
Interaction Table for Absolute Basophils (thousand/mm³)

a) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-21)					
Current Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^b	p-Value
Black	Low	8	0.058	0.1437 (0.0631)	0.023
	Medium	14	0.072		
	High	8	0.098		
Non-Black	Low	157	0.091	-0.0033 (0.0121)	0.783
	Medium	144	0.090		
	High	157	0.091		

b) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 16-21)					
Current Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^b	p-Value
Black	Low	8	0.060	0.1375 (0.0629)	0.029
	Medium	14	0.074		
	High	8	0.098		
Non-Black	Low	157	0.092	-0.0137 (0.0130)	0.292
	Medium	144	0.090		
	High	157	0.089		

^a Transformed from natural logarithm scale.

^b Slope and standard error based on natural logarithm of absolute basophils versus log₂ (current dioxin + 1).

Note: Models 5 and 6: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

APPENDIX L-3.

Hematology Analysis Tables Occupation Removed from Final Model

This appendix contains results of exposure analyses after occupation has been removed from those final dioxin models (Models 2 through 6) that contained occupation. These analyses are performed to investigate the relationship of the dependent variable to dioxin without removing any effects due to occupation. The format of these tables closely parallels the adjusted panels of Chapter 16 tables. A summary of the tables found in this appendix follows.

Appendix L-3 Table	Chapter 16 Table	Dependent Variable
L-3-1	16-3	Red Blood Cell (RBC) Count (Continuous)
L-3-2	16-5	White Blood Cell (WBC) Count (Continuous)
L-3-3	16-6	White Blood Cell (WBC) Count (Discrete)
L-3-4	16-7	Hemoglobin (Continuous)
L-3-5	16-9	Hematocrit (Continuous)
L-3-6	16-11	Platelet Count (Continuous)
L-3-7	16-13	Prothrombin Time (Continuous)
L-3-8	16-14	Prothrombin Time (Discrete)
L-3-9	16-15	RBC Morphology (Discrete)
L-3-10	16-16	Absolute Neutrophils (segs)
L-3-11	16-17	Absolute Neutrophils (bands)
L-3-12	16-18	Absolute Lymphocytes
L-3-13	16-20	Absolute Eosinophils (Zero versus Nonzero)

Table L-3-1.
Analysis of Red Blood Cell (RBC) Count (million/mm³) (Continuous)
Occupation Removed from Final Model

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED					
Dioxin Category	n	Adj. Mean^a	Difference of Adj. Mean vs. Comparisons (95% C.I.)	p-Value	Covariate Remarks
Comparison	1,059	5.066**			DXCAT*CSMOK (p=0.017) AGE (p<0.001) RACE (p=0.014) PACKYR (p=0.037)
Background RH	370	5.050**	-0.016 (-0.061,0.029)**	0.474**	
Low RH	259	5.036**	-0.030 (-0.082,0.021)**	0.247**	
High RH	258	5.039**	-0.027 (-0.079,0.025)**	0.304**	
Low plus High RH	517	5.038**	-0.029 (-0.069,0.011)**	0.157**	

^a Adjusted for percent body fat at the time of duty in SEA, change in percent body fat from the time of duty in SEA to the date of the blood draw for dioxin, and covariates specified under "Covariate Remarks" column.

** Categorized dioxin-by-covariate interaction ($0.01 < p \leq 0.05$); adjusted mean, difference of adjusted means, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table L-4-1 for further analysis of this interaction.

Note: RH = Ranch Hand.

Comparison: Current Dioxin $\leq$ 10 ppt.

Background (Ranch Hand): Current Dioxin $\leq$ 10 ppt.

Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin $\leq$ 143 ppt.

High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Table L-3-2.
Analysis of White Blood Cell (WBC) Count (thousand/mm³) (Continuous)
Occupation Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED						
Initial Dioxin Category Summary Statistics			Analysis Results for Log₂ (Initial Dioxin)^b			
Initial Dioxin	n	Adj. Mean^{ab}	R²	Adj. Slope (Std. Error)^c	p-Value	Covariate Remarks
Low	174	6.53	0.268	0.0084 (0.0085)**	0.325**	INIT*RACE (p=0.011)
Medium	172	6.76				CSMOK (p<0.001)
High	171	6.74				PACKYR (p=0.018)

^a Transformed from natural logarithm scale.

^b Adjusted for percent body fat at the time of duty in SEA, change in percent body fat from the time of duty in SEA to the date of the blood draw for dioxin, and covariates specified under "Covariate Remarks" column.

^c Slope and standard error based on natural logarithm of WBC count versus log₂ (initial dioxin).

