

APPENDIX N-2.

Interaction Tables for the Endocrine 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 18 are given in the heading of each subtable. A summary of the interactions described in this appendix follows.

Appendix N-2 Table	Chapter 18 Table	Dependent Variable	Model	Covariate
N-2-1	18-3	Past Thyroid Disease	1 3 4	Personality Type Personality Type Personality Type
N-2-2	18-4	Composite Diabetes Indicator	2 3	Occupation Occupation
N-2-3	18-5	Diabetic Severity	4 5 6	Occupation Occupation Age
N-2-4	18-8	Testicular Volume: Minimum	2 6	Occupation Occupation
N-2-5	18-9	Testicular Volume: Total	2	Occupation
N-2-6	18-10	Retinopathy Results (Diabetics)	1	Personality Type
N-2-7	18-15	Dorsalis Pedis Pulses (Doppler) (Diabetics)	5 6	Lifetime Cigarette Smoking History Lifetime Cigarette Smoking History
N-2-8	18-17	Leg Pulses (Doppler) (Diabetics)	5	Lifetime Cigarette Smoking History
N-2-9	18-18	Peripheral Pulses (Doppler) (Diabetics)	4 6	Family History of Heart Disease Family History of Heart Disease
N-2-10	18-24	Fasting Glucose (All Participants) (Continuous)	2 3 5	Occupation Occupation Body Fat
N-2-11	18-26	Fasting Glucose (Diabetics) (Continuous)	1	Age

Appendix N-2 Table	Chapter 18 Table	Dependent Variable	Model	Covariate
N-2-12	18-27	Fasting Glucose (Diabetics) (Discrete)	3 4 5 6	Body Fat Body Fat Body Fat Body Fat
N-2-13	18-28	Fasting Glucose (Nondiabetics) (Continuous)	2 3	Occupation Occupation
N-2-14	18-30	2-Hour Postprandial Glucose (Nondiabetics) (Continuous)	1 3	Body Fat, Family History of Diabetes Body Fat, Family History of Diabetes
N-2-15	18-31	2-Hour Postprandial Glucose (Nondiabetics) (Discrete)	1 2 4 5 6	Body Fat Race Race Race Race
N-2-16	18-32	Fasting Urinary Glucose (All Participants)	3 5 6	Personality Type, Body Fat Personality Type Personality Type
N-2-17	18-33	Fasting Urinary Glucose (Diabetics)	3	Body Fat
N-2-18	18-35	2-Hour Postprandial Urinary Glucose (Nondiabetics)	6	Occupation
N-2-19	18-36	Serum Insulin (All Participants) (Continuous)	1 3 6	Age, Body Fat Age Body Fat
N-2-20	18-37	Serum Insulin (All Participants) (Discrete)	1 3 4 5	Age, Body Fat Age, Occupation, Personality Type, Body Fat Body Fat Body Fat
N-2-21	18-39	Serum Insulin (Diabetics) (Discrete)	2 3 4 5 6	Age, Occupation, Body Fat Age Body Fat Body Fat Body Fat
N-2-22	18-40	Serum Insulin (Nondiabetics) (Continuous)	1 3	Body Fat Age
N-2-23	18-41	Serum Insulin (Nondiabetics) (Discrete)	1 2 3 6	Age, Body Fat Occupation Occupation Age

Appendix N-2 Table	Chapter 18 Table	Dependent Variable	Model	Covariate
N-2-24	18-42	Serum Glucagon (All Participants) (Continuous)	2 3 4	Occupation Family History of Diabetes Family History of Diabetes
N-2-25	18-44	Serum Glucagon (Diabetics) (Continuous)	1 3	Body Fat, Diabetic Severity Body Fat, Diabetic Severity
N-2-26	18-48	α -1-C Hemoglobin (All Participants) (Continuous)	2 3 4 5 6	Occupation Body Fat Body Fat Age, Body Fat Age, Body Fat
N-2-27	18-49	α -1-C Hemoglobin (All Participants) (Discrete)	2 5 6	Occupation Body Fat Body Fat
N-2-28	18-50	α -1-C Hemoglobin (Diabetics) (Continuous)	1	Age
N-2-29	18-52	α -1-C Hemoglobin (Nondiabetics) (Continuous)	1 4	Body Fat Race
N-2-30	18-54	Urinary Protein (Diabetics)	1	Race
N-2-31	18-56	Serum Proinsulin (Diabetics) (Discrete)	4 5 6	Occupation Occupation Occupation, Diabetic Severity
N-2-32	18-57	Serum C Peptide (Diabetics) (Continuous)	3	Occupation
N-2-33	18-58	Serum C Peptide (Diabetics) (Discrete)	3 5 6	Age Age, Diabetic Severity Age, Diabetic Severity
N-2-34	18-59	Total Testosterone (Continuous)	1 2 4 5 6	Age Personality Type Occupation Occupation Occupation
N-2-35	18-60	Total Testosterone (Discrete)	1 2 3 4	Race, Personality Type Occupation Personality Type Occupation
N-2-36	18-66	Estradiol	4 5 6	Occupation Occupation Occupation

Table N-2-1.
Interaction Table for Past Thyroid Disease

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Personality Type: Table 18-3)						
Stratum	Occupational Category	Group	n	Percent Yes	Adj. Relative Risk (95% C.I.)	p-Value
<i>Type A</i>	<i>All</i>	<i>Ranch Hand</i>	415	6.5	<i>1.44 (0.82,2.54)</i>	<i>0.206</i>
		<i>Comparison</i>	533	4.5		
<i>Type B</i>	<i>All</i>	<i>Ranch Hand</i>	529	4.4	<i>0.65 (0.39,1.08)</i>	<i>0.097</i>
		<i>Comparison</i>	741	6.5		
<i>Type A</i>	Officer	Ranch Hand	183	7.7	<i>1.63 (0.81,3.29)</i>	<i>0.171</i>
		Comparison	223	4.0		
	Enlisted Flyer	Ranch Hand	60	3.3	<i>2.36 (0.76,7.35)</i>	<i>0.139</i>
		Comparison	88	2.3		
	Enlisted Groundcrew	Ranch Hand	172	6.4	<i>1.07 (0.52,2.22)</i>	<i>0.846</i>
		Comparison	222	5.9		
<i>Type B</i>	Officer	Ranch Hand	181	5.0	<i>0.75 (0.38,1.48)</i>	<i>0.409</i>
		Comparison	276	7.3		
	Enlisted Flyer	Ranch Hand	100	6.0	<i>1.08 (0.37,3.22)</i>	<i>0.884</i>
		Comparison	115	4.4		
	Enlisted Groundcrew	Ranch Hand	248	3.2	<i>0.49 (0.25,0.96)</i>	<i>0.038</i>
		Comparison	350	6.6		

Table N-2-1. (Continued)
Interaction Table for Past Thyroid Disease

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Personality Type: Table 18-3)					
Stratum	Dioxin Category	n	Percent Yes	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Type A	Comparison	443	5.0		
	Background RH	172	10.5	2.26 (1.16,4.37)	0.016
	Low RH	115	4.3	0.68 (0.14,3.23)	0.627
	High RH	99	4.0	0.85 (0.20,3.68)	0.833
	Low plus High RH	214	4.2	0.75 (0.25,2.27)	0.612
Type B	Comparison	613	6.5		
	Background RH	199	3.5	0.53 (0.23,1.22)	0.136
	Low RH	142	4.2	0.63 (0.26,1.51)	0.298
	High RH	159	5.7	0.87 (0.41,1.84)	0.707
	Low plus High RH	301	5.0	0.75 (0.41,1.39)	0.358

c) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Personality Type: Table 18-3)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for Log ₂ (Current Dioxin + 1)	
	Current Dioxin	n	Percent Yes	Adjusted Relative Risk (95% C.I.) ^b	p-Value
Type A	Low	158	3.2	1.22 (0.93,1.61)	0.157
	Medium	162	4.9		
	High	180	5.0		
Type B	Low	136	9.6	0.79 (0.58,1.07)	0.133
	Medium	134	7.5		
	High	116	3.5		

^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 \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.

Model 4: Low = \leq 8.1 ppt; Medium = > 8.1 -20.5 ppt; High = $>$ 20.5 ppt.

Table N-2-2.
Interaction Table for Composite Diabetes Indicator

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-4)					
Stratum	Initial Dioxin Category Summary Statistics			Analysis Results for Log ₂ (Initial Dioxin)	
	Initial Dioxin	n	Percent Diabetic	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Officer	Low	76	18.4	2.79 (1.18,6.59)	0.020
	Medium	31	38.7		
	High	1	100.0		
Enlisted Flyer	Low	35	25.7	0.81 (0.52,1.27)	0.360
	Medium	42	14.3		
	High	30	26.7		
Enlisted Groundcrew	Low	60	13.3	1.27 (0.99,1.63)	0.065
	Medium	94	12.8		
	High	137	17.5		

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Occupation: Table 18-4)					
Stratum	Dioxin Category	n	Percent Diabetic	Adjusted Relative Risk (95% C.I.) ^b	p-Value
Officer	Comparison	406	12.8		
	Background RH	232	10.3	0.97 (0.56,1.66)	0.900
	Low RH	99	24.2	1.65 (0.93,2.95)	0.090
	High RH	9	33.3	3.04 (0.67,13.79)	0.150
	Low plus High RH	108	25.0	1.75 (1.00,3.06)	0.050
Enlisted Flyer	Comparison	169	15.4		
	Background RH	40	2.5	0.19 (0.02,1.54)	0.121
	Low RH	54	22.2	1.80 (0.80,4.04)	0.157
	High RH	53	20.8	1.01 (0.43,2.36)	0.989
	Low plus High RH	107	21.5	1.35 (0.69,2.62)	0.380
Enlisted Groundcrew	Comparison	469	14.7		
	Background RH	95	14.7	1.44 (0.73,2.85)	0.297
	Low RH	99	12.1	0.59 (0.28,1.22)	0.155
	High RH	192	16.7	1.22 (0.75,1.99)	0.422
	Low plus High RH	291	15.1	0.97 (0.62,1.52)	0.910

^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 N-2-3.
Interaction Table for Diabetic Severity

a) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation; Table 18-5)										
Stratum	Current Dioxin Category	Current Dioxin Category Summary Statistics						Analysis Results for \log_2 (Current Dioxin + 1)		
		Percent						Contrast vs. Non-Diabetic	Est. Relative Risk (95% C.I.) ^a	p-Value
		n	Non-Diabetic	No Treatment	Diet Only	Oral Hypoglycemic	Insulin Dependent			
Officer	Low	189	92.1	4.2	1.6	0.0	2.1	No Treatment	1.46 (0.80, 2.66)	0.217
	Medium	138	77.5	10.9	7.3	1.5	2.9	Diet Only	3.03 (1.25, 7.38)	0.015
	High	13	61.5	15.4	0.0	7.7	15.4	Oral Hypoglycemic	--	--
Enlisted Flyer	Low	31	96.8	3.2	0.0	0.0	0.0	Insulin Dependent	1.08 (0.44, 2.61)	0.870
	Medium	56	80.4	16.1	0.0	1.8	1.8	No Treatment	0.84 (0.51, 1.39)	0.501
	High	60	80.0	5.0	6.7	6.7	1.7	Diet Only	4.55 (1.28, 16.15)	0.019
Enlisted Groundcrew	Low	70	85.7	8.6	1.4	0.0	4.3	Oral Hypoglycemic	3.52 (1.33, 9.33)	0.011
	Medium	100	87.0	7.0	5.0	1.0	0.0	Insulin Dependent	1.60 (0.41, 6.30)	0.501
	High	217	83.9	8.8	3.2	3.7	0.5	No Treatment	1.03 (0.79, 1.35)	0.823
								Diet Only	1.26 (0.85, 1.87)	0.241
								Oral Hypoglycemic	3.66 (1.72, 7.76)	0.001
								Insulin Dependent	0.38 (0.16, 0.89)	0.025

Table N-2-3. (Continued)
Interaction Table for Diabetic Severity

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED
(Current Dioxin-by-Occupation: Table 18-5)

Stratum	Current Dioxin Category	Current Dioxin Category Summary Statistics						Analysis Results for \log_2 (Current Dioxin + 1)		
		n	Percent					Contrast vs. Non-Diabetic	Est. Relative Risk (95% C.I.) ^a	p-Value
			Non-Diabetic	No Treatment	Diet Only	Oral Hypoglycemic	Insulin Dependent			
Officer	Low	189	93.1	4.2	0.5	0.0	2.1	No Treatment	1.40 (0.86, 2.28)	0.176
	Medium	133	79.7	10.5	6.8	0.8	2.3	Diet Only	3.77 (1.82, 7.80)	<0.001
	High	18	38.9	16.7	16.7	11.1	16.7	Oral Hypoglycemic	--	--
Enlisted Flyer	Low	33	97.0	3.0	0.0	0.0	0.0	Insulin Dependent	1.03 (0.53, 1.97)	0.938
	Medium	55	80.0	14.6	1.8	1.8	1.8	No Treatment	0.89 (0.58, 1.37)	0.609
	High	59	79.7	6.8	5.1	6.8	1.7	Diet Only	3.18 (1.15, 8.84)	0.026
Enlisted Groundcrew	Low	74	86.5	6.8	2.7	0.0	4.1	Oral Hypoglycemic	3.19 (1.36, 7.49)	0.008
	Medium	102	85.3	8.8	3.9	2.0	0.0	Insulin Dependent	1.91 (0.53, 6.86)	0.323
	High	211	84.4	8.5	3.3	3.3	0.5	No Treatment	1.06 (0.83, 1.35)	0.624
								Diet Only	1.33 (0.93, 1.91)	0.124
								Oral Hypoglycemic	3.59 (1.82, 7.08)	<0.001
								Insulin Dependent	0.53 (0.32, 0.89)	0.015

Table N-2-3. (Continued)
Interaction Table for Diabetic Severity

c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Age: Table 18-5)							
Stratum	Current Dioxin Category	Current Dioxin Category Summary Statistics					Analysis Results for \log_2 (Current Dioxin + 1)
		n	Non-Diabetic	No Treatment	Diet Only	Oral Hypoglycemic	
Born ≥ 1942	Low	102	95.1	2.9	1.0	0.0	1.0
	Medium	96	93.8	6.3	0.0	0.0	0.0
	High	163	88.3	4.9	4.3	2.5	0.0
Born < 1942	Low	194	90.2	5.7	1.0	0.0	3.1
	Medium	194	75.8	12.9	7.2	2.1	2.1
	High	125	70.4	13.6	4.8	7.2	4.0

^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.

