

APPENDIX K-2.

Interaction Tables for the Cardiovascular Assessment

This appendix contains results of exposure analyses 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. 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 15, Cardiovascular Assessment, are given in the heading of each subtable. A summary of the interactions described in this appendix follows.

Appendix K-2 Table	Chapter 15 Table	Dependent Variable	Model	Covariate
K-2-1	15-4	Verified Heart Disease (Excluding Essential Hypertension)	1 2	Lifetime Alcohol History Personality Type
K-2-2	15-5	Verified Myocardial Infarction	1 3 4 5 6	Body Fat Body Fat Race Race Race
K-2-3	15-6	Systolic Blood Pressure (Continuous)	2 4	Diabetic Class Diabetic Class
K-2-4	15-7	Systolic Blood Pressure (Discrete)	1	Total Cholesterol
K-2-5	15-8	Heart Sounds	1 2 3	Age Age Age
K-2-6	15-9	Overall Electrocardiograph (ECG)	2 5 6	Total Cholesterol Total Cholesterol Total Cholesterol
K-2-7	15-10	ECG: Right Bundle Branch Block (RBBB)	1 2 3	Diabetic Class, Current Cigarette Smoking Lifetime Cigarette Smoking History Diabetic Class
K-2-8	15-12	ECG: Non-specific ST- and T-Wave Changes	3	Lifetime Cigarette Smoking History
K-2-9	15-13	ECG: Bradycardia	3 4 5 6	Personality Type Personality Type, Diabetic Class Personality Type Personality Type

Appendix K-2 Table	Chapter 15 Table	Dependent Variable	Model	Covariate
K-2-10	15-15	ECG: Arrhythmia	2 3 5 6	HDL Cholesterol, Current Cigarette Smoking HDL Cholesterol Current Cigarette Smoking Current Cigarette Smoking
K-2-11	15-16	ECG: Evidence of Prior Myocardial Infarction	1 2	Body Fat Diabetic Class
K-2-12	15-17	ECG: Other Diagnoses	4 5 6	Occupation Race, Occupation Race, Occupation
K-2-13	15-18	Diastolic Blood Pressure (Continuous)	1 2 3	Age Occupation Family History of Heart Disease
K-2-14	15-19	Diastolic Blood Pressure (Discrete)	3	Family History of Heart Disease
K-2-15	15-20	Funduscopy Examination	2	Race
K-2-16	15-21	Carotid Bruits	2 3 4 5 6	Lifetime Cigarette Smoking History, Family History of Heart Disease Lifetime Alcohol History Total Cholesterol Family History of Heart Disease Family History of Heart Disease
K-2-17	15-24	Popliteal Pulses	5 6	Occupation Occupation
K-2-18	15-25	Dorsalis Pedis Pulses	2 3	Lifetime Cigarette Smoking History Age
K-2-19	15-26	Posterior Tibial Pulses	2 3	Occupation, Lifetime Cigarette Smoking History, Family History of Heart Disease Current Cigarette Smoking
K-2-20	15-27	Leg Pulses	2	Lifetime Cigarette Smoking History, Personality Type
K-2-21	15-28	Peripheral Pulses	2	Lifetime Cigarette Smoking History, Personality Type
K-2-22	15-29	Kidney, Urethra, & Bladder (KUB) X Ray (Excluding Kidney Stones)	4 5 6	Race Race Race
K-2-23	15-30	Intermittent Claudication and Vascular Insufficiency (ICVI) Index	3	Lifetime Cigarette Smoking History

Table K-2-1.
Interaction Table for Verified Heart Disease
(Excluding Essential Hypertension)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Lifetime Alcohol History: Table 15-4)						
Stratum	Occupational Category	Group	n	Percent Yes	Adj. Relative Risk (95% C.I.)	p-Value
0 Drink-years	All	Ranch Hand	61	50.8	1.54 (0.76,3.12)	0.234
		Comparison	70	41.4		
>0-40 Drink-years	All	Ranch Hand	614	50.0	1.09 (0.88,1.35)	0.449
		Comparison	841	47.4		
>40 Drink-years	All	Ranch Hand	230	50.0	0.96 (0.68,1.36)	0.828
		Comparison	319	50.8		
0 Drink-years	Officer	Ranch Hand	12	58.3	1.44 (0.68,3.07)	0.345
		Comparison	24	37.5		
	Enlisted Flyer	Ranch Hand	14	64.3	2.16 (0.97,4.87)	0.058
		Comparison	11	45.5		
	Enlisted Groundcrew	Ranch Hand	35	42.9	1.42 (0.68,2.94)	0.348
		Comparison	35	42.9		
>0-40 Drink-years	Officer	Ranch Hand	245	55.1	1.03 (0.76,1.40)	0.851
		Comparison	335	54.3		
	Enlisted Flyer	Ranch Hand	93	57.0	1.56 (0.99,2.45)	0.057
		Comparison	122	44.3		
	Enlisted Groundcrew	Ranch Hand	276	43.1	1.01 (0.76,1.36)	0.928
		Comparison	384	42.4		
>40 Drink-years	Officer	Ranch Hand	93	52.7	0.89 (0.59,1.34)	0.565
		Comparison	123	56.1		
	Enlisted Flyer	Ranch Hand	46	50.0	1.34 (0.80,2.23)	0.263
		Comparison	65	46.2		
	Enlisted Groundcrew	Ranch Hand	91	47.3	0.87 (0.58,1.31)	0.513
		Comparison	131	48.1		

Table K-2-1. (Continued)
Interaction Table for Verified Heart Disease
(Excluding Essential Hypertension)

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Personality Type: Table 15-4)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Percent Yes	Adjusted Relative Risk (95% C.I.)^a	p-Value
Type A	Low	74	44.6	1.11 (0.88,1.41)	0.363
	Medium	67	52.2		
	High	61	44.3		
Type B	Low	89	57.3	0.82 (0.69,0.99)	0.039
	Medium	96	53.1		
	High	104	35.6		

^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-2-2.
Interaction Table for Verified Myocardial Infarction

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 15-5)						
Stratum	Occupational Category	Group	n	Percent Yes	Adj. Relative Risk (95% C.I.)	p-Value
Obese: >25%	<i>All</i>	<i>Ranch Hand</i>	228	5.3	<i>0.46 (0.23,0.95)</i>	<i>0.035</i>
		<i>Comparison</i>	316	9.5		
Normal: ≤25%	<i>All</i>	<i>Ranch Hand</i>	684	7.5	<i>1.26 (0.83,1.90)</i>	<i>0.283</i>
		<i>Comparison</i>	922	5.7		
Obese: >25%	Officer	Ranch Hand	73	4.1	0.33 (0.14,0.80)	0.014
		Comparison	112	8.9		
	Enlisted Flyer	Ranch Hand	35	8.6	0.56 (0.18,1.77)	0.322
		Comparison	45	15.6		
	Enlisted Groundcrew	Ranch Hand	120	5.0	0.53 (0.24,1.19)	0.126
		Comparison	159	8.2		
Normal: ≤25%	Officer	Ranch Hand	272	5.9	0.92 (0.49,1.73)	0.791
		Comparison	374	6.1		
	Enlisted Flyer	Ranch Hand	120	10.8	1.55 (0.72,3.36)	0.266
		Comparison	152	5.9		
	Enlisted Groundcrew	Ranch Hand	292	7.5	1.48 (0.81,2.70)	0.201
		Comparison	396	5.3		

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Body Fat: Table 15-5)					
Stratum	Dioxin Category	n	Percent Yes	Adjusted Relative Risk (95% C.I.)^a	p-Value
Obese: >25%	Comparison	268	10.1		
	Background RH	50	4.0	0.28 (0.06,1.26)	0.097
	Low RH	73	4.1	0.29 (0.08,1.02)	0.054
	High RH	89	5.6	0.51 (0.18,1.43)	0.198
	Low plus High RH	162	4.9	0.39 (0.17,0.92)	0.031
Normal: ≤25%	Comparison	758	5.0		
	Background RH	311	6.4	1.43 (0.79,2.60)	0.236
	Low RH	172	7.0	1.21 (0.60,2.45)	0.592
	High RH	162	9.9	2.02 (1.05,3.91)	0.036
	Low plus High RH	334	8.4	1.56 (0.92,2.66)	0.101