** Log₂ (initial dioxin)-by-covariate interaction ($0.01 < p \leq 0.05$); adjusted mean, adjusted slope, standard error, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table L-4-2 for further analysis of this interaction.

Note: Low = 39-98 ppt; Medium = >98-232 ppt; High = >232 ppt.

Table L-3-2. (Continued)
Analysis of White Blood Cell (WBC) Count (thousand/mm³) (Continuous)
Occupation Removed from Final Model

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED					
Dioxin Category	n	Adj. Mean^{ab}	Difference of Adj. Mean vs. Comparisons (95% C.I.)^c	p-Value^d	Covariate Remarks
Comparison	1,059	6.69			CSMOK (p<0.001) PACKYR (p<0.001) AGE*RACE (p=0.006)
Background RH	370	6.64	-0.05 --	0.607	
Low RH	259	6.72	0.04 --	0.745	
High RH	258	6.83	0.14 --	0.217	
Low plus High RH	517	6.78	0.09 --	0.311	

^a Transformed from natural logarithm scale.

^b Adjusted for percent body fat at the time of duty in SEA, change in percent body fat from the time of duty in SEA to the date of the blood draw for dioxin, and covariates specified under "Covariate Remarks" column.

^c Difference of adjusted means after transformation to original scale; confidence interval on difference of adjusted means not presented because analysis was performed on natural logarithm scale.

^d P-value is based on difference of means on natural logarithm scale.

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

Background (Ranch Hand): Current Dioxin ≤ 10 ppt.

Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.

High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Table L-3-2. (Continued)
Analysis of White Blood Cell (WBC) Count (thousand/mm³) (Continuous)
Occupation Removed from Final Model

c) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED							
Model ^b	Current Dioxin Category Adjusted Mean ^a /(n)			Analysis Results for Log ₂ (Current Dioxin + 1)			
	Low	Medium	High	R ²	Adj. Slope (Std. Error) ^c	p-Value	Covariate Remarks
4	6.51 (291)	6.59 (299)	6.80 (297)	0.243	0.0111 (0.0059)	0.061	CSMOK (p<0.001) PACKYR (p=0.004) AGE*RACE (p=0.025)
5	6.50 (296)	6.60 (297)	6.83 (294)	0.247	0.0096 (0.0051)**	0.058**	CURR*RACE (p=0.035) CSMOK (p<0.001) PACKYR (p=0.004) AGE*RACE (p=0.031)
6 ^d	6.53 (295)	6.61 (297)	6.81 (294)	0.248	0.0077 (0.0055)**	0.161**	CURR*RACE (p=0.036) CSMOK (p<0.001) PACKYR (p=0.006) AGE*RACE (p=0.027)

^a Transformed from natural logarithm scale.

^b Model 4: Log₂ (lipid-adjusted current dioxin + 1).

Model 5: Log₂ (whole-weight current dioxin + 1).

Model 6: Log₂ (whole-weight current dioxin + 1), adjusted for log₂ total lipids.

^c Slope and standard error based on natural logarithm of WBC count versus log₂ (current dioxin + 1).

^d Adjusted for log₂ total lipids in addition to covariates specified under "Covariate Remarks" column.

** Log₂ (current dioxin + 1)-by-covariate interaction (0.01 < p ≤ 0.05); adjusted mean, adjusted slope, standard error, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table L-4-2 for further analysis of this interaction.

Note: Model 4: Low = ≤ 8.1 ppt; Medium = >8.1-20.5 ppt; High = >20.5 ppt.

Models 5 and 6: Low = ≤ 46 ppq; Medium = >46-128 ppq; High = >128 ppq.

Table L-3-3.
Analysis of White Blood Cell (WBC) Count (Discrete)
Occupation Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED					
Analysis Results for Log₂ (Initial Dioxin)^a					
n	Abnormal Low vs. Normal		Abnormal High vs. Normal		Covariate Remarks
	Adj. Relative Risk (95% C.I.)^b	p-Value	Adj. Relative Risk (95% C.I.)^b	p-Value	
517	0.87 (0.60,1.27)	0.476	0.74 (0.52,1.05)	0.096	AGE (p=0.030) RACE (p=0.020) CSMOK (p<0.001)

^a Adjusted for percent body fat at the time of duty in SEA, change in percent body fat from the time of duty in SEA to the date of the blood draw for dioxin, and covariates specified under "Covariate Remarks" column.

^b Relative risk for a twofold increase in initial dioxin.

Note: Low = 39-98 ppt; Medium = >98-232 ppt; High = >232 ppt.