^c Adjusted for \log_2 total lipids.

Note: Model 4: Low = ≤ 8.1 ppt; Medium = $> 8.1\text{-}20.5$ ppt; High = > 20.5 ppt.

Models 5 and 6: Low = ≤ 46 ppq; Medium = $> 46\text{-}128$ ppq; High = > 128 ppq.

Table N-2-4.
Interaction Table for Testicular Volume: Minimum (cm³)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-8)					
Stratum	Initial Dioxin Category Summary Statistics			Analysis Results for Log₂ (Initial Dioxin)	
	Initial Dioxin	n	Adj. Mean	Adj. Slope (Std. Error)	p-Value
Officer	Low	76	14.83	1.9524 (0.9483)	0.040
	Medium	33	16.39		
	High	1	22.88		
Enlisted Flyer	Low	36	15.17	-0.9115 (0.5086)	0.074
	Medium	42	15.25		
	High	31	13.90		
Enlisted Groundcrew	Low	60	14.11	-0.4353 (0.2507)	0.083
	Medium	95	15.62		
	High	139	14.01		

b) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-8)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for Log₂ (Current Dioxin + 1)	
	Current Dioxin	n	Adj. Mean	Adj. Slope (Std. Error)	p-Value
Officer	Low	190	14.6	0.2570 (0.2799)	0.359
	Medium	133	15.4		
	High	19	16.2		
Enlisted Flyer	Low	32	15.5	-0.8563 (0.3426)	0.013
	Medium	56	15.7		
	High	60	14.2		
Enlisted Groundcrew	Low	74	15.3	-0.2721 (0.1625)	0.094
	Medium	103	14.5		
	High	213	14.6		

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 N-2-5.
Interaction Table for Testicular Volume: Total (cm³)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-9)					
Stratum	Initial Dioxin Category Summary Statistics			Analysis Results for Log ₂ (Initial Dioxin)	
	Initial Dioxin	n	Adj. Mean ^a	Adj. Slope (Std. Error) ^b	p-Value
Officer	Low	76	33.33	0.3189 (0.1597)	0.046
	Medium	33	35.74		
	High	1	51.42		
Enlisted Flyer	Low	36	33.65	-0.1763 (0.0857)	0.040
	Medium	42	31.74		
	High	31	30.42		
Enlisted	Low	60	30.70	-0.0741 (0.0421)	0.079
Groundcrew	Medium	95	33.19		
	High	139	30.26		

^a Transformed from square root scale.

^b Slope and standard error based on square root of total testicular volume versus log₂ (initial dioxin).

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

Table N-2-6.
Interaction Table for Retinopathy Results (Diabetics)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Personality Type: Table 18-10)						
Stratum	Occupational Category	Group	n	Percent Abnormal	Adj. Relative Risk (95% C.I.)	p-Value
<i>Type A</i>	<i>All</i>	<i>Ranch Hand</i>	48	0.0	—	—
		<i>Comparison</i>	64	3.1		
<i>Type B</i>	<i>All</i>	<i>Ranch Hand</i>	88	6.8	<i>3.21 (0.61,16.90)</i>	<i>0.168</i>
		<i>Comparison</i>	112	2.7		
<i>Type A</i>	Officer	Ranch Hand	22	0.0	—	—
		Comparison	20	5.0		
	Enlisted Flyer	Ranch Hand	7	0.0	—	—
		Comparison	11	0.0		
	Enlisted Groundcrew	Ranch Hand	19	0.0	—	—
		Comparison	33	3.0		
<i>Type B</i>	Officer	Ranch Hand	30	6.7	<i>1.39 (0.12,16.74)</i>	<i>0.796</i>
		Comparison	37	2.7		
	Enlisted Flyer	Ranch Hand	17	11.8	—	—
		Comparison	23	0.0		
	Enlisted Groundcrew	Ranch Hand	41	4.9	<i>2.00 (0.17,23.74)</i>	<i>0.583</i>
		Comparison	52	3.9		

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

Table N-2-7.
Interaction Table for Dorsalis Pedis Pulses (Doppler) (Diabetics)

a) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Lifetime Cigarette Smoking History: Table 18-15)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
0 Pack-years	Low	8	0.0	2.33 (0.90,5.99)	0.081
	Medium	10	0.0		
	High	12	33.3		
>0-10 Pack-years	Low	6	16.7	1.54 (0.89,2.66)	0.121
	Medium	13	0.0		
	High	18	22.2		
>10 Pack-years	Low	11	36.4	1.03 (0.71,1.49)	0.869
	Medium	29	10.3		
	High	26	23.1		

b) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Lifetime Cigarette Smoking History: Table 18-15)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Percent Abnormal	Adjusted Relative Risk (95% C.I.)^a	p-Value
0 Pack-years	Low	8	0.0	2.25 (0.86,5.86)	0.098
	Medium	10	0.0		
	High	12	33.3		
>0-10 Pack-years	Low	6	16.7	1.47 (0.83,2.58)	0.183
	Medium	13	0.0		
	High	18	22.2		
>10 Pack-years	Low	11	36.4	1.00 (0.67,1.48)	0.981
	Medium	29	10.3		
	High	26	23.1		

^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 N-2-8.
Interaction Table for Leg Pulses (Doppler) (Diabetics)

a) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Lifetime Cigarette Smoking History: Table 18-17)				
Stratum	Current Dioxin Category Summary Statistics		Analysis Results for Log₂ (Current Dioxin + 1)	
	Current Dioxin	n	Percent Abnormal	
0 Pack-years	Low	8	0.0	1.92 (0.79,4.66) 0.150
	Medium	10	0.0	
	High	12	33.3	
>0-10 Pack-years	Low	6	16.7	1.37 (0.81,2.29) 0.238
	Medium	13	0.0	
	High	18	22.2	
>10 Pack-years	Low	11	36.4	0.97 (0.69,1.37) 0.862
	Medium	29	13.8	
	High	26	23.1	

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

Note: Model 5: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table N-2-9.
Interaction Table for Peripheral Pulses (Doppler) (Diabetics)

a) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Family History of Heart Disease: Table 18-18)				
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.) ^a
No	Low	9	22.2	1.65 (1.06,2.59) 0.028
	Medium	24	4.2	
	High	28	42.9	
Yes	Low	18	22.2	0.65 (0.35,1.19) 0.159
	Medium	30	10.0	
	High	24	8.3	

b) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Family History of Heart Disease: Table 18-18)				
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.) ^a
No	Low	10	20.0	1.47 (0.98,2.20) 0.063
	Medium	21	9.5	
	High	30	36.7	
Yes	Low	15	26.7	0.76 (0.48,1.22) 0.261
	Medium	31	6.5	
	High	26	11.5	

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

Note: Model 4: Low = ≤ 8.1 ppt; Medium = $> 8.1\text{-}20.5$ ppt; High = > 20.5 ppt.
 Model 6: Low = ≤ 46 ppq; Medium = $> 46\text{-}128$ ppq; High = > 128 ppq.

Table N-2-10.
Interaction Table for Fasting Glucose (mg/dl) (All Participants)
(Continuous)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-24)					
Stratum	Initial Dioxin Category Summary Statistics			Analysis Results for Log _e (Initial Dioxin)	
	Initial Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^b	p-Value
Officer	Low	76	113.14	0.0721 (0.0350)	0.040
	Medium	31	119.98		
	High	1	279.08		
Enlisted Flyer	Low	34	115.65	-0.0232 (0.0193)	0.229
	Medium	42	108.96		
	High	30	110.73		
Enlisted Groundcrew	Low	60	104.63	0.0322 (0.0093)	<0.001
	Medium	94	107.96		
	High	137	112.59		

Stratum	Dioxin Category	n	Adjusted Mean ^a	Difference of Adjusted Mean vs. Comparisons (95% C.I.) ^c		p-Value ^d
Officer	Comparison	406	100.14			
	Background RH	232	100.05	-0.09 --		0.952
	Low RH	99	103.01	2.86 --		0.184
	High RH	9	112.77	12.63 --		0.061
	Low plus High RH	108	103.79	3.65 --		0.082
Enlisted Flyer	Comparison	169	116.16			
	Background RH	40	109.37	-6.80 --		0.069
	Low RH	54	115.64	-0.52 --		0.879
	High RH	53	114.35	-1.81 --		0.597
	Low plus High RH	107	115.00	-1.16 --		0.664
Enlisted Groundcrew	Comparison	470	107.13			
	Background RH	96	109.97	2.83 --		0.221
	Low RH	99	102.36	-4.78 --		0.029
	High RH	192	110.17	3.03 --		0.084
	Low plus High RH	291	107.44	0.31 --		0.843

Table N-2-10. (Continued)
Interaction Table for Fasting Glucose (mg/dl) (All Participants)
(Continuous)

c) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-24)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^b	p-Value
Obese: >25%	Low	37	102.94	0.0495 (0.0090)	<0.001
	Medium	80	106.30		
	High	104	117.32		
Lean or Normal: ≤25%	Low	259	101.36	0.0163 (0.0049)	<0.001
	Medium	210	103.16		
	High	184	108.64		

^a Transformed from natural logarithm scale.

^b Slope and standard error based on natural logarithm of fasting glucose versus \log_2 dioxin.

^c Difference of means after transformation to original scale; confidence interval on difference of 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.

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.

Model 5: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table N-2-11.
Interaction Table for Fasting Glucose (mg/dl) (Diabetics)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Age: Table 18-26)							
Stratum	Occupational Category	Group	n	Adjusted Mean ^a	Difference of Adjusted Means (95% C.I.) ^b	p-Value ^c	
<i>Born ≥ 1942</i>	<i>All</i>	<i>Ranch Hand</i>	31	163.72	18.85 --	0.099	
		<i>Comparison</i>	45	144.87			
<i>Born < 1942</i>	<i>All</i>	<i>Ranch Hand</i>	106	155.08	-10.80 --	0.105	
		<i>Comparison</i>	132	165.88			
<i>Born ≥ 1942</i>	Officer	<i>Ranch Hand</i>	3	196.57	56.94 --	0.168	
		<i>Comparison</i>	4	139.63			
	Enlisted Flyer	<i>Ranch Hand</i>	4	156.43	25.13 --		
		<i>Comparison</i>	6	131.30			
<i>Born < 1942</i>	Enlisted Groundcrew	<i>Ranch Hand</i>	24	162.78	13.73 --	0.297	
		<i>Comparison</i>	35	149.05			
	Officer	<i>Ranch Hand</i>	50	167.04	-10.31 --		
		<i>Comparison</i>	54	177.35			
	Enlisted Flyer	<i>Ranch Hand</i>	20	153.00	-11.91 --	0.425	
		<i>Comparison</i>	28	164.91			
	Enlisted Groundcrew	<i>Ranch Hand</i>	36	145.32	-11.06 --		
		<i>Comparison</i>	50	156.38			

^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.

Table N-2-12.
Interaction Table for Fasting Glucose (Diabetics)
(Discrete)

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY – ADJUSTED
(Dioxin Category-by-Body Fat: Table 18-27)

Stratum	Dioxin Category	n	Percent	Adjusted Relative Risk (95% C.I.) ^a	p-Value
			Abnormal High		
Obese: >25%	Comparison	72	73.6		
	Background RH	9	77.8	1.30 (0.22,7.63)	0.769
	Low RH	22	72.7	0.80 (0.14,4.39)	0.793
	High RH	27	66.7	0.66 (0.08,5.15)	0.691
	Low plus High RH	49	69.4	0.73 (0.19,2.79)	0.645
Lean or Normal: ≤25%	Comparison	75	64.0		
	Background RH	30	60.0	1.08 (0.42,2.78)	0.878
	Low RH	26	65.4	0.85 (0.30,2.37)	0.752
	High RH	19	79.0	2.37 (0.62,9.05)	0.206
	Low plus High RH	45	71.1	1.25 (0.52,3.01)	0.623

b) MODEL 4: RANCH HANDS – CURRENT DIOXIN – ADJUSTED
(Current Dioxin-by-Body Fat: Table 18-27)

Stratum	Current Dioxin Category Summary Statistics			Analysis Results for Log ₂ (Current Dioxin + 1)	
	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^b	p-Value
Obese: >25%	Low	6	83.3	0.73 (0.46,1.16)	0.182
	Medium	22	77.3		
	High	32	65.6		
Lean or Normal: ≤25%	Low	22	59.1	1.31 (0.88,1.94)	0.185
	Medium	34	64.7		
	High	22	77.3		

Table N-2-12. (Continued)
Interaction Table for Fasting Glucose (Diabetics)
(Discrete)

c) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-27)				
Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^b
Obese: > 25%	Low	6	66.7	0.79 (0.54,1.16) 1.37 (0.99,1.89)
	Medium	23	82.6	
	High	31	64.5	
Lean or Normal: ≤ 25%	Low	20	55.0	0.234 0.060
	Medium	31	58.1	
	High	27	85.2	

d) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-27)				
Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^b
Obese: > 25%	Low	6	66.7	0.66 (0.42,1.02) 1.22 (0.86,1.72)
	Medium	23	82.6	
	High	31	64.5	
Lean or Normal: ≤ 25%	Low	20	55.0	0.063 0.267
	Medium	31	58.1	
	High	27	85.2	

^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 \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.