Table K-2-2. (Continued)
Interaction Table for Verified Myocardial Infarction

c) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 15-5)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Yes	Adjusted Relative Risk (95% C.I.)^b	p-Value
Non-Black	Low	275	5.8	1.05 (0.84,1.31)	0.670
	Medium	262	6.1		
	High	271	9.2		
Black	Low	12	8.3	0.05 (0.00,6.21)	0.227
	Medium	21	0.0		
	High	16	0.0		

d) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 15-5)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Yes	Adjusted Relative Risk (95% C.I.)^b	p-Value
Non-Black	Low	280	5.4	1.05 (0.87,1.27)	0.619
	Medium	262	6.1		
	High	266	9.8		
Black	Low	13	7.7	0.10 (0.00,2.79)	0.173
	Medium	22	0.0		
	High	14	0.0		

Table K-2-2. (Continued)
Interaction Table for Verified Myocardial Infarction

e) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 15-5)					
Current Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Yes	Adjusted Relative Risk (95% C.I.) ^b	p-Value
Non-Black	Low	279	5.0	1.15 (0.95,1.38)	0.160
	Medium	262	6.1		
	High	266	9.8		
Black	Low	13	7.7	0.09 (0.00,2.81)	0.170
	Medium	22	0.0		
	High	14	0.0		

^a Relative risk and confidence interval relative to Comparisons.

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

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.

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 K-2-3.
Interaction Table for Systolic Blood Pressure (mm Hg)
(Continuous)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Diabetic Class: Table 15-6)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Adjusted Mean	Adj. Slope (Std. Error)	p-Value
Normal	Low	118	121.35	0.271 (0.732)	0.711
	Medium	116	123.75		
	High	108	123.79		
Impaired	Low	21	121.63	2.580 (1.918)	0.181
	Medium	22	120.80		
	High	26	132.04		
Diabetic	Low	29	132.52	-1.224 (1.262)	0.335
	Medium	30	131.91		
	High	34	122.49		

b) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Diabetic Class: Table 15-6)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean	Adjusted Slope (Std. Error)	p-Value
Normal	Low	235	123.16	0.330 (0.482)	0.494
	Medium	207	121.31		
	High	192	124.18		
Impaired	Low	27	123.86	0.964 (1.440)	0.505
	Medium	30	124.52		
	High	45	125.51		
Diabetic	Low	27	136.37	-2.026 (1.064)	0.059
	Medium	52	129.36		
	High	54	125.86		

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.

Table K-2-4.
Interaction Table for Systolic Blood Pressure
(Discrete)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Total Cholesterol: Table 15-7)						
Stratum	Occupational Category	Group	n	Percent Abnormal	Adj. Relative Risk (95% C.I.)	p-Value
≤200 mg/dl	All	<i>Ranch Hand</i>	309	16.8	1.37 (0.88,2.14)	0.159
		<i>Comparison</i>	404	12.4		
>200-239 mg/dl	All	<i>Ranch Hand</i>	352	13.6	0.89 (0.60,1.34)	0.590
		<i>Comparison</i>	517	14.9		
>239 mg/dl	All	<i>Ranch Hand</i>	263	14.4	0.63 (0.40,0.99)	0.046
		<i>Comparison</i>	328	20.4		
≤200 mg/dl	Officer	<i>Ranch Hand</i>	124	16.9	1.16 (0.68,1.96)	0.591
		<i>Comparison</i>	167	14.4		
	Enlisted Flyer	<i>Ranch Hand</i>	46	15.2	1.76 (0.86,3.61)	0.121
		<i>Comparison</i>	44	15.9		
	Enlisted Groundcrew	<i>Ranch Hand</i>	139	17.3	1.52 (0.89,2.59)	0.128
		<i>Comparison</i>	193	9.8		
>200-239 mg/dl	Officer	<i>Ranch Hand</i>	127	13.4	0.74 (0.45,1.23)	0.250
		<i>Comparison</i>	212	17.9		
	Enlisted Flyer	<i>Ranch Hand</i>	61	14.8	1.13 (0.58,2.21)	0.712
		<i>Comparison</i>	93	11.8		
	Enlisted Groundcrew	<i>Ranch Hand</i>	164	13.4	0.98 (0.58,1.64)	0.927
		<i>Comparison</i>	212	13.2		
>239 mg/dl	Officer	<i>Ranch Hand</i>	102	17.6	0.52 (0.30,0.90)	0.019
		<i>Comparison</i>	110	23.6		
	Enlisted Flyer	<i>Ranch Hand</i>	48	20.8	0.79 (0.39,1.60)	0.510
		<i>Comparison</i>	61	19.7		
	Enlisted Groundcrew	<i>Ranch Hand</i>	113	8.8	0.68 (0.39,1.17)	0.165
		<i>Comparison</i>	157	18.5		

Table K-2-5.
Interaction Table for Heart Sounds

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Age: Table 15-8)						
Stratum	Occupational Category	Group	n	Percent Abnormal	Adj. Relative Risk (95% C.I.)	p-Value
Born ≥ 1942	All	<i>Ranch Hand</i>	393	18.6	0.87 (0.63,1.21)	0.421
		<i>Comparison</i>	552	21.0		
Born < 1942	All	<i>Ranch Hand</i>	543	21.9	1.18 (0.89,1.55)	0.249
		<i>Comparison</i>	707	19.5		
Born ≥ 1942	Officer	<i>Ranch Hand</i>	77	22.1	0.93 (0.57,1.52)	0.767
		<i>Comparison</i>	119	29.4		
	Enlisted Flyer	<i>Ranch Hand</i>	38	18.4	1.13 (0.59,2.17)	0.701
		<i>Comparison</i>	58	15.5		
	Enlisted Groundcrew	<i>Ranch Hand</i>	278	17.6	0.83 (0.57,1.19)	0.311
		<i>Comparison</i>	375	19.2		
Born < 1942	Officer	<i>Ranch Hand</i>	283	24.0	1.16 (0.83,1.64)	0.383
		<i>Comparison</i>	373	19.6		
	Enlisted Flyer	<i>Ranch Hand</i>	120	20.8	1.42 (0.82,2.48)	0.212
		<i>Comparison</i>	144	16.7		
	Enlisted Groundcrew	<i>Ranch Hand</i>	140	18.6	1.04 (0.66,1.63)	0.870
		<i>Comparison</i>	190	21.6		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Age: Table 15-8)					
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
Born ≥ 1942	Low	54	22.2	0.80 (0.62,1.03)	0.082
	Medium	71	26.8		
	High	111	13.5		
Born < 1942	Low	113	21.2	1.17 (0.92,1.47)	0.198
	Medium	96	22.9		
	High	59	27.1		

Table K-2-5. (Continued)
Interaction Table for Heart Sounds

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Age: Table 15-8)					
Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^b	p-Value
Born ≥ 1942	Comparison	445	20.0		
	Background RH	127	17.3	0.87 (0.52,1.47)	0.609
	Low RH	84	23.8	1.25 (0.72,2.19)	0.425
	High RH	154	17.5	0.84 (0.52,1.36)	0.478
	Low plus High RH	238	19.7	0.98 (0.66,1.46)	0.916
Born < 1942	Comparison	596	19.5		
	Background RH	240	20.4	1.10 (0.76,1.60)	0.610
	Low RH	169	20.7	1.06 (0.69,1.62)	0.793
	High RH	105	25.7	1.50 (0.92,2.45)	0.105
	Low plus High RH	274	22.6	1.22 (0.85,1.73)	0.278

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

^b Relative risk and confidence interval relative to Comparisons.

