Table Q-1-19. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Model 3: Ranch Hands and Comparisons by Dioxin Category

Table Ref.	Clinical Parameter	Dioxin Category	n	Adj. Relative Risk (95% C.I.)[ab]	p-Value[a]
18-22	Thyroxine (T_4)	Comparison	1,027		
		Background RH	365	0.52 (0.11,2.54)	0.423
		Low RH	254	0.45 (0.06,3.69)	0.459
		High RH	255	2.15 (0.36,12.81)	0.400
		Low plus High RH	509	0.91 (0.23,3.57)	0.895
18-23	Anti-Thyroid Antibodies	Comparison	1,027		
		Background RH	365	1.48 (0.74,2.94)	0.266
		Low RH	254	1.97 (0.97,3.98)	0.060
		High RH	255	1.64 (0.78,3.48)	0.195
		Low plus High RH	509	1.80 (1.00,3.24)	0.048
18-25	Fasting Glucose (All Participants)	Comparison	1,045		
		Background RH	368	0.80 (0.53,1.21)	0.281
		Low RH	252	1.09 (0.73,1.62)	0.684
		High RH	254	1.18 (0.78,1.80)	0.430
		Low plus High RH	506	1.13 (0.82,1.56)	0.450
18-27	Fasting Glucose (Diabetics)	Comparison	147		
		Background RH	39	1.08 (0.48,2.46)**	0.847**
		Low RH	48	0.82 (0.38,1.77)**	0.615**
		High RH	46	1.07 (0.47,2.43)**	0.871**
		Low plus High RH	94	0.93 (0.50,1.72)**	0.813**
18-29	Fasting Glucose (Nondiabetics)	Comparison	898		
		Background RH	329	0.71 (0.33,1.52)	0.373
		Low RH	204	1.15 (0.56,2.39)	0.705
		High RH	208	0.58 (0.22,1.56)	0.284
		Low plus High RH	412	0.88 (0.47,1.66)	0.701
18-31	2-Hour Postprandial Glucose (Nondiabetics)	Comparison	896		
		Background RH	328	0.99 (0.63,1.54)	0.961
		Low RH	203	1.24 (0.79,1.96)	0.352
		High RH	208	1.67 (1.07,2.59)	0.023
		Low plus High RH	411	1.44 (1.02,2.04)	0.040
18-32	Fasting Urinary Glucose (All Participants)	Comparison	1,058		
		Background RH	374	0.64 (0.26,1.56)**	0.327**
		Low RH	256	0.72 (0.32,1.64)**	0.431**
		High RH	259	1.66 (0.84,3.28)**	0.141**
		Low plus High RH	515	1.14 (0.64,2.02)**	0.661**
18-33	Fasting Urinary Glucose (Diabetics)	Comparison	146		
		Background RH	39	****	****
		Low RH	48	****	****
		High RH	46	****	****
		Low plus High RH	94	****	****

Table Q-1-19. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Model 3: Ranch Hands and Comparisons by Dioxin Category

Table Ref.	Clinical Parameter	Dioxin Category	n	Adj. Relative Risk (95% C.I.)[ab]	p-Value[a]
18-34	Fasting Urinary Glucose (Nondiabetics)	Comparison	--		
		Background RH	--	--	--
		Low RH	--	--	--
		High RH	--	--	--
		Low plus High RH	--	--	--
18-35	2-Hour Postprandial Urinary Glucose (Nondiabetics)	Comparison	910		
		Background RH	331	1.09 (0.77,1.54)	0.620
		Low RH	208	1.08 (0.73,1.60)	0.699
		High RH	213	1.21 (0.83,1.77)	0.315
		Low plus High RH	421	1.15 (0.85,1.55)	0.366
18-39	Serum Insulin (Diabetics)	Comparison	148		
		Background RH	42	1.16 (0.52,2.61)**	0.719**
		Low RH	49	1.96 (0.87,4.40)**	0.105**
		High RH	47	0.76 (0.35,1.66)**	0.491**
		Low plus High RH	96	1.21 (0.66,2.21)**	0.535**
18-43	Serum Glucagon (All Participants)	Comparison	--		
		Background RH	--	--	--
		Low RH	--	--	--
		High RH	--	--	--
		Low plus High RH	--	--	--
18-45	Serum Glucagon (Diabetics)	Comparison	--		
		Background RH	--	--	--
		Low RH	--	--	--
		High RH	--	--	--
		Low plus High RH	--	--	--
18-47	Serum Glucagon (Nondiabetics)	Comparison	--		
		Background RH	--	--	--
		Low RH	--	--	--
		High RH	--	--	--
		Low plus High RH	--	--	--
18-49	α-1-C Hemoglobin (All Participants)	Comparison	1,045		
		Background RH	368	1.07 (0.79,1.44)	0.675
		Low RH	252	1.02 (0.74,1.41)	0.898
		High RH	254	1.07 (0.77,1.49)	0.699
		Low plus High RH	506	1.04 (0.81,1.34)	0.742
18-51	α-1-C Hemoglobin (Diabetics)	Comparison	148		
		Background RH	42	0.96 (0.40,2.32)	0.935
		Low RH	49	1.52 (0.61,3.84)	0.371
		High RH	47	2.16 (0.81,5.78)	0.126
		Low plus High RH	96	1.80 (0.87,3.72)	0.113

Table Q-1-19. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Model 3: Ranch Hands and Comparisons by Dioxin Category

Table Ref.	Clinical Parameter	Dioxin Category	n	Adj. Relative Risk (95% C.I.)[ab]	p-Value[a]
18-53	α-1-C Hemoglobin (Nondiabetics)	Comparison	898		
		Background RH	329	1.10 (0.78,1.56)	0.580
		Low RH	204	0.84 (0.56,1.26)	0.395
		High RH	208	0.82 (0.54,1.26)	0.372
		Low plus High RH	412	0.83 (0.60,1.14)	0.255
18-54	Urinary Protein (Diabetics)	Comparison	146		
		Background RH	39	1.48 (0.52,4.23)	0.463
		Low RH	48	0.39 (0.12,1.30)	0.125
		High RH	46	0.80 (0.28,2.28)	0.676
		Low plus High RH	94	0.57 (0.25,1.32)	0.190
18-56	Serum Proinsulin (Diabetics)	Comparison	143		
		Background RH	39	0.57 (0.24,1.40)	0.221
		Low RH	46	0.99 (0.46,2.12)	0.979
		High RH	45	0.82 (0.36,1.83)	0.617
		Low plus High RH	91	0.91 (0.49,1.68)	0.749
18-58	Serum C Peptide (Diabetics)	Comparison	143		
		Background RH	39	****	****
		Low RH	46	****	****
		High RH	45	****	****
		Low plus High RH	91	****	****
18-60	Total Testosterone	Comparison	1,055		
		Background RH	364	0.64 (0.32,1.30)**	0.222**
		Low RH	255	0.65 (0.32,1.30)**	0.222**
		High RH	259	1.29 (0.73,2.29)**	0.386**
		Low plus High RH	514	0.95 (0.59,1.54)**	0.830**
18-62	Free Testosterone	Comparison	1,055		
		Background RH	364	0.74 (0.52,1.05)	0.089
		Low RH	255	0.72 (0.49,1.06)	0.093
		High RH	259	0.90 (0.63,1.30)	0.588
		Low plus High RH	514	0.81 (0.61,1.08)	0.147
18-63	Sex Hormone Binding Globulin	Comparison	1,055		
		Background RH	364	1.03 (0.75,1.41)	0.845
		Low RH	255	0.74 (0.51,1.08)	0.199
		High RH	259	0.73 (0.50,1.06)	0.101
		Low plus High RH	514	0.73 (0.55,0.98)	0.038
18-64	Total Testosterone to Sex Hormone Binding Globulin Ratio	Comparison	1,056		
		Background RH	364	0.78 (0.50,1.21)	0.263
		Low RH	256	0.90 (0.57,1.44)	0.671
		High RH	259	1.19 (0.75,1.91)	0.457
		Low plus High RH	515	1.03 (0.72,1.48)	0.865

Table Q-1-19. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Model 3: Ranch Hands and Comparisons by Dioxin Category

Table Ref.	Clinical Parameter	Dioxin Category	n	Adj. Relative Risk (95% C.I.)[ab]	p-Value[a]
18-66	Estradiol	Comparison	1,063		
		Background RH	374	0.65 (0.32,1.31)	0.230
		Low RH	260	0.82 (0.41,1.66)	0.590
		High RH	260	0.82 (0.42,1.62)	0.569
		Low plus High RH	520	0.82 (0.49,1.40)	0.469
18-68	Luteinizing Hormone (LH)	Comparison	1,063		
		Background RH	374	0.99 (0.44,2.21)	0.978
		Low RH	260	0.45 (0.13,1.56)	0.208
		High RH	260	0.74 (0.22,2.58)	0.640
		Low plus High RH	520	0.56 (0.22,1.43)	0.226
18-70	Follicle Stimulating Hormone (FSH)	Comparison	1,063		
		Background RH	374	1.32 (0.75,2.32)	0.341
		Low RH	260	1.47 (0.79,2.75)	0.230
		High RH	260	1.25 (0.58,2.66)	0.569
		Low plus High RH	520	1.38 (0.81,2.35)	0.242
19-4	Composite Skin Test Diagnosis	Comparison	1,004		
		Background RH	356	1.80 (1.01,3.20)**	0.047**
		Low RH	249	1.41 (0.67,2.97)**	0.363**
		High RH	250	0.78 (0.30,2.06)**	0.435**
		Low plus High RH	499	1.11 (0.59,2.12)**	0.744**
19-15	Double Labelled Cells: CD5 with CD20 (Zero vs. Nonzero)	Comparison	400		
		Background RH	140	0.49 (0.16,1.53)	0.219
		Low RH	95	2.05 (0.82,5.13)	0.126
		High RH	106	1.29 (0.41,4.07)	0.666
		Low plus High RH	201	1.70 (0.77,3.77)	0.187
19-16	Double Labelled Cells: CD4 with CD8 (Zero vs. Nonzero)	Comparison	404		
		Background RH	141	1.15 (0.61,2.18)	0.671
		Low RH	95	1.18 (0.56,2.49)	0.622
		High RH	108	0.94 (0.48,1.86)	0.867
		Low plus High RH	203	1.04 (0.60,1.79)	0.893
19-17	Double Labelled Cells: CD3 with CD16+56 (Zero vs. Nonzero)	Comparison	403		
		Background RH	141	0.77 (0.25,2.41)	0.652
		Low RH	95	0.70 (0.15,3.17)	0.642
		High RH	108	1.85 (0.71,4.81)	0.204
		Low plus High RH	203	1.35 (0.57,3.20)	0.501
19-22	Lupus Panel: Antinuclear Antibody (ANA)	Comparison	1,033		
		Background RH	361	****	****
		Low RH	250	****	****
		High RH	248	****	****
		Low plus High RH	498	****	****