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

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

Table N-2-13.
Interaction Table for Fasting Glucose (mg/dl) (Nondiabetics)
(Continuous)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-28)					
Stratum	Initial Dioxin Category	Summary Statistics		Analysis Results for Log₂ (Initial Dioxin)	
		Initial Dioxin	n	Adjusted Mean^a	Adjusted Slope (Std. Error)^b
Officer	Low	62	103.05	-0.0436 (0.0171)	0.011
	Medium	19	98.78		
	High	0	--		
Enlisted Flyer	Low	25	99.94	-0.0099 (0.0089)	0.269
	Medium	36	98.44		
	High	22	99.02		
Enlisted Groundcrew	Low	52	97.79	0.0055 (0.0042)	0.188
	Medium	82	99.89		
	High	113	99.36		

Table N-2-13. (Continued)
Interaction Table for Fasting Glucose (mg/dl) (Nondiabetics)
(Continuous)

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Occupation: Table 18-28)					
Stratum	Dioxin Category	n	Adjusted Mean^a	Difference of Adjusted Mean vs. Comparisons (95% C.I.)^c	p-Value^d
Officer	Comparison	354	99.09		
	Background RH	208	99.49	0.39 --	0.590
	Low RH	75	100.47	1.38 --	0.200
	High RH	6	96.72	-2.38 --	0.485
	Low plus High RH	81	100.19	1.10 --	0.289
Enlisted Flyer	Comparison	143	100.55		
	Background RH	39	96.40	-4.15 --	0.006
	Low RH	41	99.25	-1.30 --	0.386
	High RH	42	97.43	-3.12 --	0.034
	Low plus High RH	83	98.33	-2.22 --	0.056
Enlisted Groundcrew	Comparison	400	98.96		
	Background RH	82	101.78	2.82 --	0.007
	Low RH	87	98.70	-0.26 --	0.791
	High RH	160	99.35	0.39 --	0.618
	Low plus High RH	247	99.13	0.16 --	0.812

^a Transformed from natural logarithm scale.

^b Slope and standard error based on natural logarithm of fasting glucose versus \log_2 dioxin.

^c Difference of means after transformation to original scale; confidence interval on difference of 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: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

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 N-2-14.
Interaction Table for 2-Hour Postprandial Glucose (mg/dl) (Nondiabetics)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 18-30)						
Stratum	Occupational Category	Group	n	Adjusted Mean ^a	Difference of Adjusted Means (95% C.I.) ^b	p-Value ^c
<i>Obese:</i> <i>>25%</i>	<i>All</i>	<i>Ranch Hand</i>	175	119.79	6.20 --	0.038
		<i>Comparison</i>	242	113.59		
<i>Lean or Normal:</i> <i>≤25%</i>	<i>All</i>	<i>Ranch Hand</i>	618	102.10	-0.77 --	0.581
		<i>Comparison</i>	838	102.88		
<i>Obese:</i> <i>>25%</i>	Officer	Ranch Hand	59	115.84	6.87 --	0.159
		Comparison	89	108.79		
	Enlisted Flyer	Ranch Hand	28	120.56	6.96 --	0.358
		Comparison	37	113.60		
	Enlisted Groundcrew	Ranch Hand	88	121.77	5.39 --	0.215
		Comparison	116	116.38		
<i>Lean or Normal:</i> <i>≤25%</i>	Officer	Ranch Hand	247	99.59	1.27 --	0.549
		Comparison	352	98.32		
	Enlisted Flyer	Ranch Hand	106	102.67	-5.22 --	0.146
		Comparison	126	107.89		
	Enlisted Groundcrew	Ranch Hand	265	103.06	-1.19 --	0.582
		Comparison	360	104.25		

Table N-2-14. (Continued)
Interaction Table for 2-Hour Postprandial Glucose (mg/dl) (Nondiabetics)
(Continuous)

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Family History of Diabetes: Table 18-30)						
Stratum	Occupational Category	Group	n	Adjusted Mean^a	Difference of Adjusted Means (95% C.I.)^b	p-Value^c
<i>No</i>	<i>All</i>	<i>Ranch Hand</i>	626	104.19	2.29 --	0.097
		<i>Comparison</i>	840	101.90		
<i>Yes</i>	<i>All</i>	<i>Ranch Hand</i>	167	104.77	-5.10 --	0.063
		<i>Comparison</i>	240	109.86		
<i>No</i>	Officer	Ranch Hand	251	99.85	1.47 --	0.477
		Comparison	363	98.39		
	Enlisted Flyer	Ranch Hand	105	105.64	-1.48 --	0.683
		Comparison	118	107.12		
	Enlisted Groundcrew	Ranch Hand	270	106.57	4.35 --	0.041
		Comparison	359	102.21		
	Yes	Officer	55	107.72	4.15 --	0.378
		Comparison	78	103.57		
	Enlisted Flyer	Ranch Hand	29	102.65	-7.37 --	0.250
		Comparison	45	110.02		
	Enlisted Groundcrew	Ranch Hand	83	103.30	-10.66 --	0.007
		Comparison	117	113.95		

Table N-2-14. (Continued)
Interaction Table for 2-Hour Postprandial Glucose (mg/dl) (Nondiabetics)
(Continuous)

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Body Fat: Table 18-30)					
Stratum	Dioxin Category	n	Adjusted Mean ^a	Difference of Adjusted Mean vs. Comparisons (95% C.I.) ^b	p-Value ^c
Obese: >25%	Comparison	205	105.51		
	Background RH	43	112.68	7.17 --	0.125
	Low RH	55	105.60	0.09 --	0.984
	High RH	65	118.94	13.43 --	0.001
Lean or Normal: ≤25%	Comparison	691	104.45		
	Background RH	285	102.10	-2.35 --	0.210
	Low RH	148	105.47	1.02 --	0.673
	High RH	143	103.53	-0.92 --	0.710
	Low plus High RH	291	104.51	0.06 --	0.975

Table N-2-14. (Continued)
Interaction Table for 2-Hour Postprandial Glucose (mg/dl) (Nondiabetics)
(Continuous)

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Family History of Diabetes: Table 18-30)					
Stratum	Dioxin Category	n	Adjusted Mean^a	Difference of Adjusted Mean vs. Comparisons (95% C.I.)^b	p-Value^c
No	Comparison	695	101.50		
	Background RH	264	101.58	0.08 --	0.964
	Low RH	162	103.04	1.54 --	0.491
	High RH	161	107.98	6.48 --	0.006
	Low plus High RH	323	105.48	3.98 --	0.026
Yes	Comparison	201	109.78		
	Background RH	64	106.14	-3.64 --	0.352
	Low RH	41	105.83	-3.95 --	0.394
	High RH	47	102.03	-7.75 --	0.074
	Low plus High RH	88	103.78	-6.00 --	0.081

^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.

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 N-2-15.
Interaction Table for 2-Hour Postprandial Glucose (Nondiabetics)
(Discrete)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 18-31)						
Stratum	Occupational Category	Group	n	Percent Impaired	Adj. Relative Risk (95% C.I.)	p-Value
<i>Obese:</i> <i>>25%</i>	<i>All</i>	<i>Ranch Hand</i>	175	27.4	<i>1.56 (0.97,2.50)</i>	<i>0.064</i>
		<i>Comparison</i>	242	20.4		
<i>Lean or Normal:</i> <i>≤25%</i>	<i>All</i>	<i>Ranch Hand</i>	618	10.8	<i>1.12 (0.79,1.58)</i>	<i>0.536</i>
		<i>Comparison</i>	838	9.5		
<i>Obese:</i> <i>>25%</i>	Officer	Ranch Hand	59	25.4	1.63 (0.88,3.01)	0.119
		Comparison	89	15.7		
	Enlisted Flyer	Ranch Hand	28	25.0	1.06 (0.49,2.27)	0.885
		Comparison	37	24.3		
	Enlisted Groundcrew	Ranch Hand	88	29.6	1.74 (1.00,3.02)	0.050
		Comparison	116	22.4		
<i>Lean or Normal:</i> <i>≤25%</i>	Officer	Ranch Hand	247	9.3	1.18 (0.71,1.97)	0.527
		Comparison	352	8.8		
	Enlisted Flyer	Ranch Hand	106	12.3	0.77 (0.39,1.51)	0.441
		Comparison	126	14.3		
	Enlisted Groundcrew	Ranch Hand	265	11.7	1.26 (0.79,2.00)	0.334
		Comparison	360	9.2		

Table N-2-15. (Continued)
Interaction Table for 2-Hour Postprandial Glucose (Nondiabetics)
(Discrete)

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED <i>(Initial Dioxin-by-Race: Table 18-31)</i>				
Initial Dioxin Category Summary Statistics				Analysis Results for \log_2 (Initial Dioxin)
Stratum	Initial Dioxin	n	Percent Impaired	Adjusted Relative Risk (95% C.I.) ^a
Non-Black	Low	128	16.4	1.17 (0.95,1.45)
	Medium	133	18.1	--
	High	133	20.3	--
Black	Low	13	0.0	--
	Medium	8	0.0	--
	High	6	16.7	--

c) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED <i>(Current Dioxin-by-Race: Table 18-31)</i>				
Current Dioxin Category Summary Statistics				Analysis Results for \log_2 (Current Dioxin + 1)
Stratum	Current Dioxin	n	Percent Impaired	Adjusted Relative Risk (95% C.I.) ^b
Non-Black	Low	255	10.6	1.26 (1.07,1.48)
	Medium	226	14.2	--
	High	232	20.3	--
Black	Low	11	0.0	--
	Medium	17	0.0	--
	High	12	8.3	--

Table N-2-15. (Continued)
Interaction Table for 2-Hour Postprandial Glucose (Nondiabetics)
(Discrete)

d) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 18-31)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Percent Impaired	Adjusted Relative Risk (95% C.I.) ^b	p-Value
Non-Black	Low	259	8.9	1.26 (1.08,1.47)	0.008
	Medium	220	15.0		
	High	221	21.3		
Black	Low	12	0.0	--	--
	Medium	17	0.0		
	High	11	9.1		

e) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 18-31)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Percent Impaired	Adjusted Relative Risk (95% C.I.) ^b	p-Value
Non-Black	Low	258	8.9	1.22 (1.04,1.43)	0.016
	Medium	220	15.0		
	High	221	21.3		
Black	Low	12	0.0	--	--
	Medium	17	0.0		
	High	11	9.1		

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

^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 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 N-2-16.
Interaction Table for Fasting Urinary Glucose (All Participants)

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Personality Type: Table 18-32)					
Stratum	Dioxin Category	n	Percent Present	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Type A	Comparison	443	3.4		
	Background RH	175	0.0	--	--
	Low RH	113	3.5	0.59 (0.90,3.78)	0.581
	High RH	99	6.1	1.92 (0.45,8.12)	0.374
	Low plus High RH	212	4.7	1.06 (0.32,3.52)	0.921
Type B	Comparison	615	2.9		
	Background RH	199	3.0	1.49 (0.57,3.91)	0.418
	Low RH	143	2.8	0.82 (0.27,2.51)	0.726
	High RH	160	5.6	1.55 (0.64,3.75)	0.327
	Low plus High RH	303	4.3	1.19 (0.56,2.54)	0.655

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Body Fat: Table 18-32)					
Stratum	Dioxin Category	n	Percent Present	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Obese: ≥ 25%	Comparison	277	6.9		
	Background RH	53	3.8	0.45 (0.10,2.05)	0.302
	Low RH	79	1.3	0.11 (0.01,1.11)	0.062
	High RH	92	10.9	1.86 (0.39,8.79)	0.433
	Low plus High RH	171	6.4	0.80 (0.25,2.54)	0.709
Lean or Normal: ≤ 25%	Comparison	781	1.8		
	Background RH	321	1.2	0.81 (0.26,2.51)	0.715
	Low RH	177	4.0	1.93 (0.76,4.90)	0.170
	High RH	167	3.0	1.64 (0.56,4.75)	0.364
	Low plus High RH	344	3.5	1.79 (0.81,3.96)	0.151

Table N-2-16. (Continued)
Interaction Table for Fasting Urinary Glucose (All Participants)

c) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Personality Type: Table 18-32)			
Stratum	Current Dioxin Category Summary Statistics		Analysis Results for \log_2 (Current Dioxin + 1)
	Current Dioxin	n	
Type A	Low	127	0.0
	Medium	139	0.7
	High	113	7.1
Type B	Low	169	2.4
	Medium	149	3.4
	High	174	5.8

d) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Personality Type: Table 18-32)			
Stratum	Current Dioxin Category Summary Statistics		Analysis Results for \log_2 (Current Dioxin + 1)
	Current Dioxin	n	
Type A	Low	128	0.0
	Medium	141	0.7
	High	117	7.7
Type B	Low	171	2.3
	Medium	153	3.3
	High	178	5.6

^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 \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.

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

Table N-2-17.
Interaction Table for Fasting Urinary Glucose (Diabetics)

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Body Fat: Table 18-33)					
Stratum	Dioxin Category	n	Percent Present	Adjusted Relative Risk (95% C.I.)^a	p-Value
Obese: >25%	Comparison	71	25.4		
	Background RH	9	22.2	1.20 (0.16,8.74)	0.861
	Low RH	22	4.5	0.02 (0.00,0.42)	0.014
	High RH	27	37.0	2.73 (0.73,10.24)	0.136
Lean or Normal: ≤25%	Comparison	75	18.7		
	Background RH	30	13.3	0.97 (0.21,4.42)	0.967
	Low RH	26	26.9	2.77 (0.73,10.48)	0.133
	High RH	19	21.1	0.40 (0.07,2.28)	0.299
	Low plus High RH	45	24.4	1.22 (0.40,3.68)	0.729

^a Relative risk and confidence interval relative to Comparisons.