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-2-6.
Interaction Table for Overall Electrocardiograph (ECG)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Total Cholesterol: Table 15-9)					
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
0-200 mg/dl	Low	50	24.0	1.46 (1.06,2.00)	0.019
	Medium	65	16.9		
	High	52	28.8		
> 200-239 mg/dl	Low	65	24.6	0.86 (0.64,1.16)	0.319
	Medium	60	28.3		
	High	68	11.8		
> 239 mg/dl	Low	54	25.9	0.84 (0.61,1.15)	0.266
	Medium	47	23.4		
	High	52	13.5		

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Total Cholesterol: Table 15-9)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^b	p-Value
0-200 mg/dl	Low	113	13.3	1.41 (1.14,1.74)	0.001
	Medium	91	22.0		
	High	87	24.1		
> 200-239 mg/dl	Low	112	20.5	0.99 (0.83,1.17)	0.886
	Medium	113	16.8		
	High	111	20.7		
> 239 mg/dl	Low	72	13.9	0.99 (0.81,1.22)	0.941
	Medium	87	26.4		
	High	97	19.6		

Table K-2-6. (Continued)
Interaction Table for Overall Electrocardiograph (ECG)

c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Total Cholesterol: Table 15-9)					
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
0-200 mg/dl	Low	113	13.3	1.41 (1.14,1.75)	0.002
	Medium	91	22.0		
	High	87	24.1		
>200-239 mg/dl	Low	111	20.7	0.98 (0.82,1.17)	0.800
	Medium	113	16.8		
	High	111	20.7		
>239 mg/dl	Low	72	13.9	0.99 (0.81,1.22)	0.948
	Medium	87	26.4		
	High	97	19.6		

^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.

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

Table K-2-7.
Interaction Table for ECG: Right Bundle Branch Block (RBBB)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Diabetic Class: Table 15-10)						
Stratum	Occupational Category	Group	n	Percent Abnormal	Adj. Relative Risk (95% C.I.)	p-Value
<i>Normal</i>	<i>All</i>	<i>Ranch Hand</i>	<i>680</i>	<i>0.7</i>	<i>0.53 (0.19,1.50)</i>	<i>0.233</i>
		<i>Comparison</i>	<i>950</i>	<i>1.4</i>		
<i>Impaired</i>	<i>All</i>	<i>Ranch Hand</i>	<i>117</i>	<i>2.6</i>	—	—
		<i>Comparison</i>	<i>129</i>	<i>0.0</i>		
<i>Diabetic</i>	<i>All</i>	<i>Ranch Hand</i>	<i>142</i>	<i>2.8</i>	<i>0.79 (0.21,2.87)</i>	<i>0.715</i>
		<i>Comparison</i>	<i>177</i>	<i>3.4</i>		
Normal	Officer	Ranch Hand	267	0.4	0.24 (0.04,1.36)	0.107
		Comparison	390	1.5		
	Enlisted Flyer	Ranch Hand	115	2.6	2.20 (0.36,13.67)	0.396
		Comparison	138	0.7		
	Enlisted Groundcrew	Ranch Hand	298	0.3	0.39 (0.10,1.55)	0.183
		Comparison	422	1.7		
Impaired	Officer	Ranch Hand	38	0.0	—	—
		Comparison	44	0.0		
	Enlisted Flyer	Ranch Hand	21	4.8	—	—
		Comparison	27	0.0		
	Enlisted Groundcrew	Ranch Hand	58	3.4	—	—
		Comparison	58	0.0		
Diabetic	Officer	Ranch Hand	56	1.8	0.37 (0.05,2.55)	0.314
		Comparison	57	3.5		
	Enlisted Flyer	Ranch Hand	24	4.2	3.43 (0.47,25.10)	0.225
		Comparison	35	2.9		
	Enlisted Groundcrew	Ranch Hand	62	3.2	0.61 (0.14,2.77)	0.526
		Comparison	85	3.5		

Table K-2-7. (Continued)
Interaction Table for ECG: Right Bundle Branch Block (RBBB)

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Current Cigarette Smoking: Table 15-10)						
Stratum	Occupational Category	Group	n	Percent Abnormal	Adj. Relative Risk (95% C.I.)	p-Value
0-Never Smoked	All	<i>Ranch Hand</i>	<i>254</i>	<i>0.4</i>	<i>0.21 (0.02,1.76)</i>	<i>0.149</i>
		<i>Comparison</i>	<i>348</i>	<i>1.7</i>		
0-Former Smoker	All	<i>Ranch Hand</i>	<i>432</i>	<i>1.6</i>	<i>0.91 (0.35,2.41)</i>	<i>0.857</i>
		<i>Comparison</i>	<i>609</i>	<i>1.8</i>		
> 0-20 Cigarettes/Day	All	<i>Ranch Hand</i>	<i>155</i>	<i>0.6</i>	<i>0.53 (0.05,5.93)</i>	<i>0.606</i>
		<i>Comparison</i>	<i>186</i>	<i>1.1</i>		
> 20 Cigarettes/Day	All	<i>Ranch Hand</i>	<i>98</i>	<i>3.1</i>	<i>—</i>	<i>—</i>
		<i>Comparison</i>	<i>113</i>	<i>0.0</i>		
0-Never Smoked	Officer	<i>Ranch Hand</i>	<i>131</i>	<i>0.0</i>	<i>0.13 (0.01,1.46)</i>	<i>0.097</i>
		<i>Comparison</i>	<i>190</i>	<i>1.1</i>		
	Enlisted Flyer	<i>Ranch Hand</i>	<i>25</i>	<i>0.0</i>	<i>0.86 (0.06,12.72)</i>	<i>0.913</i>
		<i>Comparison</i>	<i>26</i>	<i>3.8</i>		
0-Former Smoker	Enlisted Groundcrew	<i>Ranch Hand</i>	<i>98</i>	<i>1.0</i>	<i>0.19 (0.02,1.92)</i>	<i>0.160</i>
		<i>Comparison</i>	<i>132</i>	<i>2.3</i>		
	Officer	<i>Ranch Hand</i>	<i>178</i>	<i>1.1</i>	<i>0.48 (0.09,2.64)</i>	<i>0.397</i>
		<i>Comparison</i>	<i>239</i>	<i>2.1</i>		
> 0-20 Cigarettes/Day	Enlisted Flyer	<i>Ranch Hand</i>	<i>82</i>	<i>2.4</i>	<i>3.26 (0.56,19.16)</i>	<i>0.190</i>
		<i>Comparison</i>	<i>107</i>	<i>0.0</i>		
	Enlisted Groundcrew	<i>Ranch Hand</i>	<i>172</i>	<i>1.7</i>	<i>0.72 (0.20,2.55)</i>	<i>0.613</i>
		<i>Comparison</i>	<i>263</i>	<i>2.3</i>		
> 20 Cigarettes/Day	Officer	<i>Ranch Hand</i>	<i>33</i>	<i>0.0</i>	<i>0.26 (0.01,4.65)</i>	<i>0.357</i>
		<i>Comparison</i>	<i>32</i>	<i>0.0</i>		
	Enlisted Flyer	<i>Ranch Hand</i>	<i>28</i>	<i>0.0</i>	<i>1.75 (0.10,29.56)</i>	<i>0.699</i>
		<i>Comparison</i>	<i>46</i>	<i>2.2</i>		
> 20 Cigarettes/Day	Enlisted Groundcrew	<i>Ranch Hand</i>	<i>94</i>	<i>1.1</i>	<i>0.39 (0.03,4.70)</i>	<i>0.456</i>
		<i>Comparison</i>	<i>108</i>	<i>0.9</i>		
	Officer	<i>Ranch Hand</i>	<i>19</i>	<i>0.0</i>	<i>—</i>	<i>—</i>
		<i>Comparison</i>	<i>30</i>	<i>0.0</i>		
> 20 Cigarettes/Day	Enlisted Flyer	<i>Ranch Hand</i>	<i>25</i>	<i>12.0</i>	<i>—</i>	<i>—</i>
		<i>Comparison</i>	<i>21</i>	<i>0.0</i>		
	Enlisted Groundcrew	<i>Ranch Hand</i>	<i>54</i>	<i>0.0</i>	<i>—</i>	<i>—</i>
		<i>Comparison</i>	<i>62</i>	<i>0.0</i>		