Table Q-1-19. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Model 3: Ranch Hands and Comparisons by Dioxin Category

Table Ref.	Clinical Parameter	Dioxin Category	n	Adj. Relative Risk (95% C.I.)[ab]	p-Value[a]
19-23	Lupus Panel: Thyroid Microsomal Antibody	Comparison	1,033		
		Background RH	361	****	****
		Low RH	250	****	****
		High RH	248	****	****
		Low plus High RH	498	****	****
19-24	Lupus Panel: MSK Smooth Muscle Antibody	Comparison	1,051		
		Background RH	367	1.27 (0.67,2.43)	0.467
		Low RH	256	1.27 (0.63,2.58)	0.503
		High RH	255	0.37 (0.11,1.23)	0.105
		Low plus High RH	511	0.84 (0.44,1.60)	0.594
19-25	Lupus Panel: MSK Mitochondrial Antibody	Comparison	--		
		Background RH	--	--	--
		Low RH	--	--	--
		High RH	--	--	--
		Low plus High RH	--	--	--
19-26	Lupus Panel: MSK Parietal Antibody	Comparison	1,035		
		Background RH	365	0.55 (0.21,1.45)	0.226
		Low RH	253	1.21 (0.54,2.74)	0.643
		High RH	251	1.01 (0.40,2.51)	0.989
		Low plus High RH	504	1.12 (0.57,2.18)	0.750
19-27	Lupus Panel: Rheumatoid Factor	Comparison	1,035		
		Background RH	365	0.95 (0.68,1.32)**	0.744**
		Low RH	253	1.08 (0.75,1.55)**	0.670**
		High RH	251	0.62 (0.40,0.97)**	0.035**
		Low plus High RH	504	0.86 (0.63,1.16)**	0.312**
19-28	Lupus Panel: B Cell Clones Detected by Serum Protein Electrophoresis	Comparison	1,051		
		Background RH	367	1.79 (0.84,3.83)	0.134
		Low RH	256	0.70 (0.23,2.07)	0.514
		High RH	255	1.36 (0.51,3.64)	0.534
		Low plus High RH	511	0.97 (0.44,2.13)	0.943
19-29	Lupus Panel: Other Antibodies (ANA and MSK)	Comparison	1,046		
		Background RH	365	0.77 (0.40,1.49)	0.438
		Low RH	255	0.54 (0.23,1.29)	0.168
		High RH	254	0.78 (0.38,1.63)	0.510
		Low plus High RH	509	0.66 (0.37,1.21)	0.180
19-30	Lupus Panel: Summary Index	Comparison	1,048		
		Background RH	366	0.90 (0.70,1.15)	0.397
		Low RH	255	0.89 (0.67,1.18)	0.408
		High RH	254	0.70 (0.52,0.94)	0.019
		Low plus High RH	509	0.79 (0.63,0.99)	0.040

Table Q-1-19. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Model 3: Ranch Hands and Comparisons by Dioxin Category

Table Ref.	Clinical Parameter	Dioxin Category	n	Adj. Relative Risk (95% C.I.)[ab]	p-Value[a]
20-3	Asthma	Comparison	1,054		
		Background RH	369	1.48 (0.77,2.84)	0.237
		Low RH	257	1.29 (0.58,2.85)	0.534
		High RH	257	1.28 (0.58,2.82)	0.547
		Low plus High RH	514	1.28 (0.69,2.38)	0.431
20-4	Bronchitis	Comparison	1,038		
		Background RH	363	1.40 (1.02,1.91)	0.036
		Low RH	251	0.98 (0.68,1.41)	0.917
		High RH	254	0.96 (0.66,1.40)	0.841
		Low plus High RH	505	0.97 (0.73,1.29)	0.844
20-5	Pneumonia	Comparison	1,018		
		Background RH	349	0.85 (0.57,1.26)	0.421
		Low RH	243	0.59 (0.36,0.97)	0.038
		High RH	252	0.50 (0.29,0.86)	0.012
		Low plus High RH	495	0.55 (0.37,0.81)	0.002
20-6	Thorax and Lung Abnormalities	Comparison	1,061		
		Background RH	373	1.68 (1.12,2.50)	0.011
		Low RH	260	1.10 (0.69,1.75)	0.683
		High RH	260	1.26 (0.80,1.99)	0.316
		Low plus High RH	520	1.18 (0.82,1.69)	0.368
20-7	X Ray Interpretation	Comparison	1,063		
		Background RH	374	1.12 (0.79,1.59)**	0.530**
		Low RH	260	0.92 (0.62,1.38)**	0.690**
		High RH	259	0.79 (0.51,1.21)**	0.279**
		Low plus High RH	519	0.86 (0.62,1.18)**	0.343**

[a] Adjusted for percent body fat at the time of duty in SEA, change in percent body fat from the time of duty in SEA to the date of the blood draw for dioxin, and covariates specified in the referenced chapter table.

[b] Relative risk and confidence interval relative to Comparisons.

** Categorized dioxin-by-covariate interaction ($p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction.

**** Categorized dioxin-by-covariate interaction ($p \leq 0.01$); adjusted relative risk, confidence interval, and p-value not presented.

--: Adjusted analysis not performed due to sparse number of abnormalities; sample size, adjusted relative risk, confidence interval, and p-value not presented due to the sparse number of abnormalities.

Note: RH = Ranch Hand.
Comparison: Current Dioxin ≤ 10 ppt.
Background (Ranch Hand): Current Dioxin ≤ 10 ppt.
Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.
High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

Table Q-1-20.
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
9-3	Self-Perception of Health	4	1.17 (0.99,1.38)**	0.065**
		5	1.18 (1.02,1.37)**	0.024**
		6	1.09 (0.93,1.27)**	0.291**
9-4	Appearance of Illness or Distress	4	0.95 (0.66,1.36)**	0.779**
		5	0.92 (0.69,1.24)**	0.596**
		6	0.89 (0.65,1.22)**	0.484**
9-5	Relative Age Appearance	4	0.97 (0.78,1.21)**	0.785**
		5	0.95 (0.79,1.14)	0.591
		6	0.95 (0.77,1.16)	0.599
9-8	Body Fat	4	1.45 (1.28,1.65)**	<0.001**
		5	1.37 (1.25,1.51)	<0.001
		6	1.36 (1.22,1.51)	<0.001
9-9	Body Fat with Adjustment for Caloric Intake	4	1.44 (1.27,1.64)**	<0.001**
		5	1.37 (1.24,1.50)	<0.001
		6	1.35 (1.22,1.49)	<0.001
9-11	Sedimentation Rate	4	1.12 (0.98,1.28)	0.090
		5	1.19 (1.07,1.33)	0.001
		6	1.08 (0.95,1.21)	0.223
10-3	Skin Neoplasms	4	0.90 (0.81,1.00)	0.056
		5	0.94 (0.86,1.03)**	0.175**
		6	0.88 (0.79,0.97)**	0.008**
10-4	Malignant Skin Neoplasms	4	0.94 (0.81,1.09)	0.428
		5	0.99 (0.87,1.12)	0.819
		6	0.92 (0.80,1.06)	0.234
10-5	Benign Skin Neoplasms	4	0.88 (0.78,0.99)	0.034
		5	0.91 (0.82,1.01)**	0.075**
		6	0.87 (0.78,0.97)**	0.012**
10-6	Skin Neoplasms of Uncertain Behavior or Unspecified Nature	4	--	--
		5	--	--
		6	--	--
10-7	Basal Cell Carcinomas (All Sites Combined)	4	0.93 (0.79,1.09)	0.350
		5	0.97 (0.85,1.11)	0.669
		6	0.91 (0.78,1.05)**	0.194**
10-8	Basal Cell Carcinomas (Ear, Face, Head, and Neck)	4	0.88 (0.73,1.05)	0.151
		5	0.93 (0.81,1.08)	0.347
		6	0.87 (0.74,1.02)	0.079
10-9	Basal Cell Carcinomas (Trunk)	4	1.09 (0.83,1.43)**	0.551**
		5	1.05 (0.82,1.33)**	0.713**
		6	1.07 (0.83,1.38)**	0.613**