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 N-2-18.
Interaction Table for 2-Hour Postprandial Urinary Glucose (Nondiabetics)

a) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-35)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for Log ₂ (Current Dioxin + 1)	
	Current Dioxin	n	Percent Present	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Officer	Low	176	16.5	0.82 (0.62,1.09)	0.176
	Medium	107	13.1		
	High	8	25.0		
Enlisted Flyer	Low	31	22.6	0.80 (0.57,1.11)	0.179
	Medium	45	22.2		
	High	48	18.8		
Enlisted	Low	65	12.3	1.18 (0.99,1.40)	0.071
Groundcrew	Medium	89	19.1		
	High	182	26.4		

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

Note: Model 6: Low = \leq 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table N-2-19.
Interaction Table for Serum Insulin (mIU/ml) (All Participants)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Age: Table 18-36)						
Stratum	Occupational Category	Group	n	Adjusted Mean ^a	Difference of Adjusted Means (95% C.I.) ^b	p-Value ^c
<i>Born</i> <i>≥1942</i>	<i>All</i>	<i>Ranch Hand</i>	390	31.17	-0.83 --	0.614
		<i>Comparison</i>	548	32.00		
<i>Born</i> <i><1942</i>	<i>All</i>	<i>Ranch Hand</i>	541	43.66	2.54 --	0.181
		<i>Comparison</i>	710	41.13		
<i>Born</i> <i>≥1942</i>	Officer	Ranch Hand	78	34.85	-1.30 --	0.748
		Comparison	121	36.15		
	Enlisted Flyer	Ranch Hand	38	26.60	-2.11 --	0.643
		Comparison	57	28.72		
	Enlisted Groundcrew	Ranch Hand	274	31.78	-0.50 --	0.801
		Comparison	370	32.23		
<i>Born</i> <i><1942</i>	Officer	Ranch Hand	281	51.20	5.62 --	0.060
		Comparison	378	45.58		
	Enlisted Flyer	Ranch Hand	120	33.43	-5.80 --	0.101
		Comparison	140	39.23		
	Enlisted Groundcrew	Ranch Hand	140	45.86	5.36 --	0.153
		Comparison	192	40.50		

Table N-2-19. (Continued)
Interaction Table for Serum Insulin (mIU/ml) (All Participants)
(Continuous)

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 18-36)						
Stratum	Occupational Category	Group	n	Adjusted Mean^a	Difference of Adjusted Means (95% C.I.)^b	p-Value^c
<i>Obese:</i> <i>>25%</i>	<i>All</i>	<i>Ranch Hand</i>	237	66.06	10.17 --	0.017
		<i>Comparison</i>	326	55.89		
<i>Lean or Normal:</i> <i>≤25%</i>	<i>All</i>	<i>Ranch Hand</i>	694	31.84	-1.17 --	0.380
		<i>Comparison</i>	932	33.01		
<i>Obese:</i> <i>>25%</i>	Officer	Ranch Hand	80	87.56	26.00 --	0.003
		Comparison	115	61.56		
	Enlisted Flyer	Ranch Hand	38	54.36	5.55 --	0.546
		Comparison	47	48.81		
	Enlisted Groundcrew	Ranch Hand	119	60.79	3.47 --	0.549
		Comparison	164	57.31		
<i>Lean or Normal:</i> <i>≤25%</i>	Officer	Ranch Hand	279	37.76	0.93 --	0.969
		Comparison	384	36.82		
	Enlisted Flyer	Ranch Hand	120	24.04	-5.66 --	0.034
		Comparison	150	29.70		
	Enlisted Groundcrew	Ranch Hand	295	33.30	0.85 --	0.688
		Comparison	398	34.15		

Table N-2-19. (Continued)
Interaction Table for Serum Insulin (mIU/ml) (All Participants)
(Continuous)

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Age: Table 18-36)					
Stratum	Dioxin Category	n	Adjusted Mean ^a	Difference of Adjusted Mean vs. Comparisons (95% C.I.) ^b	p-Value ^c
Born ≥ 1942	Comparison	446	33.45		
	Background RH	127	28.91	-4.54 --	0.067
	Low RH	83	32.52	-0.93 --	0.762
	High RH	151	36.96	3.51 --	0.180
Born < 1942	Comparison	598	44.73		
	Background RH	241	45.99	1.26 --	0.644
	Low RH	168	48.60	3.87 --	0.224
	High RH	103	45.35	0.62 --	0.872
	Low plus High RH	271	47.34	2.61 --	0.328

d) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-36)			
Current Dioxin Category Summary Statistics			Analysis Results for Log ₂ (Current Dioxin + 1)
Stratum	Current Dioxin	n	Adjusted Mean ^a
Obese: ≥ 25%	Low	37	66.63
	Medium	81	57.96
	High	107	62.80
Lean or Normal: ≥ 25%	Low	262	28.22
	Medium	215	32.65
	High	189	35.83

^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 serum insulin versus log₂ (current dioxin + 1).

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 > 143 ppt, Initial Dioxin > 143 ppt.

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

Table N-2-20.
Interaction Table for Serum Insulin (All Participants)
(Discrete)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Age: Table 18-37)											
Stratum	Occupational Category	Group	n	Percent			Low vs. Normal		High vs. Normal		
				Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.)	p-Value	Adj. Relative Risk (95% C.I.)	p-Value	
Born ≥ 1942	All	Ranch Hand	396	6.6	46.5	47.0	1.03 (0.59,1.80)	0.927	0.77 (0.58,1.01)	0.063	
		Comparison	557	5.6	40.4	54.0					
Born <1942	All	Ranch Hand	553	2.9	34.7	62.4	0.77 (0.40,1.46)	0.423	1.12 (0.88,1.43)	0.354	
		Comparison	719	3.9	36.3	59.8					
N-2-37	Born ≥ 1942	Officer	Ranch Hand	79	6.3	50.6	43.0	0.79 (0.33,1.92)	0.609	0.76 (0.50,1.18)	0.225
			Comparison	121	9.1	47.9	43.0				
	Enlisted Flyer	Ranch Hand	38	5.3	52.6	42.1	1.10 (0.31,3.88)	0.878	0.53 (0.30,0.92)	0.024	
		Comparison	58	5.2	29.3	65.5					
	Enlisted Groundcrew	Ranch Hand	279	6.8	44.4	48.8	1.14 (0.59,2.19)	0.706	0.81 (0.60,1.10)	0.173	
		Comparison	378	4.5	39.7	55.8					
	Born <1942	Officer	Ranch Hand	286	3.2	36.7	60.1	0.66 (0.31,1.42)	0.290	1.20 (0.88,1.63)	0.254
			Comparison	381	4.7	38.6	56.7				
		Enlisted Flyer	Ranch Hand	123	4.1	33.3	62.6	0.92 (0.29,2.94)	0.886	0.82 (0.51,1.33)	0.425
			Comparison	144	2.8	32.6	64.6				
	Enlisted Groundcrew	Ranch Hand	144	1.4	31.9	66.7	0.94 (0.36,2.49)	0.908	1.26 (0.85,1.88)	0.243	
		Comparison	194	3.1	34.5	62.4					

Table N-2-20. (Continued)
Interaction Table for Serum Insulin (All Participants)
(Discrete)

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 18-37)											
Stratum	Occupational Category	Group	n	Percent			Low vs. Normal		High vs. Normal		
				Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.)	p-Value	Adj. Relative Risk (95% C.I.)	p-Value	
Obese: >25%	All	<i>Ranch Hand</i>	241	1.2	20.8	78.0	1.32 (0.28,6.15)	0.724	1.42 (0.96,2.12)	0.082	
		<i>Comparison</i>	327	1.2	26.9	71.9					
Lean or Normal: ≤25%	All	<i>Ranch Hand</i>	708	5.5	46.1	48.5	0.88 (0.57,1.36)	0.557	0.84 (0.69,1.03)	0.089	
		<i>Comparison</i>	949	5.8	41.9	52.3					
N-2-38	Obese: >25%	Officer	Ranch Hand	81	2.5	12.4	85.2	0.96 (0.19,4.98)	0.963	1.72 (1.08,2.74)	0.023
		Comparison	115	1.7	26.1	72.2					
	Enlisted Flyer	Ranch Hand	38	0.0	21.1	79.0	1.44 (0.23,9.23)	0.698	1.12 (0.62,2.00)	0.713	
		Comparison	48	0.0	20.8	79.2					
	Enlisted Groundcrew	Ranch Hand	122	0.8	26.2	73.0	1.58 (0.32,7.74)	0.573	1.34 (0.87,2.07)	0.191	
		Comparison	164	1.2	29.3	69.5					
	Lean or Normal: ≤25%	Officer	Ranch Hand	284	4.2	47.5	48.2	0.66 (0.34,1.31)	0.241	1.01 (0.75,1.35)	0.973
		Comparison	387	7.0	45.2	47.8					
		Enlisted Flyer	Ranch Hand	123	5.7	43.1	51.2	1.00 (0.33,3.04)	0.997	0.65 (0.41,1.03)	0.067
		Comparison	154	4.6	35.1	60.4					
		Enlisted Groundcrew	Ranch Hand	301	6.6	45.9	47.5	1.09 (0.57,2.07)	0.789	0.78 (0.58,1.05)	0.097
		Comparison	408	5.2	41.4	53.4					

Table N-2-20. (Continued)
Interaction Table for Serum Insulin (All Participants)
(Discrete)

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED
(Dioxin Category-by-Age: Table 18-37)

Stratum	Dioxin Category	n	Percent		Low vs. Normal		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
Born ≥1942	Comparison	446	5.4	38.3	56.3				
	Background RH	127	7.9	55.9	36.2	0.86 (0.38,1.94)	0.719	0.59 (0.38,0.92)	0.019
	Low RH	83	8.4	42.2	49.4	1.27 (0.49,3.32)	0.619	0.82 (0.49,1.37)	0.444
	High RH	151	4.0	41.1	55.0	0.80 (0.30,2.18)	0.669	0.78 (0.52,1.17)	0.231
	Low plus High RH	234	5.6	41.5	53.0	1.00 (0.47,2.13)	0.999	0.79 (0.56,1.12)	0.187
Born <1942	Comparison	598	4.4	35.1	60.5				
	Background RH	241	3.3	39.8	56.9	0.61 (0.26,1.41)	0.244	0.98 (0.70,1.36)	0.886
	Low RH	168	1.8	33.9	64.3	0.44 (0.13,1.52)	0.194	1.06 (0.72,1.54)	0.778
	High RH	103	2.9	27.2	69.9	0.89 (0.24,3.30)	0.866	1.37 (0.82,2.28)	0.228
	Low plus High RH	271	2.2	31.4	66.4	0.59 (0.23,1.51)	0.269	1.15 (0.71,1.89)	0.568

Table N-2-20. (Continued)
Interaction Table for Serum Insulin (All Participants)
(Discrete)

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Occupation: Table 18-37)									
Stratum	Dioxin Category	n	Percent		Low vs. Normal		High vs. Normal		p-Value
			Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.) ^a	p-Value	Adj. Relative Risk (95% C.I.) ^a	
Officer	Comparison	406	6.2	39.9	53.9				
	Background RH	232	3.5	43.5	53.0	0.51 (0.22,1.18)	0.116	1.01 (0.72,1.44)	0.934
	Low RH	99	4.0	34.3	61.6	0.95 (0.30,2.98)	0.931	1.15 (0.71,1.88)	0.570
	High RH	9	11.1	11.1	77.8	9.37 (0.54,163.79)	0.125	3.80 (0.44,32.82)	0.225
	Low plus High RH	108	4.6	32.4	63.0	1.17 (0.41,3.33)	0.774	1.23 (0.76,1.98)	0.399
Enlisted Flyer	Comparison	169	4.1	28.4	67.5				
	Background RH	40	5.0	57.5	37.5	0.49 (0.09,2.66)	0.412	0.31 (0.14,0.66)	0.002
	Low RH	53	3.8	47.2	49.1	0.43 (0.08,2.31)	0.326	0.47 (0.24,0.92)	0.028
	High RH	53	3.8	17.0	79.3	1.49 (0.25,8.77)	0.656	1.70 (0.75,3.86)	0.206
	Low plus High RH	106	3.8	32.1	64.2	0.69 (0.18,2.60)	0.582	0.80 (0.46,1.41)	0.445
Enlisted Groundcrew	Comparison	469	3.8	36.5	59.7				
	Background RH	96	8.3	44.8	46.9	1.57 (0.62,4.00)	0.339	0.83 (0.51,1.35)	0.447
	Low RH	99	4.0	33.3	62.6	1.04 (0.32,3.44)	0.945	1.15 (0.70,1.88)	0.578
	High RH	192	3.1	41.7	55.2	0.64 (0.23,1.80)	0.393	0.81 (0.55,1.18)	0.267
	Low plus High RH	291	3.4	38.8	57.7	0.76 (0.33,1.75)	0.514	0.91 (0.66,1.25)	0.549

Table N-2-20. (Continued)
Interaction Table for Serum Insulin (All Participants)
(Discrete)

e) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Personality Type: Table 18-37)									
Stratum	Dioxin Category	n	Percent		Low vs. Normal			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
Type A	Comparison	437	6.4	42.6	51.0				
	Background RH	172	5.2	46.5	48.3	0.75 (0.33,1.70)	0.490	0.95 (0.65,1.41)	0.808
	Low RH	111	6.3	32.4	61.3	1.42 (0.56,3.57)	0.459	1.56 (0.98,2.51)	0.063
	High RH	97	1.0	41.2	57.7	0.17 (0.02,1.34)	0.093	1.14 (0.70,1.85)	0.602
	Low plus High RH	208	3.9	36.5	59.6	0.75 (0.32,1.77)	0.513	1.34 (0.93,1.93)	0.119
Type B	Comparison	607	3.6	32.1	64.3				
	Background RH	196	4.6	44.4	51.0	0.75 (0.32,1.72)	0.496	0.73 (0.51,1.04)	0.079
	Low RH	140	2.1	40.0	57.9	0.41 (0.11,1.50)	0.180	0.64 (0.43,0.96)	0.033
	High RH	157	5.1	31.9	63.1	1.42 (0.56,3.59)	0.463	0.90 (0.60,1.36)	0.610
	Low plus High RH	297	3.7	35.7	60.6	0.87 (0.39,1.95)	0.739	0.76 (0.56,1.05)	0.092