Table K-2-7. (Continued)
Interaction Table for ECG: Right Bundle Branch Block (RBBB)

c) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Table 15-10)					
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 Pack-years	Low	45	0.0	1.16 (0.23,5.80)	0.853
	Medium	38	2.6		
	High	53	0.0		
>0-10 Pack-years	Low	52	0.0	4.74 (1.29,17.41)	0.019
	Medium	44	0.0		
	High	65	3.1		
>10 Pack-years	Low	72	4.2	0.71 (0.30,1.70)	0.447
	Medium	90	3.3		
	High	54	0.0		

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Diabetic Class: Table 15-10)					
Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^b	p-Value
Normal	Comparison	788	1.5		
	Background RH	294	1.0	0.64 (0.18,2.32)	0.494
	Low RH	173	0.0	--	--
	High RH	171	1.2	0.84 (0.18,3.89)	0.828
	Low plus High RH	344	0.6	0.36 (0.08,1.65)	0.187
Impaired	Comparison	107	0.0		
	Background RH	33	0.0	--	--
	Low RH	32	3.1	--	--
	High RH	41	4.9	--	--
	Low plus High RH	73	4.1	--	--
Diabetic	Comparison	147	2.0		
	Background RH	42	0.0	--	--
	Low RH	49	6.1	2.09 (0.34,12.80)	0.421
	High RH	47	2.1	1.23 (0.11,13.70)	0.867
	Low plus High RH	96	4.2	1.73 (0.35,8.70)	0.501

^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-2-8.
Interaction Table for ECG: Non-Specific ST- and T-Wave Changes

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Lifetime Cigarette Smoking History: Table 15-12)					
Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
0 Pack-years	Comparison	276	14.9		
	Background RH	109	8.3	0.48 (0.22,1.05)	0.066
	Low RH	69	13.0	0.65 (0.29,1.44)	0.288
	High RH	67	13.4	0.85 (0.37,1.94)	0.704
	Low plus High RH	136	13.2	0.73 (0.39,1.37)	0.334
>0-10 Pack-years	Comparison	319	11.6		
	Background RH	108	5.6	0.48 (0.19,1.20)	0.117
	Low RH	69	20.3	1.57 (0.77,3.22)	0.216
	High RH	92	7.6	0.68 (0.28,1.63)	0.386
	Low plus High RH	161	13.0	1.08 (0.59,1.98)	0.793
>10 Pack-years	Comparison	447	17.0		
	Background RH	152	15.1	0.93 (0.55,1.58)	0.779
	Low RH	116	17.2	0.87 (0.49,1.53)	0.628
	High RH	100	20.0	1.45 (0.82,2.58)	0.201
	Low plus High RH	216	18.5	1.10 (0.71,1.72)	0.671

^a Relative risk and confidence interval relative to Comparisons.

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 K-2-9.
Interaction Table for ECG: Bradycardia

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED
(Dioxin Category-by-Personality Type: Table 15-13)

Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Type A	Comparison	435	3.0		
	Background RH	171	2.9	1.03 (0.35,3.00)	0.962
	Low RH	108	5.6	1.78 (0.64,4.98)	0.269
	High RH	97	3.1	0.89 (0.24,3.29)	0.860
	Low plus High RH	205	4.4	1.35 (0.55,3.29)	0.508
Type B	Comparison	601	1.7		
	Background RH	196	6.6	3.70 (1.56,8.79)	0.003
	Low RH	141	1.4	0.89 (0.19,4.22)	0.887
	High RH	157	0.0	—	—
	Low plus High RH	298	0.7	0.38 (0.08,1.78)	0.218

b) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED
(Current Dioxin-by-Personality Type: Table 15-13)

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
Type A	Low	133	3.8	1.12 (0.77,1.61)	0.561
	Medium	126	4.0		
	High	110	3.6		
Type B	Low	154	7.1	0.43 (0.25,0.74)	0.002
	Medium	154	2.6		
	High	172	0.0		

Table K-2-9. (Continued)
Interaction Table for ECG: Bradycardia

c) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Diabetic Class: Table 15-13)					
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
Normal	Low	233	6.0	0.81 (0.60,1.10)	0.171
	Medium	201	4.0		
	High	186	2.2		
Impaired	Low	27	3.7	--	--
	Medium	28	0.0		
	High	44	0.0		
Diabetic	Low	27	3.7	0.76 (0.21,2.67)	0.645
	Medium	51	2.0		
	High	52	0.0		

d) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Personality Type: Table 15-13)					
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
Type A	Low	128	3.1	0.99 (0.72,1.36)	0.938
	Medium	133	4.5		
	High	109	3.7		
Type B	Low	166	6.0	0.54 (0.37,0.78)	0.001
	Medium	147	3.4		
	High	167	0.0		

Table K-2-9. (Continued)
Interaction Table for ECG: Bradycardia

e) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Personality Type: Table 15-13)					
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
Type A	Low	127	3.1	1.01 (0.72,1.42)	0.940
	Medium	133	4.5		
	High	109	3.7		
Type B	Low	166	6.0	0.56 (0.38,0.82)	0.003
	Medium	147	3.4		
	High	167	0.0		

^a Relative risk and confidence interval relative to Comparisons.

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

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

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.

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 K-2-10.
Interaction Table for ECG: Arrhythmia

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-HDL Cholesterol: Table 15-15)					
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
>35 mg/dl	Low	122	5.7	0.75 (0.47,1.20)	0.229
	Medium	108	6.5		
	High	117	1.7		
0-35 mg/dl	Low	46	8.7	1.46 (0.95,2.25)	0.088
	Medium	60	5.0		
	High	51	11.8		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Current Cigarette Smoking: Table 15-15)					
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-Never Smoked	Low	45	2.2	1.68 (1.04,2.72)	0.035
	Medium	38	2.6		
	High	53	11.3		
0-Former Smoker	Low	88	6.8	1.01 (0.62,1.66)	0.955
	Medium	77	3.9		
	High	65	3.1		
>0-20 Cigarettes/Day	Low	24	12.5	0.51 (0.21,1.22)	0.129
	Medium	30	13.0		
	High	32	0.0		
>20 Cigarettes/Day	Low	11	9.1	0.35 (0.05,2.24)	0.267
	Medium	23	8.7		
	High	18	0.0		

Table K-2-10. (Continued)
Interaction Table for ECG: Arrhythmia

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED
(Dioxin Category-by-HDL Cholesterol: Table 15-15)

Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^b	p-Value
> 35 mg/dl	Comparison	783	4.2		
	Background RH	279	3.2	0.75 (0.35,1.59)	0.448
	Low RH	176	5.7	1.24 (0.59,2.58)	0.572
	High RH	171	3.5	0.97 (0.39,2.39)	0.946
	Low plus High RH	347	4.6	1.12 (0.60,2.09)	0.714
0-35 mg/dl	Comparison	253	4.7		
	Background RH	88	2.3	0.39 (0.08,1.80)	0.228
	Low RH	74	6.8	1.18 (0.39,3.57)	0.768
	High RH	83	9.6	2.65 (1.02,6.88)	0.045
	Low plus High RH	157	8.3	1.82 (0.80,4.16)	0.155

d) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED
(Current Dioxin-by-Current Cigarette Smoking: Table 15-15)