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands − Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
10-10	Basal Cell Carcinomas (Upper Extremities)	4	0.88 (0.59,1.32)	0.538
		5	0.93 (0.68,1.27)	0.643
		6	0.92 (0.64,1.30)	0.620
10-11	Basal Cell Carcinomas (Lower Extremities)	4	--	--
		5	--	--
		6	--	--
10-12	Squamous Cell Carcinomas	4	0.98 (0.64,1.50)	0.921
		5	1.03 (0.72,1.48)	0.864
		6	1.01 (0.69,1.46)	0.970
10-13	Nonmelanomas	4	0.93 (0.79,1.08)	0.319
		5	0.98 (0.86,1.11)	0.692
		6	0.91 (0.79,1.04)	0.176
10-14	Melanomas	4	1.01 (0.64,1.57)	0.982
		5	1.01 (0.69,1.48)	0.950
		6	1.03 (0.69,1.54)	0.869
10-15	Systemic Neoplasms	4	1.10 (0.97,1.23)	0.130
		5	1.08 (0.98,1.20)	0.135
		6	1.08 (0.97,1.20)	0.185
10-16	Malignant Systemic Neoplasms	4	1.06 (0.85,1.37)**	0.537**
		5	1.10 (0.90,1.35)**	0.359**
		6	1.08 (0.87,1.34)**	0.506**
10-17	Benign Systemic Neoplasms	4	1.01 (0.89,1.15)	0.841
		5	1.00 (0.90,1.12)	0.940
		6	1.01 (0.90,1.14)	0.870
10-18	Systemic Neoplasms of Uncertain Behavior or Unspecified Nature	4	0.92 (0.62,1.37)**	0.689**
		5	0.91 (0.66,1.25)**	0.552**
		6	0.86 (0.61,1.21)**	0.389**
10-19	Malignant Systemic Neoplasms (Eye, Ear, Face, Head, and Neck)	4	1.11 (0.70,1.75)	0.672
		5	1.05 (0.71,1.58)	0.795
		6	1.17 (0.76,1.81)	0.489
10-20	Malignant Systemic Neoplasms (Oral Cavity, Pharynx, and Larynx)	4	1.79 (0.96,3.33)	0.076
		5	1.72 (0.96,3.09)	0.070
		6	1.73 (0.94,3.19)	0.087
10-21	Malignant Systemic Neoplasms (Esophagus)	4	--	--
		5	--	--
		6	--	--
10-22	Malignant Systemic Neoplasms (Brain)	4	--	--
		5	--	--
		6	--	--

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
10-23	Malignant Systemic Neoplasms (Thymus, Heart, and Mediastinum)	4	0.40 (0.08,2.03)	0.232
		5	0.53 (0.21,1.33)	0.216
		6	0.61 (0.18,2.09)	0.448
10-24	Malignant Systemic Neoplasms (Thyroid Gland)	4	0.87 (0.32,2.36)	0.774
		5	0.90 (0.38,2.11)	0.804
		6	0.91 (0.37,2.25)	0.843
10-25	Malignant Systemic Neoplasms (Bronchus and Lung)	4	0.97 (0.54,1.75)	0.906
		5	1.06 (0.66,1.70)	0.817
		6	0.89 (0.53,1.49)	0.668
10-26	Malignant Systemic Neoplasms (Colon and Rectum)	4	1.34 (0.65,2.73)	0.440
		5	1.44 (0.78,2.65)	0.250
		6	1.21 (0.61,2.43)	0.589
10-27	Malignant Systemic Neoplasms (Kidney and Bladder)	4	1.03 (0.58,1.82)	0.914
		5	1.09 (0.67,1.77)	0.731
		6	0.99 (0.58,1.71)	0.978
10-28	Malignant Systemic Neoplasms (Prostate)	4	1.04 (0.68,1.58)**	0.862**
		5	1.08 (0.76,1.55)**	0.662**
		6	1.02 (0.70,1.49)**	0.924**
10-29	Malignant Systemic Neoplasms (Testicles)	4	1.24 (0.60,2.57)	0.532
		5	1.33 (0.69,2.57)	0.384
		6	1.16 (0.57,2.36)	0.691
10-30	Malignant Systemic Neoplasms (Ill-Defined Sites)	4	--	--
		5	--	--
		6	--	--
10-31	Malignant Systemic Neoplasms (Connective and Other Soft Tissue)	4	--	--
		5	--	--
		6	--	--
10-32	Carcinomas in Situ of the Penis, Other, and Unspecified Sites	4	--	--
		5	--	--
		6	--	--
10-33	Hodgkin's Disease	4	0.74 (0.11,4.90)	0.746
		5	0.70 (0.13,3.61)	0.661
		6	0.73 (0.12,4.43)	0.725
10-34	Leukemia	4	--	--
		5	--	--
		6	--	--
10-35	Non-Hodgkin's Lymphoma	4	0.52 (0.09,3.05)	0.480
		5	0.59 (0.18,1.94)	0.430
		6	0.52 (0.11,2.39)	0.440

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands − Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
10-36	Other Malignant Systemic Neoplasms of Lymphoid and Histiocytic Tissue	4	0.52 (0.09,3.05)	0.480
		5	0.59 (0.18,1.94)	0.430
		6	0.52 (0.11,2.39)	0.440
10-37	Multiple Myeloma	4	--	--
		5	--	--
		6	--	--
10-38	Skin or Systemic Neoplasms	4	0.98 (0.89,1.08)**	0.651**
		5	1.00 (0.92,1.09)**	0.970**
		6	0.96 (0.87,1.04)**	0.313**
10-39	Prostate-Specific Antigen (Below vs. At or Above Sensitivity Limit)	4	0.99 (0.75,1.32)	0.962
		5	1.04 (0.82,1.33)	0.722
		6	0.97 (0.75,1.26)	0.834
10-41	Prostate-Specific Antigen	4	1.08 (0.81,1.44)**	0.593**
		5	1.12 (0.87,1.44)**	0.384**
		6	1.07 (0.82,1.40)**	0.610**
11-3	Inflammatory Diseases	4	1.10 (0.57,2.10)	0.781
		5	1.06 (0.60,1.88)	0.833
		6	1.13 (0.61,2.09)	0.706
11-4	Hereditary and Degenerative Diseases	4	0.79 (0.63,0.98)	0.030
		5	0.83 (0.70,0.98)	0.033
		6	0.76 (0.62,0.93)	0.009
11-5	Peripheral Disorders	4	1.10 (0.95,1.28)**	0.204**
		5	1.07 (0.94,1.21)**	0.311**
		6	1.09 (0.95,1.25)**	0.202**
11-6	Other Neurological Disorders	4	0.96 (0.84,1.09)	0.547
		5	0.94 (0.84,1.05)	0.268
		6	0.99 (0.88,1.11)	0.834
11-7	Smell	4	0.61 (0.39,0.93)	0.018
		5	0.69 (0.52,0.91)	0.015
		6	0.68 (0.50,0.92)	0.019
11-8	Visual Fields	4	--	--
		5	--	--
		6	--	--
11-9	Light Reaction	4	1.38 (0.80,2.39)	0.260
		5	1.37 (0.83,2.26)	0.221
		6	1.30 (0.76,2.23)	0.346
11-10	Ocular Movement	4	1.07 (0.64,1.79)	0.786
		5	1.08 (0.69,1.69)	0.735
		6	1.07 (0.66,1.72)	0.786

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
11-11	Facial Sensation	4	1.52 (0.76,3.04)	0.251
		5	1.47 (0.77,2.78)	0.248
		6	1.50 (0.76,2.98)	0.253
11-12	Jaw Clench	4	--	--
		5	--	--
		6	--	--
11-13	Smile	4	1.49 (0.97,2.28)	0.079
		5	1.38 (0.93,2.05)	0.115
		6	1.51 (0.99,2.31)	0.062
11-14	Palpebral Fissure	4	1.09 (0.70,1.68)	0.717
		5	1.06 (0.72,1.56)	0.761
		6	1.11 (0.73,1.68)	0.629
11-15	Balance	4	1.26 (0.66,2.42)	0.490
		5	1.25 (0.70,2.22)	0.455
		6	1.20 (0.65,2.24)	0.565
11-16	Gag Reflex	4	--	--
		5	--	--
		6	--	--
11-17	Speech	4	1.05 (0.57,1.92)	0.882
		5	1.05 (0.62,1.78)	0.858
		6	1.04 (0.58,1.85)	0.903
11-18	Palate and Uvula Movement	4	--	--
		5	--	--
		6	--	--
11-19	Neck Range of Motion	4	1.14 (0.96,1.35)	0.127
		5	1.12 (0.97,1.30)	0.112
		6	1.12 (0.95,1.31)	0.166
11-20	Cranial Nerve Index Without Range of Motion	4	0.97 (0.77,1.24)	0.815
		5	0.96 (0.79,1.18)	0.713
		6	0.96 (0.77,1.19)	0.693
11-21	Pin Prick	4	1.17 (0.91,1.50)**	0.220**
		5	1.15 (0.93,1.43)**	0.195**
		6	1.17 (0.92,1.48)**	0.186**
11-22	Light Touch	4	1.15 (0.89,1.48)	0.272
		5	1.15 (0.93,1.44)	0.192
		6	1.14 (0.90,1.44)	0.284
11-23	Muscle Status	4	1.06 (0.81,1.40)	0.661
		5	1.05 (0.83,1.33)	0.692
		6	1.07 (0.83,1.38)	0.604