Table N-2-20. (Continued)
Interaction Table for Serum Insulin (All Participants)
(Discrete)

I) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Body Fat: Table 18-37)									
Stratum	Dioxin Category	n	Percent			Low vs. Normal		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
Obese: >25%	Comparison	278	1.4	27.7	70.9				
	Background RH	52	1.9	13.5	84.6	2.53 (0.24,26.28)	0.438	2.68 (1.14,6.31)	0.024
	Low RH	77	2.6	20.8	76.6	2.57 (0.42,15.55)	0.305	1.55 (0.82,2.91)	0.175
	High RH	92	0.0	25.0	75.0	--	--	1.19 (0.68,2.08)	0.552
	Low plus High RH	169	1.2	23.1	75.7	0.92 (0.16,5.32)	0.925	1.33 (0.84,2.11)	0.219
Lean or Normal: ≤25%	Comparison	766	6.0	39.7	54.3				
	Background RH	316	5.4	50.6	44.0	0.69 (0.37,1.25)	0.220	0.68 (0.51,0.90)	0.007
	Low RH	174	4.6	43.7	51.7	0.66 (0.29,1.49)	0.315	0.84 (0.59,1.19)	0.321
	High RH	162	5.6	41.4	53.1	1.00 (0.44,2.24)	0.991	0.88 (0.61,1.27)	0.493
	Low plus High RH	336	5.1	42.6	52.4	0.81 (0.43,1.49)	0.494	0.86 (0.65,1.13)	0.273

Table N-2-20. (Continued)
Interaction Table for Serum Insulin (All Participants)
(Discrete)

g) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-37)									
Stratum	Current Dioxin	n	Percent			Low vs. Normal		High vs. Normal	
			Abnormal Low	Abnormal Normal	Abnormal High	Adj. Relative Risk (95% C.I.) ^b	p-Value	Adj. Relative Risk (95% C.I.) ^b	p-Value
Obese: > 25%	Low	35	2.9	14.3	82.9	0.49 (0.21,1.14)	0.098	0.85 (0.68,1.08)	0.183
	Medium	81	1.2	17.3	81.5				
	High	109	0.9	26.6	72.5				
Lean or Normal: ≤ 25%	Low	260	6.2	51.5	42.3	0.80 (0.62,1.03)	0.087	1.18 (1.05,1.32)	0.005
	Medium	217	5.1	45.2	49.8				
	High	189	4.8	39.7	55.6				

Table N-2-20. (Continued)
Interaction Table for Serum Insulin (All Participants)
(Discrete)

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-37)									
Stratum	Current Dioxin	n	Percent			Low vs. Normal		High vs. Normal	
			Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.) ^b	p-Value	Adj. Relative Risk (95% C.I.) ^b	p-Value
Obese: >25%	Low	37	2.7	13.5	83.8	0.57 (0.31,1.02)	0.058	0.88 (0.71,1.08)	0.224
	Medium	81	2.5	19.8	77.8				
	High	107	0.0	25.2	74.8				
Lean or Normal: ≤25%	Low	263	6.5	51.3	42.2	0.83 (0.68,1.01)	0.062	1.19 (1.08,1.31)	0.001
	Medium	214	4.7	44.4	50.9				
	High	189	4.8	40.7	54.5				

^a Relative risk and confidence interval relative to Comparisons.

^b 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 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.

Model 5: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

Table N-2-21.
Interaction Table for Serum Insulin (Diabetics)
(Discrete)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Age: Table 18-39)					
Stratum	Initial Dioxin Category Summary Statistics			Analysis Results for \log_2 (Initial Dioxin)	
	Initial Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Born ≥ 1942	Low	2	50.0	0.75 (0.34,1.64)	0.470
	Medium	6	66.7		
	High	15	40.0		
Born < 1942	Low	29	62.1	0.61 (0.36,1.05)	0.073
	Medium	25	80.0		
	High	19	31.6		

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-39)					
Stratum	Initial Dioxin Category Summary Statistics			Analysis Results for \log_2 (Initial Dioxin)	
	Initial Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Officer	Low	14	64.3	5.43 (0.86,34.21)	0.072
	Medium	12	83.3		
	High	1	100.0		
Enlisted Flyer	Low	9	55.6	0.57 (0.25,1.33)	0.194
	Medium	6	66.7		
	High	9	44.4		
Enlisted Groundcrew	Low	8	62.5	0.55 (0.31,0.98)	0.043
	Medium	13	76.9		
	High	24	29.2		

Table N-2-21. (Continued)
Interaction Table for Serum Insulin (Diabetics)
(Discrete)

c) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Body Fat: Table 18-39)					
Stratum	Initial Dioxin Category Summary Statistics			Analysis Results for Log ₂ (Initial Dioxin)	
	Initial Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Obese: >25%	Low	11	100.0	0.30 (0.13,0.67)	0.003
	Medium	19	79.0		
	High	20	40.0		
Lean or Normal: ≤25%	Low	20	40.0	0.95 (0.57,1.60)	0.856
	Medium	12	75.0		
	High	14	28.6		

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Age: Table 18-39)					
Stratum	Dioxin Category	n	Percent	Adjusted Relative Risk (95% C.I.) ^b	p-Value
			Abnormal High		
Born ≥1942	Comparison	36	52.8	0.98 (0.17,5.76) 0.12 (0.01,2.04) 1.76 (0.48,6.41) 1.13 (0.34,3.68)	0.982 0.141 0.393 0.844
	Background RH	8	50.0		
	Low RH	4	25.0		
	High RH	19	52.6		
	Low plus High RH	23	47.8		
Born <1942	Comparison	112	59.8	1.24 (0.50,3.07) 2.73 (1.14,6.50) 0.44 (0.16,1.21) 1.30 (0.64,2.64)	0.640 0.024 0.112 0.469
	Background RH	34	67.6		
	Low RH	45	71.1		
	High RH	28	42.9		
	Low plus High RH	73	60.3		

Table N-2-21. (Continued)
Interaction Table for Serum Insulin (Diabetics)
(Discrete)

e) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-39)				
Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^c
Obese: >25%	Low	6	100.0	0.39 (0.21,0.72) 0.003
	Medium	22	86.4	
	High	32	56.3	
Lean or Normal: ≤25%	Low	22	54.6	0.91 (0.66,1.25) 0.564
	Medium	34	50.0	
	High	22	45.5	

f) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-39)				
Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^c
Obese: >25%	Low	6	100.0	0.47 (0.28,0.79) 0.005
	Medium	23	82.6	
	High	31	58.1	
Lean or Normal: ≤25%	Low	20	55.0	0.92 (0.71,1.19) 0.536
	Medium	31	54.8	
	High	27	40.7	

Table N-2-21. (Continued)
Interaction Table for Serum Insulin (Diabetics)
(Discrete)

g) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-39)				
Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^c
Obese: > 25%	Low	6	100.0	0.47 (0.27,0.80) 0.92 (0.69,1.22)
	Medium	23	82.6	
	High	31	58.1	
Lean or Normal: ≤ 25%	Low	20	55.0	0.544
	Medium	31	54.8	
	High	27	40.7	

^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.

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 N-2-22.
Interaction Table for Serum Insulin (mIU/ml) (Nondiabetics)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 18-40)						
Stratum	Occupational Category	Group	n	Adjusted Mean ^a	Difference of Adjusted Means (95% C.I.) ^b	p-Value ^c
<i>Obese:</i> <i>>25%</i>	<i>All</i>	<i>Ranch Hand</i>	175	117.03	17.32 --	0.043
		<i>Comparison</i>	243	99.71		
<i>Lean or Normal:</i> <i>≤25%</i>	<i>All</i>	<i>Ranch Hand</i>	619	55.96	-3.19 --	0.189
		<i>Comparison</i>	838	59.15		
<i>Obese:</i> <i>>25%</i>	Officer	Ranch Hand	59	135.02	29.48 --	0.066
		Comparison	89	105.54		
	Enlisted Flyer	Ranch Hand	28	105.19	16.27 --	0.400
		Comparison	37	88.92		
	Enlisted Groundcrew	Ranch Hand	88	115.32	10.63 --	0.390
		Comparison	117	104.69		
<i>Lean or Normal:</i> <i>≤25%</i>	Officer	Ranch Hand	247	63.64	0.67 --	0.874
		Comparison	352	62.98		
	Enlisted Flyer	Ranch Hand	106	43.22	-10.82 --	0.033
		Comparison	126	54.03		
	Enlisted Groundcrew	Ranch Hand	266	58.34	-3.24 --	0.400
		Comparison	360	61.58		

Table N-2-22. (Continued)
Interaction Table for Serum Insulin (mIU/ml) (Nondiabetics)
(Continuous)

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED

(Dioxin Category-by-Age: Table 18-40)

Stratum	Dioxin Category	n	Adjusted Mean ^a	Difference of Adjusted Mean vs. Comparisons (95% C.I.) ^b	p-Value ^c
Born ≥ 1942	Comparison	410	48.20		
	Background RH	119	41.90	-6.30 --	0.080
	Low RH	80	45.93	-2.27 --	0.603
	High RH	132	51.56	3.36 --	0.380
	Low plus High RH	212	49.36	1.16 --	0.712
Born < 1942	Comparison	487	64.49		
	Background RH	210	64.56	0.07 --	0.988
	Low RH	123	63.88	0.61 --	0.901
	High RH	76	72.50	8.01 --	0.221
	Low plus High RH	199	67.05	2.56 --	0.547

^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.

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 N-2-23.
Interaction Table for Serum Insulin (Nondiabetics)
(Discrete)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Age: Table 18-41)										
Stratum	Occupational Category	Group	n	Percent		Low vs. Normal		High vs. Normal		
				Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.)	p-Value	Adj. Relative Risk (95% C.I.)	p-Value
Born ≥ 1942	<i>All</i>	Ranch Hand	359	7.2	46.2	46.5	0.97 (0.55,1.72)	0.926	0.72 (0.53,0.97)	0.028
		Comparison	503	6.2	39.4	54.5				
Born < 1942	<i>All</i>	Ranch Hand	435	3.2	34.5	62.3	0.72 (0.36,1.42)	0.342	1.04 (0.78,1.37)	0.801
		Comparison	578	4.5	34.6	60.9				
Born ≥ 1942	Officer	Ranch Hand	75	6.7	53.3	40.0	0.69 (0.28,1.71)	0.420	0.65 (0.41,1.04)	0.074
		Comparison	117	9.4	47.0	43.6				
	Enlisted Flyer	Ranch Hand	34	5.9	50.0	44.1	1.18 (0.29,4.74)	0.815	0.45 (0.27,0.84)	0.012
		Comparison	51	5.9	29.4	64.7				
	Enlisted Groundcrew	Ranch Hand	250	7.6	43.6	48.8	1.11 (0.57,2.15)	0.769	0.79 (0.57,1.10)	0.162
		Comparison	335	5.1	38.2	56.7				
Born < 1942	Officer	Ranch Hand	231	3.5	39.0	57.6	0.59 (0.26,1.31)	0.194	1.07 (0.76,1.51)	0.697
		Comparison	324	5.6	38.6	55.9				
	Enlisted Flyer	Ranch Hand	100	4.0	32.0	64.0	1.01 (0.27,3.79)	0.987	0.74 (0.43,1.28)	0.283
		Comparison	112	1.8	27.7	70.5				
	Enlisted Groundcrew	Ranch Hand	104	1.9	26.9	71.2	0.95 (0.34,2.63)	0.916	1.30 (0.82,2.05)	0.261
		Comparison	142	4.2	31.0	64.8				

Table N-2-23. (Continued)
Interaction Table for Serum Insulin (Nondiabetics)
(Discrete)

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 18-41)										
Stratum	Occupational Category	Group	n	Percent			Low vs. Normal		High vs. Normal	
				Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.)	p-Value	Adj. Relative Risk (95% C.I.)	p-Value
Obese: >25%	All	Ranch Hand	175	1.7	18.9	79.4	1.07 (0.20,5.69)	0.937	1.25 (0.76,2.05)	0.372
		Comparison	243	1.7	22.2	76.1				
Lean/Normal: ≤25%	All	Ranch Hand	619	6.0	45.7	48.3	0.85 (0.54,1.34)	0.483	0.81 (0.65,1.01)	0.061
		Comparison	838	6.3	41.1	52.6				
Obese: >25%	Officer	Ranch Hand	59	3.4	15.3	81.4	0.74 (0.14,3.98)	0.728	1.42 (0.81,2.48)	0.219
		Comparison	89	2.3	21.4	76.4				
	Enlisted Flyer	Ranch Hand	28	0.0	14.3	85.7	--	--	0.93 (0.46,1.84)	0.827
		Comparison	37	0.0	13.5	86.5				
	Enlisted Groundcrew	Ranch Hand	88	1.1	22.7	76.1	1.34 (0.26,6.82)	0.726	1.24 (0.73,2.11)	0.430
		Comparison	117	1.7	25.6	72.7				
Lean/Normal: ≤25%	Officer	Ranch Hand	247	4.5	49.0	46.6	0.60 (0.30,1.22)	0.161	0.92 (0.67,1.27)	0.622
		Comparison	352	7.7	45.7	46.6				
	Enlisted Flyer	Ranch Hand	106	5.7	42.5	51.9	1.09 (0.31,3.85)	0.895	0.60 (0.36,1.01)	0.054
		Comparison	126	4.0	32.5	63.5				
	Enlisted Groundcrew	Ranch Hand	266	7.5	44.0	48.5	1.09 (0.57,2.09)	0.796	0.81 (0.59,1.11)	0.182
		Comparison	360	5.8	39.4	54.7				