Current Dioxin Category Summary Statistics				Analysis Results for Log _e (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^c	p-Value
0-Never Smoked	Low	88	2.3	1.56 (1.11,2.19)	0.010
	Medium	81	3.7		
	High	76	9.2		
0-Former Smoker	Low	137	1.5	1.26 (0.91,1.75)	0.171
	Medium	142	7.0		
	High	126	3.2		
> 0-20 Cigarettes/Day	Low	47	2.1	1.06 (0.69,1.63)	0.799
	Medium	42	9.5		
	High	55	5.5		
> 20 Cigarettes/Day	Low	26	3.8	0.83 (0.57,1.21)	0.333
	Medium	26	11.5		
	High	38	2.6		

Table K-2-10. (Continued)
Interaction Table for ECG: Arrhythmia

e) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Current Cigarette Smoking: Table 15-15)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^c	p-Value
0-Never Smoked	Low	88	2.3	1.56 (1.11,2.20)	0.011
	Medium	81	3.7		
	High	76	9.2		
0-Former Smoker	Low	137	1.5	1.25 (0.89,1.76)	0.188
	Medium	142	7.0		
	High	126	3.2		
>0-20 Cigarettes/Day	Low	46	2.2	1.04 (0.65,1.65)	0.879
	Medium	42	9.5		
	High	55	5.5		
>20 Cigarettes/Day	Low	26	3.8	0.83 (0.56,1.22)	0.338
	Medium	26	11.5		
	High	38	2.6		

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

^b Relative risk and confidence interval relative to Comparisons.

^c 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.

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

Table K-2-11.
Interaction Table for ECG: Evidence of Prior Myocardial Infarction

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 15-16)						
Stratum	Occupational Category	Group	n	Percent Abnormal	Adj. Relative Risk (95% C.I.)	p-Value
Normal: ≤25%	All	Ranch Hand	681	4.0	0.31 (0.10,0.97)	0.044
		Comparison	920	2.9		
Obese: >25%	All	Ranch Hand	228	1.8	1.28 (0.73,2.23)	0.386
		Comparison	313	4.8		
Normal: ≤25%	Officer	Ranch Hand	271	4.1	0.24 (0.07,0.87)	0.030
		Comparison	372	3.5		
	Enlisted Flyer	Ranch Hand	120	4.2	0.36 (0.08,1.64)	0.187
		Comparison	152	3.3		
	Enlisted Groundcrew	Ranch Hand	290	3.8	0.37 (0.10,1.32)	0.126
		Comparison	396	2.3		
Obese: >25%	Officer	Ranch Hand	73	1.4	1.01 (0.46,2.22)	0.976
		Comparison	111	7.2		
	Enlisted Flyer	Ranch Hand	35	5.7	1.51 (0.50,4.59)	0.466
		Comparison	45	4.4		
	Enlisted Groundcrew	Ranch Hand	120	0.8	1.56 (0.66,3.67)	0.313
		Comparison	157	3.2		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Diabetic Class: Table 15-16)					
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
Normal	Low	118	0.0	1.74 (1.07,2.84)	0.026
	Medium	115	3.5		
	High	110	4.5		
Impaired	Low	20	5.0	0.94 (0.39,2.31)	0.901
	Medium	24	8.3		
	High	28	3.6		
Diabetic	Low	30	6.7	0.54 (0.26,1.15)	0.111
	Medium	32	9.4		
	High	34	0.0		

^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-2-12.
Interaction Table for ECG: Other Diagnoses

a) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 15-17)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Officer	Low	192	0.5	2.08 (0.37,11.65)	0.403
	Medium	138	1.4		
	High	13	0.0		
Enlisted Flyer	Low	31	0.0	5.74 (1.17,28.30)	0.032
	Medium	54	0.0		
	High	62	3.2		
Enlisted Groundcrew	Low	69	2.9	0.87 (0.49,1.54)	0.630
	Medium	101	0.0		
	High	222	1.4		

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 15-17)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Non-Black	Low	284	1.1	1.17 (0.76,1.80)	0.480
	Medium	268	0.7		
	High	281	1.4		
Black	Low	13	0.0	10.80 (0.53,218.91)	0.121
	Medium	22	0.0		
	High	14	7.1		

Table K-2-12. (Continued)
Interaction Table for ECG: Other Diagnoses

c) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 15-17)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Officer	Low	191	0.5	2.90 (0.71,11.95)	0.140
	Medium	133	1.5		
	High	19	0.0		
Enlisted Flyer	Low	33	0.0	4.37 (0.99,19.32)	0.052
	Medium	53	0.0		
	High	61	3.3		
Enlisted Groundcrew	Low	73	2.7	0.98 (0.62,1.55)	0.938
	Medium	104	0.0		
	High	215	1.4		

d) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 15-17)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Non-Black	Low	283	1.1	1.14 (0.71,1.83)	0.578
	Medium	268	0.7		
	High	281	1.4		
Black	Low	13	0.0	10.45 (0.52,210.28)	0.125
	Medium	22	0.0		
	High	14	7.1		

Table K-2-12. (Continued)
Interaction Table for ECG: Other Diagnoses

e) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 15-17)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Officer	Low	191	0.5	3.17 (0.68,14.78)	0.141
	Medium	133	1.5		
	High	19	0.0		
Enlisted Flyer	Low	32	0.0	4.76 (0.96,23.59)	0.056
	Medium	53	0.0		
	High	61	3.3		
Enlisted Groundcrew	Low	73	2.7	1.01 (0.62,1.63)	0.981
	Medium	104	0.0		
	High	215	1.4		

^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.

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

Table K-2-13.
Interaction Table for Diastolic Blood Pressure (mm Hg)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Age: Table 15-18)						
Stratum	Occupational Category	Group	n	Adjusted Mean	Difference of Adjusted Means (95% C.I.)	p-Value
Born ≥ 1942	All	Ranch Hand	393	74.21	0.03 (-1.17,1.23)	0.963
		Comparison	552	74.18		
Born < 1942	All	Ranch Hand	544	73.83	-0.82 (-1.86,0.22)	0.122
		Comparison	706	74.65		
Born ≥ 1942	Officer	Ranch Hand	77	75.02	0.50 (-2.17,3.17)	0.713
		Comparison	119	74.52		
	Enlisted Flyer	Ranch Hand	38	73.11	-1.61 (-5.43,2.21)	0.408
		Comparison	57	74.72		
	Enlisted Groundcrew	Ranch Hand	278	74.17	0.14 (-1.30,1.59)	0.846
		Comparison	376	74.03		
Born < 1942	Officer	Ranch Hand	282	73.86	0.53 (-1.97,0.91)	0.472
		Comparison	373	74.39		
	Enlisted Flyer	Ranch Hand	122	75.12	0.10 (-2.15,2.34)	0.932
		Comparison	144	75.02		
	Enlisted Groundcrew	Ranch Hand	140	72.74	-2.24 (-4.28,-0.21)	0.031
		Comparison	189	74.99		

Table K-2-13. (Continued)
Interaction Table for Diastolic Blood Pressure (mm Hg)
(Continuous)

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 15-18)					
Initial Dioxin Category Summary Statistics				Analysis Results for Log_e (Initial Dioxin)	
Stratum	Initial Dioxin	n	Adjusted Mean	Adjusted Slope (Std. Error)	p-Value
Officer	Low	74	73.70	5.690 (1.696)	0.001
	Medium	33	81.50		
	High	1	68.88		
Enlisted Flyer	Low	34	75.22	1.639 (1.007)	0.107
	Medium	43	73.63		
	High	31	80.41		
Enlisted Groundcrew	Low	61	73.29	0.222 (0.380)	0.560
	Medium	96	75.56		
	High	140	74.82		

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Family History of Heart Disease: Table 15-18)					
Stratum	Dioxin Category	n	Adjusted Mean	Difference of Adjusted Mean vs. Comparisons (95% C.I.)	p-Value
No	Comparison	450	73.35		
	Background RH	139	74.05	0.70 (-1.08,2.47)	0.442
	Low RH	113	74.08	0.74 (-1.18,2.66)	0.452
	High RH	108	72.85	-0.50 (-2.47,1.47)	0.618
	Low plus High RH	221	73.46	0.14 (-1.36,1.65)	0.852
Yes	Comparison	584	74.47		
	Background RH	224	72.96	-1.51 (-2.94,-0.07)	0.040
	Low RH	136	72.56	-1.91 (-3.64,-0.17)	0.032
	High RH	148	74.95	0.49 (-1.20,2.17)	0.570
	Low plus High RH	284	73.78	-0.66 (-1.98,0.67)	0.330

Note: RH = Ranch Hand.