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
11-24	Patellar Reflex	4	1.55 (0.99,2.41)	0.058
		5	1.41 (0.94,2.12)	0.098
		6	1.58 (1.03,2.45)	0.039
11-25	Achilles Reflex	4	1.08 (0.89,1.32)	0.411
		5	1.06 (0.90,1.25)	0.487
		6	1.06 (0.89,1.27)	0.515
11-26	Biceps Reflex	4	1.76 (0.87,3.55)	0.115
		5	1.43 (0.78,2.65)	0.245
		6	1.98 (0.95,4.14)	0.059
11-27	Babinski Reflex	4	0.43 (0.19,0.98)	0.039
		5	0.59 (0.35,0.98)	0.062
		6	0.60 (0.34,1.05)	0.092
11-30	Tremor	4	0.95 (0.70,1.29)**	0.735**
		5	0.98 (0.78,1.24)	0.898
		6	0.96 (0.75,1.24)	0.750
11-31	Coordination	4	1.04 (0.75,1.45)	0.809
		5	1.05 (0.79,1.39)	0.734
		6	1.02 (0.75,1.38)	0.919
11-32	Romberg Sign	4	1.26 (0.66,2.42)	0.490
		5	1.25 (0.70,2.22)	0.455
		6	1.20 (0.65,2.24)	0.565
11-33	Gait	4	0.94 (0.71,1.24)	0.662
		5	0.96 (0.76,1.22)	0.753
		6	0.95 (0.73,1.22)	0.673
11-34	Central Nervous System (CNS) Index	4	0.93 (0.75,1.16)	0.519
		5	0.97 (0.81,1.17)	0.766
		6	0.92 (0.76,1.12)	0.407
12-3	Psychoses	4	1.00 (0.76,1.32)	0.983
		5	1.04 (0.82,1.32)	0.749
		6	0.98 (0.76,1.27)	0.881
12-4	Alcohol Dependence	4	0.86 (0.72,1.03)	0.097
		5	0.89 (0.77,1.03)	0.122
		6	0.84 (0.72,0.99)	0.036
12-5	Drug Dependence	4	--	--
		5	--	--
		6	--	--
12-6	Anxiety	4	0.94 (0.82,1.07)	0.343
		5	0.96 (0.85,1.08)	0.495
		6	0.92 (0.81,1.04)	0.197

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands − Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
12-7	Other Neuroses	4	0.98 (0.88,1.10)**	0.777**
		5	1.01 (0.92,1.11)**	0.816**
		6	0.95 (0.85,1.05)**	0.301**
12-8	SCL-90-R Anxiety	4	1.13 (0.96,1.34)**	0.146**
		5	1.15 (0.99,1.34)**	0.069**
		6	1.10 (0.94,1.30)**	0.240**
12-9	SCL-90-R Depression	4	1.00 (0.86,1.18)**	0.961**
		5	1.02 (0.89,1.17)**	0.783**
		6	0.95 (0.82,1.10)**	0.507**
12-10	SCL-90-R Hostility	4	1.08 (0.89,1.33)	0.431
		5	1.10 (0.92,1.32)	0.275
		6	1.05 (0.86,1.27)	0.645
12-11	SCL-90-R Interpersonal Sensitivity	4	1.05 (0.90,1.22)	0.560
		5	1.06 (0.93,1.21)	0.381
		6	1.02 (0.88,1.18)	0.813
12-12	SCL-90-R Obsessive-Compulsive Behavior	4	0.94 (0.81,1.10)**	0.456**
		5	0.95 (0.84,1.08)**	0.461**
		6	0.93 (0.81,1.07)**	0.295**
12-13	SCL-90-R Paranoid Ideation	4	0.92 (0.76,1.12)**	0.405**
		5	0.96 (0.82,1.13)**	0.639**
		6	0.92 (0.77,1.10)**	0.378**
12-14	SCL-90-R Phobic Anxiety	4	0.96 (0.81,1.14)	0.635
		5	0.98 (0.84,1.13)	0.731
		6	0.92 (0.78,1.08)	0.297
12-15	SCL-90-R Psychoticism	4	0.95 (0.80,1.13)**	0.559**
		5	0.98 (0.84,1.13)	0.747
		6	0.94 (0.81,1.10)	0.471
12-16	SCL-90-R Somatization	4	1.05 (0.90,1.22)**	0.545**
		5	1.08 (0.94,1.23)**	0.283**
		6	1.00 (0.87,1.16)**	0.996**
12-17	SCL-90-R Global Severity Index	4	1.08 (0.92,1.26)**	0.354**
		5	1.08 (0.95,1.24)**	0.242**
		6	1.02 (0.88,1.18)**	0.779**
12-18	SCL-90-R Positive Symptom Total	4	1.05 (0.91,1.22)	0.494
		5	1.07 (0.94,1.21)	0.330
		6	1.00 (0.87,1.15)	0.984
12-19	SCL-90-R Positive Symptom Distress Index	4	1.10 (0.92,1.30)	0.302
		5	1.11 (0.95,1.29)	0.172
		6	1.03 (0.88,1.22)	0.683

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands − Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
13-3	Hepatitis (Non-A, Non-B, or Non-C)	4	0.91 (0.64,1.30)	0.602
		5	0.86 (0.65,1.15)	0.321
		6	0.93 (0.67,1.27)	0.638
13-4	Jaundice	4	0.48 (0.32,0.74)	<0.001
		5	0.61 (0.47,0.79)	<0.001
		6	0.59 (0.44,0.77)	<0.001
13-5	Acute and Subacute Necrosis of the Liver	4	--	--
		5	--	--
		6	--	--
13-6	Alcoholic Chronic Liver Disease and Cirrhosis	4	1.03 (0.83,1.27)	0.782
		5	1.03 (0.86,1.23)	0.745
		6	1.00 (0.83,1.21)	0.986
13-7	Nonalcoholic Chronic Liver Disease and Cirrhosis	4	1.10 (0.74,1.63)	0.651
		5	1.12 (0.79,1.59)	0.525
		6	1.07 (0.73,1.57)	0.722
13-8	Liver Abscess and Sequelae of Chronic Liver Disease	4	--	--
		5	--	--
		6	--	--
13-9	Other Liver Disorders	4	1.19 (1.06,1.34)**	0.004**
		5	1.18 (1.06,1.31)**	0.001**
		6	1.14 (1.02,1.27)**	0.018**
13-10	Hepatomegaly	4	0.92 (0.61,1.39)	0.683
		5	0.88 (0.63,1.23)	0.462
		6	0.89 (0.61,1.29)	0.534
13-11	Current Hepatomegaly	4	1.21 (0.71,2.09)	0.495
		5	1.21 (0.75,1.97)	0.438
		6	1.19 (0.70,2.03)	0.517
13-13	AST	4	1.19 (0.82,1.71)**	0.352**
		5	1.22 (0.88,1.69)**	0.231**
		6	1.14 (0.81,1.61)**	0.451**
13-15	ALT	4	1.30 (1.01,1.66)	0.035
		5	1.28 (1.03,1.60)	0.024
		6	1.25 (0.99,1.59)	0.058
13-17	GGT	4	1.14 (1.01,1.29)**	0.040**
		5	1.15 (1.03,1.28)**	0.012**
		6	1.09 (0.97,1.23)**	0.133**
13-19	Alkaline Phosphatase	4	0.90 (0.73,1.12)	0.360
		5	0.92 (0.77,1.10)	0.374
		6	0.86 (0.71,1.05)	0.148

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands -- Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
13-21	Total Bilirubin	4	0.93 (0.75,1.16)**	0.527**
		5	0.97 (0.81,1.17)**	0.776**
		6	0.92 (0.75,1.12)**	0.388**
13-22	Direct Bilirubin	4	1.19 (0.68,2.11)**	0.539**
		5	1.42 (0.86,2.35)**	0.156**
		6	0.88 (0.54,1.44)**	0.621**
13-24	LDH	4	1.08 (0.94,1.23)	0.278
		5	1.07 (0.95,1.20)	0.277
		6	1.05 (0.93,1.19)	0.461
13-26	Cholesterol	4	1.02 (0.88,1.19)	0.781
		5	1.18 (1.03,1.36)**	0.002**
		6	0.95 (0.82,1.09)	0.431
13-28	HDL Cholesterol	4	1.05 (0.90,1.21)**	0.555**
		5	1.13 (0.98,1.29)**	0.085**
		6	1.00 (0.87,1.16)**	0.951**
13-30	Cholesterol-HDL Ratio	4	1.15 (1.04,1.27)	0.006
		5	1.23 (1.12,1.34)	<0.001
		6	1.02 (0.93,1.13)	0.672
13-32	Triglycerides	4	1.32 (1.11,1.57)	0.002
		5	1.60 (1.35,1.90)	<0.001
		6	1.11 (0.92,1.33)	0.293
13-34	Creatine Kinase	4	1.16 (0.99,1.37)	0.070
		5	1.13 (0.98,1.30)	0.097
		6	1.14 (0.98,1.33)	0.090
13-36	Serum Amylase	4	0.90 (0.72,1.14)	0.394
		5	0.91 (0.76,1.10)	0.340
		6	0.95 (0.78,1.17)	0.660
13-37	Antibodies for Hepatitis A	4	1.01 (0.90,1.14)	0.818
		5	1.01 (0.92,1.12)	0.782
		6	1.01 (0.90,1.12)	0.897
13-38	Serological Evidence of Present or Prior Hepatitis B Infection	4	0.97 (0.82,1.14)**	0.674**
		5	0.97 (0.85,1.11)**	0.677**
		6	0.96 (0.82,1.11)**	0.554**
13-39	Antibodies for Hepatitis C	4	0.65 (0.30,1.39)	0.252
		5	0.65 (0.38,1.13)	0.154
		6	0.78 (0.42,1.47)	0.461
13-40	Stool Hemoccult	4	1.12 (0.77,1.62)	0.554
		5	1.15 (0.83,1.60)	0.379
		6	1.09 (0.77,1.55)	0.631