Table N-2-23. (Continued)
Interaction Table for Serum Insulin (Nondiabetics)
(Discrete)

c) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-41)										
Stratum	Initial Dioxin	n	Percent			Low vs. Normal		High vs. Normal		p-Value
			Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.) ^a	p-Value	Adj. Relative Risk (95% C.I.) ^a		
			--	--	--					
Officer	Low	62	3.2	40.3	56.5	3.71 (0.66,20.72)	0.136	1.97 (0.74,5.25)	0.177	
	Medium	21	14.3	19.1	66.7					
	High	0	--	--	--					
Enlisted Flyer	Low	27	7.4	51.9	40.7	1.35 (0.38,4.82)	0.647	2.75 (1.39,5.44)	0.004	
	Medium	37	8.1	18.9	73.0					
	High	22	0.0	9.1	90.9					
Enlisted Groundcrew	Low	53	3.8	30.2	66.0	0.75 (0.47,1.19)	0.224	1.08 (0.87,1.34)	0.507	
	Medium	83	4.8	39.8	55.4					
	High	117	3.4	38.5	58.1					

Table N-2-23. (Continued)
Interaction Table for Serum Insulin (Nondiabetics)
(Discrete)

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Occupation: Table 18-41)									
Stratum	Dioxin Category	n	Percent			Low vs. Normal		High vs. Normal	
			Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.) ^b	p-Value	Adj. Relative Risk (95% C.I.) ^b	p-Value
Officer	Comparison	354	7.1	40.7	52.3				
	Background RH	208	3.9	45.2	51.0	0.49 (0.21,1.15)	0.101	0.98 (0.67,1.42)	0.899
	Low RH	75	5.3	36.0	58.7	1.03 (0.33,3.27)	0.955	1.02 (0.58,1.77)	0.954
	High RH	6	16.7	16.7	66.7	7.24 (0.41,126.67)	0.175	2.24 (0.23,21.75)	0.487
	Low plus High RH	81	6.2	34.6	59.3	1.25 (0.43,3.61)	0.684	1.06 (0.61,1.82)	0.839
Enlisted Flyer	Comparison	143	3.5	28.0	68.5				
	Background RH	39	5.1	56.4	38.5	0.73 (0.13,4.18)	0.720	0.32 (0.14,0.70)	0.005
	Low RH	41	4.9	48.8	46.3	0.70 (0.12,4.09)	0.690	0.40 (0.18,0.85)	0.018
	High RH	42	4.8	7.1	88.1	4.59 (0.58,36.14)	0.148	4.80 (1.37,16.74)	0.014
	Low plus High RH	83	4.8	27.7	67.5	1.18 (0.28,4.97)	0.820	0.97 (0.51,1.83)	0.917
Enlisted Groundcrew	Comparison	400	4.5	34.5	61.0				
	Background RH	82	9.8	45.1	45.1	1.60 (0.63,4.08)	0.322	0.73 (0.43,1.25)	0.255
	Low RH	87	4.6	34.5	60.9	1.01 (0.31,3.26)	0.984	0.93 (0.55,1.58)	0.798
	High RH	160	3.8	38.1	58.1	0.69 (0.25,1.89)	0.477	0.83 (0.59,1.16)	0.269
	Low plus High RH	247	4.1	36.8	59.1	0.80 (0.35,1.83)	0.595	0.86 (0.60,1.23)	0.417

Table N-2-23. (Continued)
Interaction Table for Serum Insulin (Nondiabetics)
(Discrete)

e) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Age: Table 18-41)									
Stratum	Current Dioxin	n	Percent			Low vs. Normal		High vs. Normal	
			Abnormal Low	Normal	Abnormal High	Adj. Relative Risk (95% C.I.) ^c	p-Value	Adj. Relative Risk (95% C.I.) ^c	p-Value
Born ≥ 1942	Low	98	9.2	60.2	30.6	0.96 (0.73,1.26)	0.770	1.09 (0.94,1.25)	0.256
	Medium	90	6.7	40.0	53.3				
	High	148	5.4	40.5	54.1				
Born < 1942	Low	175	5.1	40.6	54.3	0.85 (0.62,1.16)	0.314	1.34 (1.14,1.58)	0.001
	Medium	151	4.0	37.8	58.3				
	High	90	1.1	16.7	82.2				

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

Table N-2-24.
Interaction Table for Serum Glucagon (pg/ml) (All Participants)
(Continuous)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-42)				
Initial Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Initial Dioxin)
Stratum	Initial Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^b
Officer	Low	63	57.64	0.0795 (0.0458)
	Medium	30	62.43	
	High	1	63.10	
Enlisted Flyer	Low	32	55.21	0.0434 (0.0240)
	Medium	38	55.66	
	High	28	62.88	
Enlisted	Low	55	61.01	-0.0146 (0.0118)
Groundcrew	Medium	81	63.85	
	High	124	59.73	

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Family History of Diabetes: Table 18-42)					
Stratum	Dioxin Category	n	Adjusted Mean ^a	Difference of Adjusted Mean vs. Comparisons (95% C.I.) ^c	p-Value ^d
No	Comparison	709	60.72		
	Background RH	256	59.28	-1.44 --	0.202
	Low RH	175	59.44	-1.28 --	0.322
	High RH	162	63.07	2.35 --	0.094
	Low plus High RH	337	61.16	0.44 --	0.670
Yes	Comparison	235	61.51		
	Background RH	74	61.36	-0.15 --	0.941
	Low RH	48	61.21	-0.30 --	0.904
	High RH	56	55.87	-5.64 --	0.011
	Low plus High RH	104	58.28	-3.23 --	0.071

Table N-2-24. (Continued)
Interaction Table for Serum Glucagon (pg/ml) (All Participants)
(Continuous)

c) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Family History of Diabetes: Table 18-42)				Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin Category	Summary Statistics		Adjusted Slope (Std. Error) ^b	p-Value
No	Low	204	57.09	0.0213 (0.0080)	0.008
	Medium	201	57.13		
	High	188	61.47		
Yes	Low	54	57.55	-0.0191 (0.0127)	0.132
	Medium	61	59.60		
	High	63	56.74		

^a Transformed from natural logarithm scale.

^b Slope and standard error based on natural logarithm of serum glucagon versus \log_2 dioxin.

^c Difference of means after transformation to original scale; confidence interval on difference of 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: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

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.

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

Table N-2-25.
Interaction Table for Serum Glucagon (pg/ml) (Diabetics)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 18-44)						
Stratum	Occupational Category	Group	n	Adjusted Mean ^a	Difference of Adjusted Means (95% C.I.) ^b	p-Value ^c
<i>Obese:</i> >25%	<i>All</i>	<i>Ranch Hand</i>	59	67.74	-5.05 --	0.197
		<i>Comparison</i>	72	72.79		
<i>Lean or Normal:</i> ≤25%	<i>All</i>	<i>Ranch Hand</i>	66	71.55	4.94 --	0.174
		<i>Comparison</i>	88	66.61		
<i>Obese:</i> >25%	Officer	<i>Ranch Hand</i>	21	68.65	-0.67 --	0.917
		<i>Comparison</i>	25	69.32		
		Enlisted Flyer	8	56.63		0.053
			9	76.17		
	Enlisted Groundcrew	<i>Ranch Hand</i>	30	74.46	-4.47 --	0.452
		<i>Comparison</i>	38	78.93		
<i>Lean or Normal:</i> ≤25%	Officer	<i>Ranch Hand</i>	29	70.89	3.49 --	0.546
		<i>Comparison</i>	29	67.40		
		Enlisted Flyer	13	66.20		0.736
			23	68.70		
	Enlisted Groundcrew	<i>Ranch Hand</i>	24	76.27	10.92 --	0.065
		<i>Comparison</i>	36	65.35		

Table N-2-25. (Continued)
Interaction Table for Serum Glucagon (pg/ml) (Diabetics)
(Continuous)

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Diabetic Severity: Table 18-44)						
Stratum	Occupational Category	Group	n	Adjusted Mean ^a	Difference of Adjusted Means (95% C.I.) ^b	p-Value ^c
<i>No Treatment</i>	<i>All</i>	<i>Ranch Hand</i>	67	64.12	2.76 --	0.368
		<i>Comparison</i>	98	61.36		
<i>Diet Only</i>	<i>All</i>	<i>Ranch Hand</i>	25	74.51	13.55 --	0.018
		<i>Comparison</i>	29	60.96		
<i>Oral Hypoglycemics</i>	<i>All</i>	<i>Ranch Hand</i>	17	60.95	-26.09 --	<0.001
		<i>Comparison</i>	24	87.04		
<i>Insulin Dependent</i>	<i>All</i>	<i>Ranch Hand</i>	16	76.44	-3.91 --	0.697
		<i>Comparison</i>	9	80.35		
<i>No Treatment</i>	Officer	Ranch Hand	26	63.68	1.71 --	0.746
		Comparison	30	61.97		
	Enlisted Flyer	Ranch Hand	11	55.53	-6.87 --	0.302
		Comparison	21	62.40		
	Enlisted Groundcrew	Ranch Hand	30	68.81	7.04 --	0.133
		Comparison	47	61.77		
<i>Diet Only</i>	Officer	Ranch Hand	11	72.67	19.34 --	0.031
		Comparison	8	53.33		
	Enlisted Flyer	Ranch Hand	2	83.99	13.92 --	0.456
		Comparison	7	70.07		
	Enlisted Groundcrew	Ranch Hand	12	76.46	13.61 --	0.109
		Comparison	14	62.85		
<i>Oral Hypoglycemics</i>	Officer	Ranch Hand	3	67.11	-15.60 --	0.288
		Comparison	12	82.71		
	Enlisted Flyer	Ranch Hand	5	56.99	-15.77 --	0.345
		Comparison	2	72.76		
	Enlisted Groundcrew	Ranch Hand	9	63.58	-34.14 --	0.002
		Comparison	10	97.72		
<i>Insulin Dependent</i>	Officer	Ranch Hand	10	69.85	-4.36 --	0.742
		Comparison	4	74.21		
	Enlisted Flyer	Ranch Hand	3	72.08	-4.76 --	0.817
		Comparison	2	76.84		
	Enlisted Groundcrew	Ranch Hand	3	105.53	13.16 --	0.591
		Comparison	3	92.37		

Table N-2-25. (Continued)
Interaction Table for Serum Glucagon (pg/ml) (Diabetics)
(Continuous)

c) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Body Fat: Table 18-44)					
Stratum	Dioxin Category	n	Adjusted Mean^a	Difference of Adjusted Mean vs. Comparisons (95% C.I.)^b	p-Value^c
Obese: >25%	Comparison	61	67.64		
	Background RH	10	65.61	-2.03 --	0.781
	Low RH	23	60.99	-6.65 --	0.195
	High RH	22	57.60	-10.04 --	0.050
Lean or Normal: ≤25%	Comparison	71	67.68		
	Background RH	28	74.76	7.08 --	0.190
	Low RH	22	76.81	9.13 --	0.108
	High RH	16	69.79	2.11 --	0.740
	Low plus High RH	38	73.78	6.10 --	0.191

Table N-2-25. (Continued)
Interaction Table for Serum Glucagon (pg/ml) (Diabetics)
(Continuous)

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Diabetic Severity: Table 18-44)					
Stratum	Dioxin Category	n	Adjusted Mean^a	Difference of Adjusted Means vs. Comparisons (95% C.I.)^b	p-Value^c
No Treatment/ Diet Only	Comparison	103	60.52		
	Background RH	30	67.19	6.67 --	0.112
	Low RH	35	64.36	3.84 --	0.311
	High RH	23	66.66	6.14 --	0.182
	Low plus High RH	58	65.27	4.75 --	0.137
Oral Hypo- glycemics/ Insulin Dependent	Comparison	29	86.09		
	Background RH	8	77.01	-9.08 --	0.386
	Low RH	10	71.04	-15.05 --	0.099
	High RH	15	56.58	-29.51 --	<0.001
	Low plus High RH	25	61.97	-24.12 --	<0.001

^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.