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

Model 3: 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-2-14.
Interaction Table for Diastolic Blood Pressure (mm Hg)
(Discrete)

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Family History of Heart Disease: Table 15-19)					
Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
No	Comparison	450	3.3		
	Background RH	139	3.6	1.29 (0.45,3.66)	0.637
	Low RH	112	4.5	1.46 (0.51,4.18)	0.476
	High RH	108	2.8	0.69 (0.19,2.47)	0.566
	Low plus High RH	220	3.6	1.04 (0.43,2.51)	0.936
Yes	Comparison	584	2.9		
	Background RH	225	1.3	0.50 (0.14,1.72)	0.270
	Low RH	136	0.0	—	—
	High RH	148	5.4	1.80 (0.75,4.33)	0.188
	Low plus High RH	284	2.8	0.90 (0.38,2.12)	0.802

^a 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 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-2-15.
Interaction Table for Funduscopy Examination

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Race: Table 15-20)					
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
Non-Black	Low	151	4.6	1.13 (0.84,1.50)	0.423
	Medium	162	8.0		
	High	162	9.9		
Black	Low	16	12.5	0.04 (0.00,1.98)	0.106
	Medium	9	0.0		
	High	9	0.0		

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

Table K-2-16.
Interaction Table for Carotid Bruits

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Table 15-21)					
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	0.19 (0.01,2.57)	0.214
	Medium	35	0.0		
	High	49	0.0		
>0-10 Pack-years	Low	51	5.9	0.40 (0.16,1.04)	0.061
	Medium	42	2.4		
	High	63	1.6		
>10 Pack-years	Low	70	0.0	2.31 (0.75,7.12)	0.144
	Medium	86	1.2		
	High	53	1.9		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Family History of Heart Disease: Table 15-21)					
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	0.17 (0.01,1.96)	0.154
	Medium	74	0.0		
	High	73	0.0		
Yes	Low	95	3.2	0.81 (0.40,1.62)	0.552
	Medium	89	2.2		
	High	92	2.2		

Table K-2-16. (Continued)
Interaction Table for Carotid Bruits

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Lifetime Alcohol History: Table 15-21)					
Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^b	p-Value
0-40 Drink-years	Comparison	754	1.6		
	Background RH	279	0.7	0.40 (0.09,1.79)	0.212
	Low RH	181	2.8	1.57 (0.54,4.58)	0.412
	High RH	188	0.0	--	--
	Low plus High RH	369	1.4	0.89 (0.31,2.60)	0.943
> 40 Drink-years	Comparison	274	0.7		
	Background RH	85	5.9	7.55 (1.41,40.54)	0.018
	Low RH	67	1.5	1.85 (0.16,21.32)	0.623
	High RH	64	4.7	9.52 (1.51,59.83)	0.016
	Low plus High RH	131	3.1	4.78 (0.86,26.71)	0.074

d) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Cholesterol: Table 15-21)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^c	p-Value
0-200 mg/dl	Low	98	4.1	0.55 (0.29,1.06)	0.073
	Medium	96	3.1		
	High	97	1.0		
> 200-239 mg/dl	Low	114	1.8	0.86 (0.45,1.67)	0.660
	Medium	111	0.9		
	High	112	1.8		
> 239 mg/dl	Low	81	0.0	1.58 (0.80,3.10)	0.189
	Medium	87	2.3		
	High	88	1.1		

Table K-2-16. (Continued)
Interaction Table for Carotid Bruits

e) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Family History of Heart Disease: Table 15-21)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^c	p-Value
No	Low	110	1.8	0.48 (0.30,0.77)	0.002
	Medium	119	1.7		
	High	125	0.0		
Yes	Low	180	2.2	1.19 (0.82,1.73)	0.371
	Medium	161	2.5		
	High	156	2.6		

f) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Family History of Heart Disease: Table 15-21)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^c	p-Value
No	Low	110	1.8	0.41 (0.24,0.70)	0.001
	Medium	119	1.7		
	High	125	0.0		
Yes	Low	179	2.2	1.10 (0.71,1.70)	0.660
	Medium	161	2.5		
	High	156	2.6		

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

^b Relative risk and confidence interval relative to Comparisons.

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

--: 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.

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 K-2-17.
Interaction Table for Popliteal Pulses

a) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 15-24)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Officer	Low	191	0.5	5.53 (1.79,17.08)	0.003
	Medium	133	1.5		
	High	19	15.8		
Enlisted Flyer	Low	33	0.0	1.92 (0.74,5.01)	0.182
	Medium	54	1.9		
	High	61	4.9		
Enlisted Groundcrew	Low	73	0.0	1.05 (0.72,1.54)	0.806
	Medium	104	4.8		
	High	215	0.9		

b) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 15-24)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Officer	Low	191	0.5	4.86 (1.46,16.16)	0.010
	Medium	133	1.5		
	High	19	15.8		
Enlisted Flyer	Low	32	0.0	1.78 (0.66,4.80)	0.254
	Medium	54	1.9		
	High	61	4.9		
Enlisted Groundcrew	Low	73	0.0	1.01 (0.68,1.51)	0.945
	Medium	104	4.8		
	High	215	0.9		

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

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

Table K-2-18.
Interaction Table for Dorsalis Pedis Pulses

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Table 15-25)					
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	45	0.0	1.46 (0.81,2.63)	0.208
	Medium	38	5.3		
	High	53	5.7		
>0-10 Pack-years	Low	52	9.6	0.89 (0.58,1.36)	0.583
	Medium	44	11.4		
	High	64	7.8		
>10 Pack-years	Low	72	11.1	0.84 (0.57,1.23)	0.360
	Medium	90	13.3		
	High	54	9.3		

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Age: Table 15-25)					
Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^b	p-Value
Born ≥ 1942	Comparison	447	6.7		
	Background RH	126	4.8	0.64 (0.26,1.59)	0.334
	Low RH	84	4.8	0.71 (0.24,2.07)	0.527
	High RH	153	5.2	0.73 (0.32,1.65)	0.447
	Low plus High RH	237	5.1	0.72 (0.36,1.45)	0.358
Born < 1942	Comparison	595	8.2		
	Background RH	242	11.2	1.46 (0.87,2.43)	0.149
	Low RH	170	9.4	1.06 (0.58,1.94)	0.857
	High RH	105	16.2	1.93 (1.04,3.59)	0.037
	Low plus High RH	275	12.0	1.38 (0.85,2.23)	0.192

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

^b Relative risk and confidence interval relative to Comparisons.