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands − Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
13-42	Prealbumin	4	0.83 (0.52,1.31)**	0.417**
		5	0.75 (0.54,1.04)**	0.104**
		6	1.00 (0.66,1.52)**	0.984**
13-44	Albumin	4	1.13 (0.86,1.49)	0.393
		5	1.08 (0.84,1.38)	0.541
		6	1.09 (0.84,1.42)	0.510
13-46	α-1 Acid Glycoprotein	4	0.99 (0.69,1.43)**	0.973**
		5	0.99 (0.73,1.34)**	0.960**
		6	1.01 (0.72,1.40)**	0.971**
13-50	α-2 Macroglobulin	4	1.18 (0.56,2.46)	0.668
		5	1.18 (0.61,2.28)	0.623
		6	1.11 (0.55,2.27)	0.771
13-52	Apolipoprotein B	4	1.09 (0.98,1.21)	0.100
		5	1.17 (1.07,1.28)**	<0.001**
		6	0.98 (0.89,1.09)	0.719
13-54	C_3 Complement	4	0.68 (0.47,0.97)**	0.032**
		5	0.66 (0.51,0.85)	0.003
		6	0.85 (0.62,1.17)	0.330
13-56	C_4 Complement	4	0.86 (0.48,1.53)	0.595
		5	0.82 (0.51,1.32)	0.421
		6	0.91 (0.54,1.54)	0.732
13-58	Haptoglobin	4	0.88 (0.76,1.03)	0.110
		5	0.93 (0.82,1.06)	0.288
		6	0.87 (0.76,1.00)	0.044
13-60	Transferrin	4	0.84 (0.71,0.99)	0.043
		5	0.86 (0.75,0.99)	0.041
		6	0.85 (0.73,0.99)	0.039
14-3	Occurrence of Acne (Lifetime)	4	0.97 (0.83,1.13)	0.687
		5	0.98 (0.86,1.12)	0.752
		6	0.97 (0.84,1.12)	0.676
14-4	Acne Relative to Time of Duty in SEA (Pre- and Post-SEA and Post-SEA vs. Pre-SEA and None)	4	0.95 (0.81,1.11)	0.513
		5	0.96 (0.84,1.10)	0.558
		6	0.95 (0.82,1.11)	0.527
14-5	Acne Relative to Time of Duty in SEA (Post-SEA vs. None)	4	0.97 (0.82,1.14)	0.677
		5	0.98 (0.85,1.12)	0.734
		6	0.97 (0.83,1.12)	0.670
14-6	Acne Relative to Time of Duty in SEA (Pre- and Post-SEA vs. Pre-SEA)	4	--	--
		5	--	--
		6	--	--

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
14-8	Location of Acne (Post-SEA)	4	0.97 (0.87,1.08)	0.607
		5	0.94 (0.84,1.04)	0.202
		6	0.94 (0.84,1.05)	0.236
14-10	Location of Acne (Pre- and Post-SEA and Post-SEA)	4	0.94 (0.84,1.05)	0.265
		5	0.94 (0.85,1.03)	0.178
		6	0.94 (0.85,1.04)	0.222
14-11	Other Abnormalities	4	0.93 (0.81,1.07)	0.318
		5	0.97 (0.86,1.09)	0.566
		6	0.93 (0.81,1.06)	0.264
14-12	Dermatology Index	4	0.85 (0.77,0.95)	0.003
		5	0.87 (0.79,0.95)	0.002
		6	0.87 (0.79,0.96)	0.006
15-3	Verified Essential Hypertension	4	1.14 (1.02,1.28)	0.021
		5	1.15 (1.04,1.27)	0.005
		6	1.11 (1.00,1.23)	0.049
15-4	Verified Heart Disease (excluding Essential Hypertension)	4	0.92 (0.84,1.01)	0.079
		5	0.93 (0.85,1.00)	0.062
		6	0.93 (0.85,1.01)	0.100
15-5	Myocardial Infarction	4	1.02 (0.82,1.27)**	0.826**
		5	1.03 (0.86,1.24)**	0.762**
		6	1.12 (0.93,1.35)**	0.228**
15-7	Systolic Blood Pressure	4	1.05 (0.91,1.21)	0.540
		5	1.04 (0.91,1.17)	0.584
		6	1.06 (0.92,1.21)	0.426
15-8	Heart Sounds	4	1.09 (0.96,1.23)	0.178
		5	1.08 (0.97,1.20)	0.155
		6	1.09 (0.97,1.22)	0.139
15-9	Overall Electrocardiograph	4	1.11 (0.98,1.26)	0.112
		5	1.09 (0.97,1.22)**	0.130**
		6	1.09 (0.97,1.23)**	0.154**
15-10	ECG: Right Bundle Branch Block (RBBB)	4	1.49 (1.00,2.21)	0.054
		5	1.37 (0.96,1.97)	0.082
		6	1.51 (1.02,2.25)	0.038
15-11	ECG: Left Bundle Branch Block (LBBB)	4	--	--
		5	--	--
		6	--	--
15-12	ECG: Nonspecific ST- and T-Wave Changes	4	1.20 (1.03,1.40)	0.017
		5	1.18 (1.03,1.34)	0.015
		6	1.17 (1.02,1.35)	0.028

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands − Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
15-13	ECG: Bradycardia	4	0.77 (0.57,1.04)**	0.074**
		5	0.76 (0.61,0.96)**	0.020**
		6	0.78 (0.61,1.00)**	0.049**
15-14	ECG: Tachycardia	4	--	--
		5	--	--
		6	--	--
15-15	ECG: Arrhythmia	4	1.25 (1.00,1.56)	0.052
		5	1.20 (0.99,1.47)**	0.067**
		6	1.21 (0.97,1.50)**	0.087**
15-16	ECG: Evidence of Prior Myocardial Infarction	4	1.25 (0.97,1.63)	0.095
		5	1.31 (1.04,1.65)	0.020
		6	1.17 (0.91,1.51)	0.225
15-17	ECG: Other Diagnoses	4	1.18 (0.72,1.94)**	0.501**
		5	1.25 (0.81,1.93)**	0.304**
		6	1.22 (0.76,1.96)**	0.392**
15-19	Diastolic Blood Pressure	4	1.25 (0.87,1.79)	0.219
		5	1.20 (0.87,1.65)	0.255
		6	1.26 (0.89,1.78)	0.176
15-20	Funduscopic Examination	4	1.21 (1.00,1.46)	0.054
		5	1.19 (1.01,1.42)	0.042
		6	1.21 (1.01,1.45)	0.037
15-21	Carotid Bruits	4	****	****
		5	****	****
		6	****	****
15-22	Radial Pulses	4	0.55 (0.25,1.20)	0.122
		5	0.70 (0.42,1.16)	0.192
		6	0.65 (0.38,1.12)	0.150
15-23	Femoral Pulses	4	1.00 (0.67,1.49)	0.996
		5	1.03 (0.74,1.42)	0.877
		6	1.00 (0.69,1.44)	0.988
15-24	Popliteal Pulses	4	1.30 (0.92,1.85)	0.145
		5	****	****
		6	1.22 (0.85,1.77)**	0.277**
15-25	Dorsalis Pedis Pulses	4	1.11 (0.93,1.33)	0.245
		5	1.10 (0.94,1.28)	0.237
		6	1.10 (0.93,1.29)	0.264
15-26	Posterior Tibial Pulses	4	1.20 (0.93,1.57)	0.171
		5	1.23 (0.98,1.54)	0.072
		6	1.17 (0.92,1.50)	0.207

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
15-27	Leg Pulses	4	1.10 (0.93,1.30)	0.278
		5	1.09 (0.94,1.26)	0.256
		6	1.09 (0.93,1.28)	0.272
15-28	Peripheral Pulses	4	1.09 (0.92,1.29)	0.342
		5	1.08 (0.93,1.25)	0.324
		6	1.08 (0.93,1.26)	0.326
15-29	Kidney, Urethra, and Bladder (KUB) X Ray (Excluding Kidney Stones)	4	****	****
		5	****	****
		6	****	****
15-30	Intermittent Claudication and Vascular Insufficiency (ICVI) Index	4	1.11 (0.86,1.43)	0.447
		5	1.19 (0.96,1.49)	0.109
		6	1.03 (0.81,1.32)	0.808
16-10	Hematocrit	4	1.16 (0.82,1.65)	0.404
		5	1.10 (0.79,1.51)	0.582
		6	1.21 (0.86,1.70)	0.282
16-12	Platelet Count	4	1.63 (1.11,2.39)	0.014
		5	1.42 (0.98,2.05)	0.062
		6	0.76 (0.42,1.38)	0.377
16-14	Prothrombin Time	4	0.88 (0.46,1.68)**	0.698**
		5	0.82 (0.48,1.42)	0.483
		6	0.98 (0.54,1.78)	0.950
16-15	RBC Morphology	4	1.10 (0.99,1.22)	0.083
		5	1.08 (0.99,1.19)	0.090
		6	1.11 (1.00,1.22)	0.045
16-17	Absolute Neutrophils (bands) (Zero vs. Nonzero)	4	****	****
		5	****	****
		6	****	****
16-20	Absolute Eosinophils (Zero vs. Nonzero)	4	1.14 (0.99,1.32)	0.082
		5	1.13 (0.99,1.28)	0.065
		6	1.12 (0.96,1.32)**	0.155**
16-21	Absolute Basophils (Zero vs. Nonzero)	4	0.98 (0.90,1.08)	0.715
		5	0.99 (0.91,1.07)	0.767
		6	0.98 (0.90,1.07)	0.673
17-3	Kidney Disease	4	1.07 (0.94,1.21)	0.313
		5	1.06 (0.95,1.18)	0.329
		6	1.05 (0.93,1.18)	0.480
17-4	Kidney Stones	4	0.96 (0.72,1.27)	0.766
		5	0.98 (0.77,1.24)	0.850
		6	0.98 (0.76,1.27)	0.898