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 N-2-26.
Interaction Table for α -1-C Hemoglobin (percent) (All Participants)
(Continuous)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-48)			
Initial Dioxin Category Summary Statistics			Analysis Results for Log _e (Initial Dioxin)
Stratum	Initial Dioxin	n	Adjusted Mean ^a
Officer	Low	76	7.06
	Medium	31	7.86
	High	1	11.73
Enlisted Flyer	Low	35	8.53
	Medium	42	8.17
	High	30	8.41
Enlisted	Low	60	7.36
Groundcrew	Medium	94	7.61
	High	137	7.76

Stratum	Dioxin Category	n	Adjusted Mean ^a	Difference of Adjusted Mean vs. Comparisons (95% C.I.) ^c		p-Value ^d
				Difference	95% C.I.	
Obese: >25%	Comparison	278	7.75			
	Background RH	52	7.31	-0.44	--	0.012
	Low RH	77	7.52	-0.23	--	0.123
	High RH	92	8.01	0.26	--	0.080
	Low plus High RH	169	7.78	0.03	--	0.795
Lean or Normal: ≤25%	Comparison	767	7.50			
	Background RH	316	7.58	0.08	--	0.310
	Low RH	175	7.54	0.04	--	0.704
	High RH	162	7.53	0.03	--	0.809
	Low plus High RH	337	7.53	0.04	--	0.684

Table N-2-26. (Continued)
Interaction Table for α -1-C Hemoglobin (percent) (All Participants)
(Continuous)

c) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-48)				Analysis Results for \log_2 (Current Dioxin + 1)	
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
Obese: >25%	Low	35	7.47	0.0377 (0.0081)	<0.001
	Medium	79	7.55		
	High	107	8.18		
Lean or Normal: ≤25%	Low	255	7.41	0.0041 (0.0048)	0.398
	Medium	215	7.51		
	High	183	7.48		

d) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Age and Body Fat: Table 18-48)				Analysis Results for \log_2 (Current Dioxin + 1)	
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
Born ≥ 1942, Obese: > 25%	Low	9	7.77	0.0201 (0.0109)	0.065
	Medium	26	7.24		
	High	58	7.75		
Born ≥ 1942, Lean or Normal: ≤ 25%	Low	93	7.39	-0.0021 (0.0059)	0.720
	Medium	70	7.14		
	High	105	7.14		
Born < 1942, Obese: > 25%	Low	28	7.44	0.0492 (0.0102)	<0.001
	Medium	54	7.88		
	High	46	8.34		
Born < 1942, Lean or Normal: ≤ 25%	Low	166	7.42	0.0139 (0.0057)	0.016
	Medium	140	7.49		
	High	79	8.17		

Table N-2-26. (Continued)
Interaction Table for α -1-C Hemoglobin (percent) (All Participants)
(Continuous)

e) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Age and Body Fat: Table 18-48)				Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin Category	Summary Statistics		Adjusted Slope (Std. Error) ^b	p-Value
Born \geq 1942, Obese: > 25%	Low	9	7.92	0.0137 (0.0109)	0.209
	Medium	26	7.25		
	High	58	7.70		
Born \geq 1942, Lean or Normal: \leq 25%	Low	93	7.50	-0.0061 (0.0060)	0.304
	Medium	70	7.16		
	High	105	7.12		
Born < 1942, Obese: > 25%	Low	28	7.53	0.0431 (0.0103)	< 0.001
	Medium	54	7.91		
	High	46	8.23		
Born < 1942, Lean or Normal: \leq 25%	Low	165	7.51	0.0082 (0.0061)	0.177
	Medium	140	7.52		
	High	79	8.04		

^a Transformed from natural logarithm scale.

^b Slope and standard error based on natural logarithm of α -1-C hemoglobin versus \log_2 dioxin.

^c Difference of means after transformation to original scale; confidence interval on difference of 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: Model 2: Low = 39.98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.

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.

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

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

Table N-2-27.
Interaction Table for α -1-C Hemoglobin (All Participants)
(Discrete)

a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-49)				
Stratum	Initial Dioxin Category Summary Statistics			Analysis Results for \log_2 (Initial Dioxin)
	Initial Dioxin	n	Percent Abnormal High	
Officer	Low	76	27.6	2.53 (1.15,5.57) 0.021
	Medium	31	38.7	
	High	1	100.0	
Enlisted Flyer	Low	35	40.0	0.80 (0.54,1.19) 0.267
	Medium	42	28.6	
	High	30	40.0	
Enlisted Groundcrew	Low	60	21.7	1.12 (0.91,1.37) 0.280
	Medium	94	31.9	
	High	137	25.6	

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-49)				
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)
	Current Dioxin	n	Percent Abnormal High	
Lean or Normal: $\leq 25\%$	Low	259	21.6	1.05 (0.93,1.17) 0.432
	Medium	209	23.4	
	High	184	24.5	
Obese: $> 25\%$	Low	37	24.3	1.32 (1.09,1.60) 0.005
	Medium	80	42.5	
	High	104	41.4	

Table N-2-27. (Continued)
Interaction Table for α -1-C Hemoglobin (All Participants)
(Discrete)

c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Body Fat: Table 18-49)				Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	Percent Abnormal High		Adjusted Relative Risk (95% C.I.) ^b	p-Value
		n	Abnormal High		
Lean or Normal: $\leq 25\%$	Low	258	21.7	0.98 (0.87,1.11)	0.754
	Medium	209	23.4		
	High	184	24.5		
Obese: $> 25\%$	Low	37	24.3	1.22 (1.00,1.49)	0.050
	Medium	80	42.5		
	High	104	41.4		

^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 N-2-28.
Interaction Table for α -1-C Hemoglobin (percent) (Diabetics)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Age: Table 18-50)						
Stratum	Occupational Category	Group	n	Adjusted Mean ^a	Difference of Adjusted Means (95% C.I.) ^b	p-Value ^c
<i>Born ≥ 1942</i>	<i>All</i>	<i>Ranch Hand</i>	31	10.60	1.00 --	0.087
		<i>Comparison</i>	45	9.60		
<i>Born < 1942</i>	<i>All</i>	<i>Ranch Hand</i>	106	10.28	-0.38 --	0.263
		<i>Comparison</i>	132	10.66		
<i>Born ≥ 1942</i>	Officer	Ranch Hand	3	10.01	0.06 --	0.974
		Comparison	4	9.95		
	Enlisted Flyer	Ranch Hand	4	10.04	0.75 --	0.629
		Comparison	6	9.29		
	Enlisted Groundcrew	Ranch Hand	24	11.15	1.21 --	0.084
		Comparison	35	9.94		
<i>Born < 1942</i>	Officer	Ranch Hand	50	10.34	0.04 --	0.929
		Comparison	54	10.30		
	Enlisted Flyer	Ranch Hand	20	10.10	-0.99 --	0.195
		Comparison	28	11.09		
	Enlisted Groundcrew	Ranch Hand	36	10.15	-0.54 --	0.334
		Comparison	50	10.69		

^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-values based on difference of means on natural logarithm scale.

Table N-2-29.
Interaction Table for α -1-C Hemoglobin (percent) (Nondiabetics)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Body Fat: Table 18-52)						
Stratum	Occupational Category	Group	n	Adjusted Mean ^a	Difference of Adjusted Means (95% C.I.) ^b	p-Value ^c
<i>Obese:</i> <i>>25%</i>	<i>All</i>	<i>Ranch Hand</i>	175	7.11	<i>-0.08 --</i>	<i>0.159</i>
		<i>Comparison</i>	243	7.19		
<i>Lean or Normal:</i> <i>≤25%</i>	<i>All</i>	<i>Ranch Hand</i>	620	7.05	<i>-0.01 --</i>	<i>0.793</i>
		<i>Comparison</i>	839	7.06		
<i>Obese:</i> <i>>25%</i>	Officer	Ranch Hand	59	6.99	<i>-0.17 --</i>	<i>0.092</i>
		Comparison	89	7.16		
		Enlisted Flyer	28	7.24	<i>0.00 --</i>	<i>0.978</i>
		Comparison	37	7.24		
	Enlisted Groundcrew	Ranch Hand	88	7.12	<i>-0.06 --</i>	<i>0.566</i>
		Comparison	117	7.18		
		Officer	247	6.95	<i>-0.01 --</i>	<i>0.776</i>
<i>Lean or Normal:</i> <i>≤25%</i>		Comparison	352	6.96		
Enlisted Flyer	Ranch Hand	107	7.09	<i>-0.06 --</i>	<i>0.505</i>	
	Comparison	126	7.15			
	Enlisted Groundcrew	266	7.10	<i>0.02 --</i>	<i>0.775</i>	
	Comparison	361	7.08			

b) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Race: Table 18-52)					
Stratum	Current Dioxin Category	Summary Statistics		Analysis Results for \log_2 (Current Dioxin + 1)	
		Current Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^d
Non-Black	Low	253	6.96	<i>-0.0026 (0.0028)</i>	<i>0.347</i>
	Medium	222	6.89		
	High	226	6.89		
Black	Low	11	7.34	<i>-0.0282 (0.0125)</i>	<i>0.024</i>
	Medium	17	7.21		
	High	12	6.87		

^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 based on difference of means on natural logarithm scale.

^d Slope and standard error based on natural logarithm of α -1-C hemoglobin versus \log_2 (current dioxin + 1).

Table N-2-30.
Interaction Table for Urinary Protein (Diabetics)

a) MODEL I: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Race: Table 18-54)						
Stratum	Occupational Category	Group	n	Percent Present	Adj. Relative Risk (95% C.I.)	p-Value
<i>Non-Black</i>	<i>All</i>	<i>Ranch Hand</i>	126	14.3	1.05 (0.51,2.19)	0.890
		<i>Comparison</i>	161	13.7		
<i>Black</i>	<i>All</i>	<i>Ranch Hand</i>	11	0.0	--	--
		<i>Comparison</i>	15	26.7		
<i>Non-Black</i>	Officer	<i>Ranch Hand</i>	53	13.2	1.07 (0.32,3.57)	0.910
		<i>Comparison</i>	58	12.1		
	Enlisted Flyer	<i>Ranch Hand</i>	20	15.0	2.15 (0.35,13.04)	0.407
		<i>Comparison</i>	28	7.1		
	Enlisted Groundcrew	<i>Ranch Hand</i>	53	15.1	0.84 (0.30,2.37)	0.743
		<i>Comparison</i>	75	17.3		
<i>Black</i>	Officer	<i>Ranch Hand</i>	0	0.0	--	--
		<i>Comparison</i>	0	0.0		
	Enlisted Flyer	<i>Ranch Hand</i>	4	0.0	--	--
		<i>Comparison</i>	6	16.7		
	Enlisted Groundcrew	<i>Ranch Hand</i>	7	0.0	--	--
		<i>Comparison</i>	9	33.3		

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

Table N-2-31.
Interaction Table for Serum Proinsulin (Diabetics)
(Discrete)

a) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-56)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Officer	Low	13	15.4	7.29 (1.46,36.42)	0.016
	Medium	30	43.3		
	High	5	60.0		
Enlisted Flyer	Low	1	0.0	1.81 (0.55,5.95)	0.330
	Medium	9	11.1		
	High	12	66.7		
Enlisted Groundcrew	Low	10	50.0	0.70 (0.47,1.04)	0.081
	Medium	12	41.7		
	High	33	45.5		

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-56)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Officer	Low	13	7.7	12.43 (2.45,62.98)	0.002
	Medium	26	38.5		
	High	11	63.6		
Enlisted Flyer	Low	1	0.0	2.01 (0.70,5.82)	0.196
	Medium	9	0.0		
	High	13	69.2		
Enlisted Groundcrew	Low	10	50.0	0.83 (0.62,1.11)	0.203
	Medium	15	40.0		
	High	32	46.9		

Table N-2-31. (Continued)
Interaction Table for Serum Proinsulin (Diabetics)
(Discrete)

c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-56)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Officer	Low	13	7.7	10.52 (1.76,62.96)	0.010
	Medium	26	38.5		
	High	11	63.6		
Enlisted Flyer	Low	1	0.0	1.78 (0.59,5.43)	0.308
	Medium	9	0.0		
	High	13	69.2		
Enlisted	Low	10	50.0	0.62 (0.42,0.92)	0.019
Groundcrew	Medium	15	40.0		
	High	32	46.9		

d) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Diabetic Severity: Table 18-56)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a	p-Value
No Treatment	Low	14	7.1	1.20 (0.73,1.95)	0.472
	Medium	28	10.7		
	High	24	50.0		
Diet Only	Low	3	66.7	0.51 (0.25,1.01)	0.055
	Medium	14	50.0		
	High	13	53.9		
Oral	Low	0	0.0	0.45 (0.21,0.94)	0.035
Hypoglycemic	Medium	4	75.0		
	High	13	76.9		
Insulin	Low	7	42.9	0.78 (0.49,1.23)	0.286
Dependent	Medium	4	75.0		
	High	6	33.3		

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

Note: Model 4: Low = ≤ 8.1 ppt; Medium = $> 8.1\text{--}20.5$ ppt; High = > 20.5 ppt.

Models 5 and 6: Low = ≤ 46 ppq; Medium = $> 46\text{--}128$ ppq; High = > 128 ppq.