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-2-19.
Interaction Table for Posterior Tibial Pulses

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 15-26)					
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
Officer	Low	73	2.7	3.04 (0.55,16.78)	0.203
	Medium	31	6.5		
	High	1	100.0		
Enlisted Flyer	Low	34	5.9	1.19 (0.37,3.83)	0.773
	Medium	42	2.4		
	High	31	6.5		
Enlisted Groundcrew	Low	60	6.7	0.57 (0.29,1.10)	0.095
	Medium	95	6.3		
	High	138	0.7		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Table 15-26)					
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
0-10 Pack-years	Low	96	1.0	1.25 (0.55,2.84)	0.593
	Medium	80	1.3		
	High	116	1.7		
>10 Pack-years	Low	71	9.9	0.59 (0.31,1.12)	0.109
	Medium	88	9.1		
	High	54	3.7		

c) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Family History of Heart Disease: Table 15-26)					
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	71	8.5	0.46 (0.19,1.15)	0.098
	Medium	76	3.9		
	High	74	1.4		
Yes	Low	96	2.1	1.01 (0.55,1.86)	0.972
	Medium	92	6.5		
	High	96	3.1		

Table K-2-19. (Continued)
Interaction Table for Posterior Tibial Pulses

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED
(Dioxin Category-by-Current Cigarette Smoking: Table 15-26)

Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^b	p-Value
0-Never Smoked	Comparison	275	0.7		
	Background RH	107	1.9	2.27 (0.97,5.35)	0.059
	Low RH	69	0.0	--	--
	High RH	67	0.0	--	--
	Low plus High RH	136	0.0	--	--
0-Former Smoker	Comparison	513	1.9		
	Background RH	167	2.4	1.28 (0.54,3.00)	0.573
	Low RH	120	3.3	1.16 (0.34,3.97)	0.808
	High RH	110	2.7	1.85 (0.79,4.33)	0.157
	Low plus High RH	230	3.0	1.41 (0.84,2.37)	0.188
>0-20 Cigarettes/Day	Comparison	149	2.0		
	Background RH	56	7.1	3.75 (1.60,8.81)	0.002
	Low RH	39	7.7	5.86 (1.27,27.09)	0.024
	High RH	47	12.8	12.54 (5.36,29.36)	<0.001
	Low plus High RH	86	10.5	8.95 (3.72,21.54)	<0.001
>20 Cigarettes/Day	Comparison	96	9.4		
	Background RH	36	0.0	--	--
	Low RH	22	13.6	1.84 (0.41,8.22)	0.423
	High RH	30	10.0	1.05 (0.45,2.46)	0.906
	Low plus High RH	52	11.5	1.36 (0.42,4.43)	0.615

^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-2-20.
Interaction Table for Leg Pulses

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Table 15-27)					
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	45	0.0	1.57 (0.86,2.86)	0.138
	Medium	38	5.3		
	High	53	5.7		
>0-10 Pack-years	Low	52	9.6	0.95 (0.63,1.45)	0.823
	Medium	44	11.4		
	High	64	9.4		
>10 Pack-years	Low	71	12.7	0.80 (0.55,1.17)	0.256
	Medium	90	16.7		
	High	54	9.3		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Personality Type: Table 15-27)					
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
Type A	Low	78	14.1	0.61 (0.39,0.96)	0.032
	Medium	70	12.9		
	High	62	3.2		
Type B	Low	90	3.3	1.15 (0.84,1.58)	0.376
	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-2-21.
Interaction Table for Peripheral Pulses

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Table 15-28)					
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	45	0.0	1.57 (0.86,2.86)	0.138
	Medium	38	5.3		
	High	53	5.7		
>0-10 Pack-years	Low	52	9.6	0.95 (0.63,1.45)	0.823
	Medium	44	11.4		
	High	64	9.4		
>10 Pack-years	Low	71	12.7	0.80 (0.55,1.17)	0.256
	Medium	90	16.7		
	High	54	9.3		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Personality Type: Table 15-28)					
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
Type A	Low	78	14.1	0.61 (0.39,0.96)	0.032
	Medium	70	12.9		
	High	62	3.2		
Type B	Low	90	3.3	1.15 (0.84,1.58)	0.376
	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-2-22.
Interaction Table for Kidney, Urethra, and Bladder (KUB) X Ray
(Excluding Kidney Stones)

a) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 15-29)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Non-Black	Low	277	29.6	1.14 (1.02,1.27)	0.022
	Medium	266	33.8		
	High	271	30.6		
Black	Low	12	41.7	0.49 (0.25,0.96)	0.039
	Medium	20	15.0		
	High	16	12.5		

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 15-29)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Non-Black	Low	280	29.6	1.10 (1.00,1.21)	0.041
	Medium	263	32.7		
	High	271	31.7		
Black	Low	13	38.5	0.52 (0.28,0.96)	0.035
	Medium	21	14.3		
	High	14	14.3		

c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 15-29)					
Current Dioxin Category Summary Statistics				Analysis Results for Log₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
Non-Black	Low	279	29.7	1.12 (1.01,1.24)	0.037
	Medium	263	32.7		
	High	271	31.7		
Black	Low	13	38.5	0.52 (0.28,0.97)	0.039
	Medium	21	14.3		
	High	14	14.3		

^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.

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

Table K-2-23.

Interaction Table for Intermittent Claudication and Vascular Insufficiency (ICVI) Index

a) MODEL 3: RANCH HANDS AND COMPARISON BY DIOXIN CATEGORY — ADJUSTED
(Dioxin Category-by-Lifetime Cigarette Smoking History: Table 15-30)

Stratum	Dioxin Category	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.) ^a	p-Value
0 Pack-years	Comparison	267	0.7		
	Background RH	102	3.9	4.50 (0.78,25.93)	0.093
	Low RH	65	0.0	--	--
	High RH	62	1.6	2.36 (0.20,27.93)	0.495
	Low plus High RH	127	0.8	0.89 (0.08,10.31)	0.926
>0-10 Pack-years	Comparison	311	1.0		
	Background RH	106	2.8	2.87 (0.56,14.74)	0.207
	Low RH	66	1.5	1.29 (0.13,13.27)	0.829
	High RH	88	4.5	4.60 (0.97,21.95)	0.055
	Low plus High RH	154	3.2	3.01 (0.67,13.48)	0.150
>10 Pack-years	Comparison	432	4.4		
	Background RH	146	3.4	0.59 (0.20,1.73)	0.337
	Low RH	108	6.5	1.51 (0.59,3.86)	0.394
	High RH	94	4.3	0.78 (0.25,2.48)	0.678
	Low plus High RH	202	5.4	1.14 (0.51,2.53)	0.754

^a 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 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.

APPENDIX K-3.

Cardiovascular Analysis Tables Occupation, Body Fat, Total Cholesterol, HDL, and Diabetic Class Removed from Final Model

This appendix contains results of exposure analyses after occupation, percent body fat, total cholesterol, HDL cholesterol, and diabetic class have been removed from those final statistical models that used dioxin as a measure of exposure (Models 2 through 6) and contained any of these covariates. These analyses were performed to investigate the relationship of the dependent variable to dioxin without removing any effects due to these covariates. The format of these tables closely parallels the adjusted panels of Chapter 15, Cardiovascular Assessment, tables. A summary of the tables found in this appendix follows.

Appendix K-3 Table	Chapter 15 Table	Dependent Variable
K-3-1	15-3	Verified Essential Hypertension
K-3-2	15-4	Verified Heart Disease (Excluding Essential Hypertension)
K-3-3	15-5	Verified Myocardial Infarction
K-3-4	15-6	Systolic Blood Pressure (mm Hg) (Continuous)
K-3-5	15-7	Systolic Blood Pressure (Discrete)
K-3-6	15-8	Heart Sounds
K-3-7	15-9	Overall Electrocardiograph (ECG)
K-3-8	15-10	ECG: Right Bundle Branch Block (RBBB)
K-3-9	15-12	ECG: Non-Specific ST- and T-Wave Changes
K-3-10	15-13	ECG: Bradycardia
K-3-11	15-15	ECG: Arrhythmia
K-3-12	15-16	ECG: Evidence of Prior Myocardial Infarction
K-3-13	15-17	ECG: Other Diagnoses
K-3-14	15-18	Diastolic Blood Pressure (mm Hg) (Continuous)
K-3-15	15-19	Diastolic Blood Pressure (Discrete)
K-3-16	15-20	Funduscopy Examination
K-3-17	15-21	Carotid Bruits
K-3-18	15-23	Femoral Pulses
K-3-19	15-24	Popliteal Pulses
K-3-20	15-25	Dorsalis Pedis Pulses
K-3-21	15-26	Posterior Tibial Pulses

Appendix K-3 Table	Chapter 15 Table	Dependent Variable
K-3-22	15-27	Leg Pulses
K-3-23	15-28	Peripheral Pulses
K-3-24	15-29	Kidney, Urethra, and Bladder (KUB) X Ray (Excluding Kidney Stones)
K-3-25	15-30	Intermittent Claudication and Vascular Insufficiency (ICVI) Index