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
17-5	Urinary Protein	4	1.08 (0.85,1.36)**	0.538**
		5	1.06 (0.86,1.30)**	0.576**
		6	1.07 (0.86,1.34)**	0.536**
17-6	Urinary Red Blood Cell Count	4	1.13 (0.86,1.50)**	0.384**
		5	1.12 (0.87,1.43)**	0.371**
		6	1.11 (0.86,1.45)**	0.417**
17-7	Urinary White Blood Cell Count	4	0.95 (0.72,1.24)	0.684
		5	0.95 (0.75,1.19)	0.644
		6	0.98 (0.76,1.26)	0.881
18-3	Past Thyroid Disease	4	0.99 (0.80,1.23)**	0.954**
		5	1.02 (0.85,1.22)	0.834
		6	0.98 (0.81,1.19)	0.842
18-4	Composite Diabetes Indicator	4	1.26 (1.09,1.46)	0.002
		5	1.27 (1.11,1.45)	<0.001
		6	1.16 (1.01,1.34)	0.041
18-7	Thyroid Gland	4	0.69 (0.35,1.34)	0.258
		5	0.80 (0.49,1.29)	0.372
		6	0.74 (0.44,1.23)	0.265
18-10	Retinopathy Results (Diabetics)	4	1.64 (0.93,2.88)	0.066
		5	1.53 (0.91,2.57)	0.079
		6	1.62 (0.93,2.83)	0.067
18-11	Neuropathy Results (Diabetics)	4	1.01 (0.65,1.56)	0.973
		5	1.00 (0.70,1.43)	0.995
		6	1.13 (0.73,1.74)	0.572
18-12	Radial Pulses (Doppler) (Diabetics)	4	--	--
		5	--	--
		6	--	--
18-13	Femoral Pulses (Doppler) (Diabetics)	4	0.89 (0.51,1.55)	0.674
		5	0.98 (0.63,1.51)	0.911
		6	0.87 (0.52,1.44)	0.579
18-14	Popliteal Pulses (Doppler) (Diabetics)	4	0.97 (0.65,1.45)	0.878
		5	1.04 (0.74,1.45)	0.821
		6	0.93 (0.63,1.37)	0.712
18-15	Dorsalis Pedis Pulses (Doppler) (Diabetics)	4	1.33 (0.90,1.74)	0.183
		5	****	****
		6	****	****
18-16	Posterior Tibial Pulses (Doppler) (Diabetics)	4	1.04 (0.69,1.56)	0.860
		5	1.09 (0.79,1.51)	0.587
		6	1.09 (0.79,1.51)	0.587

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands − Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
18-17	Leg Pulses (Doppler) (Diabetics)	4	1.20 (0.87,1.66)	0.263
		5	1.16 (0.89,1.52)**	0.271**
		6	1.14 (0.84,1.55)	0.391
18-18	Peripheral Pulses (Doppler) (Diabetics)	4	****	****
		5	1.12 (0.86,1.44)	0.399
		6	1.10 (0.81,1.49)**	0.534**
18-20	Thyroid Stimulating Hormone (TSH)	4	1.15 (0.87,1.52)	0.330
		5	1.16 (0.90,1.48)	0.252
		6	1.16 (0.90,1.49)	0.257
18-22	Thyroxine (T_4)	4	3.22 (1.08,9.63)	0.030
		5	2.60 (1.11,6.10)	0.025
		6	2.83 (0.97,8.24)	0.043
18-23	Anti-Thyroid Antibodies	4	1.02 (0.80,1.30)	0.866
		5	1.05 (0.85,1.29)	0.644
		6	1.00 (0.80,1.25)	0.999
18-25	Fasting Glucose (All Participants)	4	1.18 (1.01,1.38)	0.038
		5	1.22 (1.06,1.40)	0.005
		6	1.11 (0.96,1.29)	0.156
18-27	Fasting Glucose (Diabetics)	4	****	****
		5	****	****
		6	****	****
18-29	Fasting Glucose (Nondiabetics)	4	0.92 (0.68,1.24)	0.583
		5	0.96 (0.75,1.24)	0.772
		6	0.90 (0.68,1.18)	0.439
18-31	2-Hour Postprandial Glucose (Nondiabetics)	4	1.27 (1.08,1.50)**	0.004**
		5	1.28 (1.10,1.49)**	0.002**
		6	1.23 (1.05,1.44)**	0.011**
18-32	Fasting Urinary Glucose (All Participants)	4	1.70 (1.30,2.23)	<0.001
		5	1.72 (1.33,2.21)**	<0.001**
		6	1.63 (1.26,2.11)**	<0.001**
18-33	Fasting Urinary Glucose (Diabetics)	4	1.49 (1.09,2.03)	0.010
		5	1.44 (1.10,1.89)	0.005
		6	1.39 (1.03,1.88)	0.027
18-34	Fasting Urinary Glucose (Nondiabetics)	4	--	--
		5	--	--
		6	--	--
18-35	2-Hour Postprandial Urinary Glucose (Nondiabetics)	4	1.13 (0.99,1.28)	0.075
		5	1.17 (1.04,1.32)	0.011
		6	1.03 (0.90,1.19)**	0.636**

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
18-39	Serum Insulin (Diabetics)	4	****	****
		5	****	****
		6	****	****
18-43	Serum Glucagon (All Participants)	4	0.95 (0.36,2.54)	0.920
		5	0.90 (0.37,2.20)	0.821
		6	1.00 (0.38,2.64)	0.998
18-45	Serum Glucagon (Diabetics)	4	0.78 (0.41,1.48)	0.433
		5	0.39 (0.07,2.19)	0.128
		6	1.03 (0.53,1.99)	0.927
18-47	Serum Glucagon (Nondiabetics)	4	--	--
		5	--	--
		6	--	--
18-49	α-1-C Hemoglobin (All Participants)	4	1.08 (0.96,1.21)	0.212
		5	1.10 (0.99,1.21)**	0.072**
		6	1.02 (0.91,1.14)**	0.713**
18-51	α-1-C Hemoglobin (Diabetics)	4	1.41 (0.96,2.09)	0.070
		5	1.42 (1.01,2.02)	0.035
		6	1.24 (0.84,1.83)	0.267
18-53	α-1-C Hemoglobin (Nondiabetics)	4	0.93 (0.81,1.07)	0.307
		5	0.96 (0.85,1.09)	0.525
		6	0.92 (0.81,1.05)	0.206
18-54	Urinary Protein (Diabetics)	4	1.01 (0.71,1.44)	0.947
		5	1.02 (0.77,1.37)	0.878
		6	1.04 (0.75,1.44)	0.826
18-56	Serum Proinsulin (Diabetics)	4	****	****
		5	****	****
		6	****	****
18-58	Serum C Peptide (Diabetics)	4	0.75 (0.53,1.08)	0.111
		5	0.79 (0.59,1.06)**	0.118**
		6	0.84 (0.60,1.17)**	0.296**
18-60	Total Testosterone	4	1.13 (0.85,1.49)**	0.398**
		5	1.11 (0.90,1.36)	0.322
		6	1.06 (0.85,1.31)	0.632
18-62	Free Testosterone	4	1.10 (0.94,1.29)	0.227
		5	1.05 (0.92,1.21)	0.468
		6	1.12 (0.97,1.30)	0.131
18-63	Sex Hormone Binding Globulin	4	0.97 (0.85,1.11)	0.655
		5	1.02 (0.92,1.14)	0.666
		6	0.98 (0.87,1.10)	0.709

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands − Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
18-64	Total Testosterone to Sex Hormone Binding Globulin Ratio	4	1.14 (0.96,1.34)	0.136
		5	1.09 (0.95,1.26)	0.227
		6	1.16 (0.99,1.36)	0.067
18-66	Estradiol	4	****	****
		5	1.08 (0.85,1.39)**	0.527**
		6	1.04 (0.80,1.35)**	0.793**
18-68	Luteinizing Hormone (LH)	4	0.97 (0.64,1.48)	0.883
		5	1.00 (0.70,1.41)	0.982
		6	0.81 (0.56,1.17)	0.281
18-70	Follicle Stimulating (FSH)	4	1.07 (0.85,1.35)	0.543
		5	1.09 (0.89,1.32)	0.409
		6	1.05 (0.85,1.30)	0.676
19-4	Composite Skin Test Diagnosis	4	0.76 (0.59,0.98)	0.029
		5	0.82 (0.68,0.99)	0.037
		6	0.80 (0.64,0.99)**	0.047**
19-15	Double Labelled Cells: CD5 with CD20 (Zero vs. Nonzero)	4	1.02 (0.72,1.44)	0.912
		5	1.05 (0.78,1.42)	0.738
		6	1.00 (0.72,1.39)	0.367
19-16	Double Labelled Cells: CD4 with CD8 (Zero vs. Nonzero)	4	0.97 (0.76,1.23)	0.769
		5	0.98 (0.80,1.21)	0.882
		6	0.96 (0.77,1.21)	0.736
19-17	Double Labelled Cells: CD3 with CD16+56 (Zero vs. Nonzero)	4	****	****
		5	****	****
		6	****	****
19-22	Lupus Panel: Antinuclear Antibody (ANA)	4	0.95 (0.82,1.09)**	0.431**
		5	0.97 (0.86,1.09)**	0.554**
		6	0.94 (0.83,1.07)**	0.341**
19-23	Lupus Panel: Thyroid Microsomal Antibody	4	1.09 (0.88,1.34)**	0.449**
		5	1.10 (0.92,1.32)	0.302
		6	1.07 (0.88,1.30)	0.507
19-24	Lupus Panel: MSK Smooth Muscle Antibody	4	0.80 (0.60,1.07)	0.131
		5	0.87 (0.69,1.09)	0.232
		6	0.83 (0.65,1.06)	0.151
19-25	Lupus Panel: MSK Mitochondrial Antibody	4	--	--
		5	--	--
		6	--	--
19-26	Lupus Panel: MSK Parietal Antibody	4	1.29 (0.94,1.77)	0.118
		5	1.25 (0.95,1.66)	0.114
		6	1.29 (0.95,1.76)	0.104