Table N-2-32.
Interaction Table for Serum C Peptide (ng/ml) (Diabetics)
(Continuous)

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Occupation: Table 18-57)					
Stratum	Dioxin Category	n	Adjusted Mean	Difference of Adjusted Mean vs. Comparisons (95% C.I.)	p-Value
Officer	Comparison	51	6.52		
	Background RH	22	6.12	-0.40 (-2.51,1.71)	0.707
	Low RH	23	7.14	0.62 (-1.42,2.66)	0.553
	High RH	3	7.31	0.79 (-4.02,5.59)	0.749
Enlisted Flyer	Comparison	26	6.78		
	Background RH	1	3.17	-3.61 (-11.97,4.74)	0.398
	Low RH	10	6.39	-0.39 (-3.42,2.63)	0.799
	High RH	11	7.86	1.08 (-1.86,4.02)	0.472
Enlisted Groundcrew	Comparison	66	5.86		
	Background RH	13	6.42	0.56 (-1.94,3.06)	0.660
	Low RH	12	11.68	5.82 (3.29,8.35)	<0.001
	High RH	30	6.24	0.39 (-1.41,2.19)	0.673
	Low plus High RH	42	7.80	1.94 (0.34,3.55)	0.019

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 N-2-33.
Interaction Table for Serum C Peptide (Diabetics)
(Discrete)

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Age: Table 18-58)					
Stratum	Dioxin Category	n	Percent	Adjusted Relative Risk (95% C.I.) ^a	p-Value
			Abnormal High		
Born ≥ 1942	Comparison	34	58.8		
	Background RH	7	14.3	0.14 (0.01,1.69)	0.122
	Low RH	3	66.7	0.77 (0.04,14.06)	0.862
	High RH	19	68.4	4.19 (0.95,18.52)	0.059
	Low plus High RH	22	68.2	3.09 (0.79,12.00)	0.104
Born < 1942	Comparison	109	65.1		
	Background RH	32	65.6	1.17 (0.35,3.90)	0.804
	Low RH	43	69.8	2.81 (1.02,7.75)	0.046
	High RH	26	42.3	0.29 (0.08,1.07)	0.062
	Low plus High RH	69	59.4	1.25 (0.54,2.88)	0.601

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Age: Table 18-58)					
Current Dioxin Category Summary Statistics			Analysis Results for Log ₂ (Current Dioxin + 1)		
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^b	p-Value
Born ≥ 1942	Low	4	0.0	0.93 (0.58,1.51)	0.773
	Medium	5	60.0		
	High	19	68.4		
Born < 1942	Low	18	61.1	0.73 (0.51,1.04)	0.079
	Medium	44	65.9		
	High	35	54.3		

Table N-2-33. (Continued)
Interaction Table for Serum C Peptide (Diabetics)
(Discrete)

c) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Diabetic Severity: Table 18-58)				
Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^b
No Treatment or Diet Only	Low	15	73.3	0.62 (0.42,0.92) 0.017
	Medium	41	75.6	
	High	36	66.7	
Oral Hypoglycemic or Insulin Dependent	Low	7	0.0	1.08 (0.67,1.75) 0.752
	Medium	8	12.5	
	High	18	44.4	

d) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Age: Table 18-58)				
Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^b
Born ≥ 1942	Low	4	0.0	0.98 (0.60,1.60) 0.925
	Medium	5	60.0	
	High	19	68.4	
Born < 1942	Low	18	61.1	0.78 (0.52,1.16) 0.216
	Medium	44	65.9	
	High	35	54.3	

Table N-2-33. (Continued)
Interaction Table for Serum C Peptide (Diabetics)
(Discrete)

e) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Diabetic Severity: Table 18-58)					
Stratum	Current Dioxin Category Summary Statistics			Adjusted Relative Risk (95% C.I.) ^b	p-Value
	Current Dioxin	n	Percent Abnormal High		
No Treatment or Diet Only	Low	15	73.3	0.65 (0.42,1.00)	0.052
	Medium	41	75.6		
	High	36	66.7		
Oral Hypoglycemic or Insulin Dependent	Low	7	0.0	1.12 (0.68,1.85)	0.658
	Medium	8	12.5		
	High	18	44.4		

^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 \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.

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

Table N-2-34.
Interaction Table for Total Testosterone (ng/dl)
(Continuous)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Age: Table 18-59)						
Stratum	Occupational Category	Group	n	Adjusted Mean ^a	Difference of Adjusted Means (95% C.I.) ^b	p-Value ^c
<i>Born</i> <i>≥ 1942</i>	<i>All</i>	<i>Ranch Hand</i>	395	518.9	1.06 --	0.926
		<i>Comparison</i>	555	517.8		
<i>Born</i> <i>< 1942</i>	<i>All</i>	<i>Ranch Hand</i>	541	503.2	18.59 --	0.054
		<i>Comparison</i>	716	484.6		
<i>Born</i> <i>≥ 1942</i>	Officer	Ranch Hand	78	500.8	19.97 --	0.414
		Comparison	121	480.8		
	Enlisted Flyer	Ranch Hand	38	535.2	17.18 --	0.638
		Comparison	57	518.0		
	Enlisted Groundcrew	Ranch Hand	279	528.3	-7.78 --	0.574
		Comparison	377	536.1		
<i>Born</i> <i>< 1942</i>	Officer	Ranch Hand	279	493.1	14.48 --	0.273
		Comparison	379	478.6		
	Enlisted Flyer	Ranch Hand	123	520.0	45.52 --	0.029
		Comparison	143	474.5		
	Enlisted Groundcrew	Ranch Hand	139	495.7	4.55 --	0.808
		Comparison	194	491.1		

Table N-2-34. (Continued)
Interaction Table for Total Testosterone (ng/dl)
(Continuous)

b) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Personality Type: Table 18-59)				Analysis Results for Log ₂ (Initial Dioxin)	
Initial Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Initial Dioxin)	
Stratum	Initial Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^d	p-Value
Type A	Low	80	539.0	-0.5988 (0.2433)	0.015
	Medium	70	492.6		
	High	63	461.8		
Type B	Low	91	534.8	0.0392 (0.1816)	0.829
	Medium	100	509.3		
	High	110	505.2		

c) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-59)				Analysis Results for Log ₂ (Current Dioxin + 1)	
Current Dioxin Category Summary Statistics				Analysis Results for Log ₂ (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Adjusted Mean ^a	Adjusted Slope (Std. Error) ^d	p-Value
Officer	Low	188	531.2	-0.9913 (0.2791)	<0.001
	Medium	137	493.0		
	High	14	369.3		
Enlisted Flyer	Low	31	571.6	-0.6173 (0.2891)	0.035
	Medium	57	565.5		
	High	61	504.2		
Enlisted Groundcrew	Low	68	515.6	-0.1184 (0.1315)	0.369
	Medium	101	540.2		
	High	222	511.4		

Table N-2-34. (Continued)
Interaction Table for Total Testosterone (ng/dl)
(Continuous)

d) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-59)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Adjusted Mean^a	Adjusted Slope (Std. Error)^d	p-Value
Officer	Low	187	534.9	-0.7894 (0.2008)	<0.001
	Medium	133	488.2		
	High	19	385.6		
Enlisted Flyer	Low	33	563.4	-0.6092 (0.2386)	0.012
	Medium	56	554.4		
	High	60	515.2		
Enlisted Groundcrew	Low	72	522.7	-0.1864 (0.1158)	0.108
	Medium	104	536.3		
	High	215	509.3		

e) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-59)					
Stratum	Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
	Current Dioxin	n	Adjusted Mean^a	Adjusted Slope (Std. Error)^d	p-Value
Officer	Low	187	525.6	-0.7437 (0.2158)	0.001
	Medium	133	487.0		
	High	19	402.9		
Enlisted Flyer	Low	32	544.5	-0.3897 (0.2839)	0.172
	Medium	56	548.9		
	High	60	520.0		
Enlisted Groundcrew	Low	72	514.9	-0.0834 (0.1220)	0.495
	Medium	104	531.8		
	High	215	512.5		

^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.

^d Slope and standard error based on square root of total testosterone versus \log_2 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 N-2-35.
Interaction Table for Total Testosterone
(Discrete)

a) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Race: Table 18-60)						
Stratum	Occupational Category	Group	n	Percent Abnormal Low	Adjusted Relative Risk (95% C.I.)	p-Value
<i>Non-Black</i>	<i>All</i>	<i>Ranch Hand</i>	877	4.8	<i>0.89 (0.59,1.35)</i>	<i>0.597</i>
		<i>Comparison</i>	1,193	5.2		
<i>Black</i>	<i>All</i>	<i>Ranch Hand</i>	56	0.0	--	--
		<i>Comparison</i>	74	6.8		
<i>Non-Black</i>	Officer	<i>Ranch Hand</i>	348	4.6	<i>1.03 (0.53,2.00)</i>	<i>0.414</i>
		<i>Comparison</i>	494	4.7		
	Enlisted Flyer	<i>Ranch Hand</i>	150	4.0	<i>0.55 (0.19,1.60)</i>	<i>0.638</i>
		<i>Comparison</i>	186	5.9		
	Enlisted Groundcrew	<i>Ranch Hand</i>	379	5.3	<i>0.94 (0.52,1.73)</i>	<i>0.574</i>
		<i>Comparison</i>	513	5.7		
<i>Black</i>	Officer	<i>Ranch Hand</i>	7	0.0	--	--
		<i>Comparison</i>	6	0.0		
	Enlisted Flyer	<i>Ranch Hand</i>	10	0.0	--	--
		<i>Comparison</i>	14	0.0		
	Enlisted Groundcrew	<i>Ranch Hand</i>	39	0.0	--	--
		<i>Comparison</i>	54	0.0		

Table N-2-35. (Continued)
Interaction Table for Total Testosterone
(Discrete)

b) MODEL 1: RANCH HANDS VS. COMPARISONS — ADJUSTED (Group-by-Personality Type: Table 18-60)						
Stratum	Occupational Category	Group	n	Percent Abnormal Low	Adjusted Relative Risk (95% C.I.)	p-Value
<i>Type A</i>	<i>All</i>	<i>Ranch Hand</i>	408	5.6	<i>1.82 (0.95,3.49)</i>	<i>0.071</i>
		<i>Comparison</i>	527	3.4		
<i>Type B</i>	<i>All</i>	<i>Ranch Hand</i>	525	3.6	<i>0.48 (0.27,0.84)</i>	<i>0.011</i>
		<i>Comparison</i>	740	6.8		
<i>Type A</i>	Officer	Ranch Hand	175	6.3	2.01 (0.89,4.55)	0.092
		Comparison	223	2.2		
	Enlisted Flyer	Ranch Hand	60	3.3	1.24 (0.37,4.15)	0.730
		Comparison	86	4.7		
	Enlisted Groundcrew	Ranch Hand	173	5.8	1.86 (0.84,4.11)	0.125
		Comparison	218	4.1		
<i>Type B</i>	Officer	Ranch Hand	180	2.8	0.54 (0.24,1.22)	0.139
		Comparison	277	6.5		
	Enlisted Flyer	Ranch Hand	100	4.0	0.33 (0.11,1.01)	0.053
		Comparison	114	6.1		
	Enlisted Groundcrew	Ranch Hand	245	4.1	0.50 (0.25,1.02)	0.055
		Comparison	349	7.2		

Table N-2-35. (Continued)
Interaction Table for Total Testosterone
(Discrete)

c) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Occupation: Table 18-60)					
Stratum	Initial Dioxin Category Summary Statistics			Analysis Results for Log₂ (Initial Dioxin)	
	Initial Dioxin	n	Percent Abnormal Low	Adjusted Relative Risk (95% C.I.)^a	p-Value
Officer	Low	76	5.3	5.48 (1.53,19.67)	0.009
	Medium	33	12.1		
	High	1	100.0		
Enlisted Flyer	Low	36	0.0	1.14 (0.51,2.55)	0.754
	Medium	42	4.8		
	High	31	9.7		
Enlisted Groundcrew	Low	60	6.7	1.01 (0.70,1.45)	0.974
	Medium	95	2.1		
	High	141	7.1		

d) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Personality Type: Table 18-60)					
Stratum	Dioxin Category	n	Percent Abnormal Low	Adjusted Relative Risk (95% C.I.)^b	p-Value
Type A	Comparison	441	3.2		
	Background RH	168	4.2	1.58 (0.60,4.15)	0.040
	Low RH	113	6.2	1.83 (0.69,4.86)	0.024
	High RH	100	7.0	2.39 (0.90,6.34)	0.880
	Low plus High RH	213	6.6	2.08 (0.94,4.56)	0.116
Type B	Comparison	614	6.7		
	Background RH	196	1.5	0.28 (0.09,0.94)	0.350
	Low RH	142	2.8	0.29 (0.10,0.85)	0.227
	High RH	159	7.5	0.95 (0.46,1.94)	0.080
	Low plus High RH	301	5.3	0.60 (0.32,1.13)	0.069

Table N-2-35. (Continued)
Interaction Table for Total Testosterone
(Discrete)

e) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-60)				Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin Category	Summary Statistics		Adjusted Relative Risk (95% C.I.) ^c	p-Value
Officer	Low	188	2.7	2.83 (1.25,6.42)	0.012
	Medium	137	5.1		
	High	14	28.6		
Enlisted Flyer	Low	31	0.0	1.28 (0.61,2.69)	0.523
	Medium	56	0.0		
	High	61	8.2		
Enlisted	Low	68	2.9	0.94 (0.68,1.30)	0.691
Groundcrew	Medium	101	5.0		
	High	222	5.4		

^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 \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.

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

Table N-2-36.
Interaction Table for Estradiol
(Discrete)

a) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-66)					
Current Dioxin Category Summary Statistics				Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Officer	Low	193	3.1	0.56 (0.29,1.08)	0.082
	Medium	141	2.1		
	High	14	7.1		
Enlisted Flyer	Low	31	9.7	0.62 (0.32,1.20)	0.158
	Medium	57	3.5		
	High	62	1.6		
Enlisted	Low	71	1.4	1.55 (1.09,2.21)	0.015
Groundcrew	Medium	102	3.9		
	High	223	4.5		

b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-66)					
Current Dioxin Category Summary Statistics				Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a	p-Value
Officer	Low	192	2.6	0.74 (0.48,1.12)	0.156
	Medium	136	2.2		
	High	20	10.0		
Enlisted Flyer	Low	33	9.1	0.71 (0.43,1.17)	0.184
	Medium	56	3.6		
	High	61	1.6		
Enlisted	Low	75	1.3	1.45 (1.04,2.01)	0.026
Groundcrew	Medium	105	4.8		
	High	216	4.2		

Table N-2-36. (Continued)
Interaction Table for Estradiol
(Discrete)

c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED (Current Dioxin-by-Occupation: Table 18-66)				
Current Dioxin Category Summary Statistics			Analysis Results for \log_2 (Current Dioxin + 1)	
Stratum	Current Dioxin	n	Percent Abnormal High	Adjusted Relative Risk (95% C.I.) ^a
Officer	Low	192	2.6	0.71 (0.47,1.07) 0.103
	Medium	136	2.2	
	High	20	10.0	
Enlisted Flyer	Low	32	9.4	0.59 (0.31,1.12) 0.108
	Medium	56	3.6	
	High	61	1.6	
Enlisted Groundcrew	Low	75	1.3	1.39 (1.00,1.94) 0.052
	Medium	105	4.8	
	High	216	4.2	

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

Note: Model 4: Low = ≤ 8.1 ppt; Medium = $> 8.1\text{-}20.5$ ppt; High = > 20.5 ppt.

Models 5 and 6: Low = ≤ 46 ppq; Medium = $> 46\text{-}128$ ppq; High = > 128 ppq.