K-3-1	15-3	Verified Essential Hypertension
K-3-2	15-4	Verified Heart Disease (Excluding Essential Hypertension)
K-3-3	15-5	Verified Myocardial Infarction
K-3-4	15-6	Systolic Blood Pressure (mm Hg) (Continuous)
K-3-5	15-7	Systolic Blood Pressure (Diastolic)
K-3-6	15-8	Heart Failure or Angina Pectoris (Excluding Heart Failure)
K-3-7	15-9	Overall Electrocardiogram (ECG)
K-3-8	15-10	ECG: Right Bundle Branch Block (RBBB)
K-3-9	15-11	ECG: Non Specific ST and T Wave Changes
K-3-10	15-12	ECG: Left Bundle Branch Block (LBBB)
K-3-11	15-13	ECG: ST-T Wave Changes (Non Specific)
K-3-12	15-14	ECG: ST-T Wave Changes (Non Specific)
K-3-13	15-15	ECG: ST-T Wave Changes (Non Specific)
K-3-14	15-16	ECG: ST-T Wave Changes (Non Specific)
K-3-15	15-17	ECG: ST-T Wave Changes (Non Specific)
K-3-16	15-18	ECG: ST-T Wave Changes (Non Specific)
K-3-17	15-19	ECG: ST-T Wave Changes (Non Specific)
K-3-18	15-20	ECG: ST-T Wave Changes (Non Specific)
K-3-19	15-21	ECG: ST-T Wave Changes (Non Specific)
K-3-20	15-22	ECG: ST-T Wave Changes (Non Specific)
K-3-21	15-23	ECG: ST-T Wave Changes (Non Specific)

Table K-3-1.
Analysis of Verified Essential Hypertension
Total Cholesterol, Body Fat, and Diabetic Class Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED			
Analysis Results for Log_e (Initial Dioxin)^a			
n	Adj. Relative Risk (95% C.I.)^b	p-Value	Covariate Remarks
486	1.15 (0.98,1.34)	0.079	AGE (p=0.013) RACE (p=0.100) DRKYR (p=0.001) HRTDIS (p=0.006)

^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.

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED				
Dioxin Category	n	Adj. Relative Risk (95% C.I.)^{ab}	p-Value	Covariate Remarks
Comparison	1,007			AGE (p<0.001) RACE (p=0.021) DRKYR (p<0.001) HRTDIS (p<0.001)
Background RH	356	0.93 (0.71,1.23)	0.623	
Low RH	238	0.85 (0.62,1.16)	0.312	
High RH	248	1.28 (0.94,1.74)	0.112	
Low plus High RH	486	1.05 (0.83,1.33)	0.705	

^a Relative risk and confidence interval relative to Comparisons.

^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.

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 K-3-1. (Continued)
Analysis of Verified Essential Hypertension
Total Cholesterol, Body Fat, and Diabetic Class Removed from Final Model

c) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED				
Analysis Results for Log ₂ (Current Dioxin + 1)				
Model ^a	n	Adj. Relative Risk (95% C.I.) ^b	p-Value	Covariate Remarks
4	842	1.28 (1.15,1.42)	<0.001	AGE (p<0.001) RACE (p=0.219) DRKYR (p<0.001) HRTDIS (p<0.001)
5	842	1.27 (1.16,1.40)	<0.001	AGE (p<0.001) RACE (p=0.191) DRKYR (p<0.001) HRTDIS (p<0.001)
6 ^c	841	1.22 (1.11,1.35)	<0.001	AGE (p<0.001) RACE (p=0.143) DRKYR (p<0.001) HRTDIS (p<0.001)

^a 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.

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

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

Table K-3-2.
Analysis of Verified Heart Disease (Excluding Essential Hypertension)
Total Cholesterol Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED			
Analysis Results for Log₂ (Initial Dioxin)^a			
n	Adj. Relative Risk (95% C.I.)^b	p-Value	Covariate Remarks
491	0.91 (0.79,1.05)	0.205	AGE (p=0.007) DRKYR (p=0.054) HRTDIS (p=0.014) PERS (p=0.939)

^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.

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED				
Dioxin Category	n	Adj. Relative Risk (95% C.I.)^{ab}	p-Value	Covariate Remarks
Comparison	1,034			AGE (p<0.001) PERS (p=0.086) HRTDIS (p=0.004)
Background RH	366	1.09 (0.85,1.39)	0.505	
Low RH	248	1.09 (0.82,1.46)	0.534	
High RH	256	0.79 (0.59,1.05)	0.110	
Low plus High RH	504	0.93 (0.75,1.16)	0.527	

^a Relative risk and confidence interval relative to Comparisons.

^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.

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 K-3-3.
Analysis of Verified Myocardial Infarction
Occupation, HDL, and Body Fat Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED			
Analysis Results for Log₂ (Initial Dioxin)^a			
n	Adj. Relative Risk (95% C.I.)^b	p-Value	Covariate Remarks
505	1.17 (0.90,1.53)	0.239	AGE (p=0.002) RACE (p=0.054) HRTDIS (p=0.050)

^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.

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED				
Dioxin Category	n	Adj. Relative Risk (95% C.I.)^{ab}	p-Value	Covariate Remarks
Comparison	1,035			AGE (p<0.001) PACKYR (p=0.002) HRTDIS (p<0.001)
Background RH	365	0.94 (0.57,1.56)	0.810	
Low RH	249	0.78 (0.43,1.42)	0.408	
High RH	256	1.58 (0.93,2.71)	0.093	
Low plus High RH	505	1.11 (0.72,1.72)	0.633	

^a Relative risk and confidence interval relative to Comparisons.

^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.

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 K-3-3. (Continued)
Analysis of Verified Myocardial Infarction
Occupation, HDL, and Body Fat Removed from Final Model

c) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED				
Analysis Results for Log ₂ (Current Dioxin + 1)				
Model ^a	n	Adj. Relative Risk (95% C.I.) ^b	p-Value	Covariate Remarks
4	870	1.16 (0.96,1.41)**	0.134**	CURR*RACE (p=0.049) AGE (p<0.001) PACKYR (p=0.029) HRTDIS (p=0.013)
5	870	1.15 (0.97,1.37)**	0.102**	CURR*RACE (p=0.045) AGE (p<0.001) PACKYR (p=0.030) HRTDIS (p=0.012)
6 ^c	869	1.13 (0.94,1.36)**	0.200**	CURR*RACE (p=0.043) AGE (p<0.001) PACKYR (p=0.053) HRTDIS (p=0.014)

^a 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.

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

^c 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 relative risk, confidence interval, and p-value derived from a model after deletion of this interaction; refer to Appendix Table K-4-1 for further analysis of this interaction.

Table K-3-4.
Analysis of Systolic Blood Pressure (mm Hg) (Continuous)
Total Cholesterol, HDL, Body Fat, and Diabetic Class Removed from Final Model

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED						
Initial Dioxin Category Summary Statistics			Analysis Results for Log ₂ (Initial Dioxin) ^a			
Initial Dioxin	n	Adj. Mean ^a	R ²	Adj. Slope (Std. Error)	p-Value	Covariate Remarks
Low	169	123.82	0.125	-0.057 (0.609)	0.926	AGE (p=0.001) BPMED (p=0.001)
Medium	172	125.26				
High	172	124.49				

^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.

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

b) 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	1,044	124.83			AGE (p<0.001) CSMOK (p<0.001) BPMED (p<0.001)
Background RH	370	123.86	-0.97 (-3.02,1.07)	0.350	
Low RH	254	124.45	-0.38 (-2.72,1.97)	0.752	
High RH	259	124.56	-0.27 (-2.62,2.08)	0.822	
Low plus High RH	513	124.51	-0.32 (-2.13,1.49)	0.726	

^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.

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.