Table Q-1-20. (Continued)
Summary of Adjusted Results for Dichotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Reference	Clinical Parameter	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
19-27	Lupus Panel: Rheumatoid Factor	4	0.83 (0.72,0.96)	0.013
		5	0.85 (0.75,0.96)	0.008
		6	0.88 (0.77,1.00)	0.053
19-28	Lupus Panel: B Cell Clones Detected by Serum Protein Electrophoresis	4	0.91 (0.66,1.27)	0.572
		5	0.92 (0.71,1.20)**	0.543**
		6	0.87 (0.65,1.16)**	0.340**
19-29	Lupus Panel: Other Antibodies (ANA and MSK)	4	1.07 (0.83,1.39)	0.595
		5	1.05 (0.83,1.31)	0.697
		6	1.11 (0.87,1.41)**	0.417**
19-30	Lupus Panel: Summary Index	4	0.94 (0.85,1.04)	0.248
		5	0.95 (0.88,1.04)	0.259
		6	0.95 (0.87,1.04)	0.294
20-3	Asthma	4	1.06 (0.80,1.42)**	0.674**
		5	0.99 (0.78,1.27)	0.962
		6	1.01 (0.80,1.27)**	0.965**
20-4	Bronchitis	4	0.84 (0.74,0.96)**	0.011**
		5	0.89 (0.79,0.99)**	0.031**
		6	0.84 (0.74,0.94)**	0.004**
20-5	Pneumonia	4	0.86 (0.72,1.03)	0.095
		5	0.89 (0.77,1.03)	0.127
		6	0.90 (0.76,1.05)	0.173
20-6	Thorax and Lung Abnormalities	4	0.93 (0.79,1.09)**	0.369**
		5	0.95 (0.83,1.08)	0.446
		6	0.97 (0.83,1.12)	0.665
20-7	X Ray Interpretation	4	****	****
		5	0.95 (0.84,1.09)**	0.478**
		6	0.88 (0.77,1.02)**	0.085**

[a] Model 4: Log_2 (lipid-adjusted current dioxin + 1).
Model 5: Log_2 (whole-weight current dioxin + 1).
Model 6: Log_2 (whole-weight current dioxin + 1), adjusted for log_2 total lipids.

** Log_2 (current dioxin + 1)-by-covariate interaction ($p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction.

**** Log_2 (current dioxin + 1)-by-covariate interaction ($p \leq 0.01$); adjusted relative risk, confidence interval, and p-value not presented.

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

Note: Relative risk for a twofold increase in current dioxin.

Table Q-1-21.
Summary of Adjusted Results for Polychotomous Variables
Model 1: Ranch Hands versus Comparisons

Table Ref.	Clinical Parameter	Contrast	Occupational Category	Adj. Relative Risk (95% C.I.)	p-Value
13-48	α-1 Antitrypsin	Low vs. Normal	All	1.34 (0.73,2.49)	0.347
			Officer	1.37 (0.62,3.00)	0.434
			Enlisted Flyer	2.50 (0.23,27.60)	0.456
			Enlisted Groundcrew	1.13 (0.38,3.41)	0.824
		High vs. Normal	All	1.35 (0.66,2.73)	0.409
			Officer	2.06 (0.64,6.61)	0.224
			Enlisted Flyer	1.19 (0.24,6.05)	0.831
			Enlisted Groundcrew	0.98 (0.33,2.90)	0.975
16-4	Red Blood Cell (RBC) Count	Low vs. Normal	All	1.55 (0.93,2.57)	0.092
			Officer	1.37 (0.69,2.74)	0.366
			Enlisted Flyer	1.62 (0.36,7.39)	0.530
			Enlisted Groundcrew	1.87 (0.78,4.51)	0.160
		High vs. Normal	All	0.96 (0.46,2.03)	0.919
			Officer	0.68 (0.12,3.72)	0.654
			Enlisted Flyer	0.25 (0.03,2.21)	0.213
			Enlisted Groundcrew	1.59 (0.61,4.18)	0.346
16-6	White Blood Cell (WBC) Count	Low vs. Normal	All	1.11 (0.70,1.75)	0.654
			Officer	0.92 (0.46,1.85)	0.815
			Enlisted Flyer	1.95 (0.66,5.77)	0.226
			Enlisted Groundcrew	1.05 (0.50,2.20)	0.903
		High vs. Normal	All	1.18 (0.80,1.74)	0.400
			Officer	1.33 (0.60,2.95)	0.480
			Enlisted Flyer	0.97 (0.44,2.10)	0.931
			Enlisted Groundcrew	1.24 (0.72,2.13)	0.443

Table Q-1-21. (Continued)
Summary of Adjusted Results for Polychotomous Variables
Model 1: Ranch Hands versus Comparisons

Table Ref.	Clinical Parameter	Contrast	Occupational Category	Adj. Relative Risk (95% C.I.)	p-Value
16-8	Hemoglobin	Low vs. Normal	All	1.26 (0.75,2.13)	0.386
			Officer	0.68 (0.30,1.54)	0.355
			Enlisted Flyer	2.59 (0.63,10.65)	0.187
			Enlisted Groundcrew	1.95 (0.83,4.55)	0.123
		High vs. Normal	All	1.56 (0.83,2.93)	0.170
			Officer	2.33 (0.86,6.31)	0.095
			Enlisted Flyer	3.44 (0.34,35.03)	0.297
			Enlisted Groundcrew	0.97 (0.39,2.46)	0.955
18-5	Diabetic Severity	No Treatment vs. Nondiabetic	All	0.94 (0.68,1.29)	0.684
			Officer	1.19 (0.69,2.06)	0.528
			Enlisted Flyer	0.69 (0.33,1.45)	0.323
			Enlisted Groundcrew	0.89 (0.56,1.42)	0.627
		Diet Only vs. Nondiabetic	All	1.27 (0.76,2.13)	0.365
			Officer	2.02 (0.85,4.84)	0.113
			Enlisted Flyer	0.66 (0.19,2.36)	0.525
			Enlisted Groundcrew	1.13 (0.53,2.43)	0.755
		Oral Hypoglycemic vs. Nondiabetic	All	0.99 (0.52,1.88)	0.965
			Officer	0.35 (0.09,1.26)	0.106
			Enlisted Flyer	2.93 (0.53,16.05)	0.216
			Enlisted Groundcrew	1.35 (0.53,3.44)	0.535
		Insulin Dependent vs. Nondiabetic	All	1.82 (0.85,3.88)	0.124
			Officer	2.77 (0.93,8.25)	0.067
			Enlisted Flyer	0.86 (0.14,5.26)	0.869
			Enlisted Groundcrew	1.39 (0.34,5.65)	0.647

Table Q-1-21. (Continued)
Summary of Adjusted Results for Polychotomous Variables
Model 1: Ranch Hands versus Comparisons

Table Ref.	Clinical Parameter	Contrast	Occupational Category	Adj. Relative Risk (95% C.I.)	p-Value
18-37	Serum Insulin (All Participants)	Low vs. Normal	All	0.92 (0.60,1.40)**	0.705**
			Officer	0.73 (0.37,1.44)**	0.360**
			Enlisted Flyer	1.00 (0.33,3.03)**	0.995**
			Enlisted Groundcrew	1.11 (0.59,2.09)**	0.739**
		High vs. Normal	All	0.96 (0.80,1.15)**	0.630**
			Officer	1.08 (0.81,1.45)**	0.594**
			Enlisted Flyer	0.74 (0.47,1.18)**	0.207**
			Enlisted Groundcrew	0.94 (0.71,1.24)**	0.641**
18-41	Serum Insulin (Nondiabetics)	Low vs. Normal	All	0.87 (0.56,1.34)**	0.529**
			Officer	0.64 (0.32,1.28)**	0.203**
			Enlisted Flyer	1.08 (0.31,3.81)**	0.903**
			Enlisted Groundcrew	1.09 (0.57,2.06)**	0.795**
		High vs. Normal	All	0.88 (0.72,1.08)**	0.217**
			Officer	0.95 (0.69,1.30)**	0.731**
			Enlisted Flyer	0.66 (0.39,1.11)**	0.116**
			Enlisted Groundcrew	0.91 (0.67,1.25)**	0.569**
20-11	Loss of Vital Capacity	Mild vs. None	All	0.80 (0.55,1.16)	0.248
			Officer	0.80 (0.42,1.53)	0.503
			Enlisted Flyer	0.39 (0.16,0.99)	0.048
			Enlisted Groundcrew	1.05 (0.62,1.78)	0.861
		Moderate or Severe vs. None	All	0.78 (0.35,1.73)	0.538
			Officer	1.01 (0.22,4.60)	0.989
			Enlisted Flyer	0.37 (0.07,1.99)	0.244
			Enlisted Groundcrew	0.95 (0.03,3.02)	0.930

Table Q-1-21. (Continued)
Summary of Adjusted Results for Polychotomous Variables
Model 1: Ranch Hands versus Comparisons

Table Ref.	Clinical Parameter	Contrast	Occupational Category	Adj. Relative Risk (95% C.I.)	p-Value
20-12	Obstructive Abnormality	Mild vs. None	All	1.17 (0.86,1.28)**	0.624**
			Officer	1.08 (0.79,1.47)**	0.638**
			Enlisted Flyer	1.24 (0.77,2.01)**	0.379**
			Enlisted Groundcrew	0.97 (0.71,1.31)**	0.821**
		Moderate or Severe vs. None	All	1.05 (0.81,1.69)**	0.396**
			Officer	1.20 (0.65,2.21)**	0.552**
			Enlisted Flyer	1.77 (0.81,3.87)**	0.155**
			Enlisted Groundcrew	0.93 (0.53,1.65)**	0.809**

** Group-by-covariate interaction ($p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction.

Note: RH = Ranch Hand
C = Comparison.

Table Q-1-22.
Summary of Adjusted Results for Polychotomous Variables
Model 2: Ranch Hands – Log_2 (Initial Dioxin)

Table Ref.	Clinical Parameter	Contrast	Adj. Relative Risk (95% C.I.)[a]	p-Value[a]
13-48	α-1 Antitrypsin	Low vs. Normal	0.90 (0.51,1.57)	0.703
		High vs. Normal	0.75 (0.38,1.47)	0.404
16-4	Red Blood Cell (RBC) Count	Low vs. Normal	0.81 (0.53,1.24)	0.333
		High vs. Normal	1.06 (0.60,1.90)	0.833
16-6	White Blood Cell (WBC) Count	Low vs. Normal	0.94 (0.60,1.46)	0.778
		High vs. Normal	0.75 (0.52,1.08)	0.127
16-8	Hemoglobin	Low vs. Normal	0.93 (0.61,1.42)	0.732
		High vs. Normal	1.07 (0.68,1.68)	0.765
18-5	Diabetic Severity	No Treatment vs. Normal	1.00 (0.75,1.33)	0.982
		Diet Only vs. Normal	1.29 (0.86,1.95)	0.224
		Oral Hypoglycemics vs. Normal	2.37 (1.42,3.96)	0.001
		Insulin Dependent vs. Normal	1.24 (0.60,2.57)	0.566
18-37	Serum Insulin	Low vs. Normal	0.67 (0.44,1.00)	0.064
		High vs. Normal	1.10 (0.91,1.20)	0.406
18-41	Serum Insulin	Low vs. Normal	0.90 (0.55,1.50)**	0.685**
		High vs. Normal	1.20 (1.00,1.50)**	0.047**
20-11	Loss of Vital Capacity	Mild vs. None	1.16 (0.85,1.59)	0.353
		Moderate or Severe vs. None	0.80 (0.36,1.77)	0.574
20-12	Obstructive Abnormality	Mild vs. None	0.98 (0.82,1.16)	0.795
		Moderate or Severe vs. None	0.97 (0.70,1.34)	0.850

[a] Adjusted for percent body fat at the time of duty in SEA, change in percent body fat from the time of duty in SEA to the date of the blood draw for dioxin, and the covariates specified in the referenced chapter table.

** Log_2 (initial dioxin)-by-covariate interaction ($p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction.

Note: Relative risk for a twofold increase in initial dioxin.

Table Q-1-23.
Summary of Adjusted Results for Polychotomous Variables
Model 3: Ranch Hands and Comparisons by Dioxin Category

Table Ref.	Clinical Parameter	Contrast	Dioxin Category	n	Adj. Relative Risk (95% C.I.)[a]	p-Value[a]
13-48	α-1 Antitrypsin	Low vs. Normal	Comparison	1,043		
			Background RH	369	1.24 (0.57,2.66)	0.586
			Low RH	257	0.92 (0.31,2.75)	0.881
			High RH	258	1.19 (0.37,3.81)	0.765
			Low plus High RH	515	1.03 (0.44,2.42)	0.945
		High vs. Normal	Comparison	1,043		
			Background RH	369	1.81 (0.71,4.57)	0.211
			Low RH	257	1.16 (0.40,3.38)	0.791
			High RH	258	0.23 (0.03,1.80)	0.160
			Low plus High RH	515	0.70 (0.26,1.93)	0.493
16-4	Red Blood Cell (RBC) Count	Low vs. Normal	Comparison	1,061		
			Background RH	371	1.77 (0.93,3.39)	0.084
			Low RH	259	1.80 (0.88,3.66)	0.107
			High RH	258	0.75 (0.26,2.20)	0.603
			Low plus High RH	517	1.33 (0.70,2.54)	0.383
		High vs. Normal	Comparison	1,061		
			Background RH	371	0.79 (0.22,2.84)	0.723
			Low RH	259	0.98 (0.31,3.15)	0.974
			High RH	258	0.75 (0.20,2.77)	0.668
			Low plus High RH	517	0.87 (0.34,2.24)	0.769
16-6	White Blood Cell (WBC) Count	Low vs. Normal	Comparison	1,059		
			Background RH	371	1.06 (0.54,2.11)	0.861
			Low RH	259	1.26 (0.62,2.58)	0.521
			High RH	258	1.37 (0.63,3.00)	0.431
			Low plus High RH	517	1.31 (0.73,2.34)	0.369
		High vs. Normal	Comparison	1,059		
			Background RH	371	1.11 (0.63,1.96)	0.709
			Low RH	259	1.53 (0.86,2.75)	0.151
			High RH	258	0.79 (0.41,1.52)	0.477
			Low plus High RH	517	1.11 (0.69,1.80)	0.664

Table Q-1-23. (Continued)
Summary of Adjusted Results for Polychotomous Variables
Model 3: Ranch Hands and Comparisons by Dioxin Category

Table Ref.	Clinical Parameter	Contrast	Dioxin Category	n	Adj. Relative Risk (95% C.I.)[a]	p-Value[a]
18-37	Serum Insulin (All Participants)	Low vs. Normal	Comparison	1,044		
			Background RH	368	0.72 (0.40,1.30)**	0.275**
			Low RH	251	0.82 (0.39,1.73)**	0.609**
			High RH	254	0.78 (0.35,1.74)**	0.540**
			Low plus High RH	505	0.80 (0.45,1.45)**	0.466**
		High vs. Normal	Comparison	1,044		
			Background RH	368	0.81 (0.62,1.06)**	0.127**
			Low RH	251	0.95 (0.70,1.29)**	0.736**
			High RH	254	0.99 (0.72,1.37)**	0.972**
			Low plus High RH	505	0.97 (0.76,1.23)**	0.805**
18-41	Serum Insulin (Nondiabetics)	Low vs. Normal	Comparison	897		
			Background RH	329	****	****
			Low RH	203	****	****
			High RH	208	****	****
			Low plus High RH	411	****	****
		High vs. Normal	Comparison	897		
			Background RH	329	****	****
			Low RH	203	****	****
			High RH	208	****	****
			Low plus High RH	411	****	****
20-11	Loss of Vital Capacity	Mild vs. None	Comparison	1,060		
			Background RH	372	0.94 (0.55,1.62)	0.833
			Low RH	260	0.67 (0.36,1.23)	0.196
			High RH	260	0.84 (0.46,1.54)	0.582
			Low plus High RH	520	0.75 (0.47,1.19)	0.220
		Moderate or Severe vs. None	Comparison	1,060		
			Background RH	372	0.43 (0.10,1.95)	0.277
			Low RH	260	0.97 (0.34,2.77)	0.952
			High RH	260	0.74 (0.20,2.67)	0.643
			Low plus High RH	520	0.87 (0.36,2.11)	0.754

Table Q-1-23. (Continued)
Summary of Adjusted Results for Polychotomous Variables
Model 3: Ranch Hands and Comparisons by Dioxin Category

Table Ref.	Clinical Parameter	Contrast	Dioxin Category	n	Adj. Relative Risk (95% C.I.)[a]	p-Value[a]
20-12	Obstructive Abnormality	Mild vs. None	Comparison	1,060		
			Background RH	372	1.14 (0.86,1.51)**	0.360**
			Low RH	260	0.96 (0.70,1.32)**	0.822**
			High RH	260	1.05 (0.74,1.47)**	0.798**
			Low plus High RH	520	1.00 (0.78,1.29)**	0.997**
		Moderate or Severe vs. None	Comparison	1,060		
			Background RH	372	1.30 (0.78,2.16)**	0.307**
			Low RH	260	1.08 (0.62,1.89)**	0.785**
			High RH	260	0.85 (0.44,1.66)**	0.631**
			Low plus High RH	520	0.98 (0.62,1.56)**	0.938**

[a] Adjusted for percent body fat at the time of duty in SEA, change in percent body fat from the time of duty in SEA to the date of the blood draw for dioxin, and covariates specified in the referenced chapter table.

** Categorized dioxin-by-covariate interaction ($p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction.

**** Categorized dioxin-by-covariate interaction ($p \leq 0.01$); adjusted relative risk, confidence interval, and p-value not presented.

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

Note: Relative risk and confidence interval relative to Comparisons.
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 Q-1-24.
Summary of Adjusted Results for Polychotomous Variables
Models 4, 5, and 6: Ranch Hands – Log_2 (Current Dioxin + 1)

Table Ref.	Clinical Parameter	Contrast	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
13-48	α-1 Antitrypsin	Low vs. Normal	4	0.88 (0.62,1.24)	0.449
			5	0.93 (0.70,1.23)	0.604
			6	0.88 (0.67,1.15)	0.344
		High vs. Normal	4	0.67 (0.45,1.01)	0.054
			5	0.74 (0.55,0.98)	0.035
			6	0.86 (0.62,1.20)	0.390
16-4	Red Blood Cell (RBC) Count	Low vs. Normal	4	0.88 (0.68,1.15)	0.349
			5	0.90 (0.73,1.11)	0.331
			6	0.92 (0.73,1.15)	0.447
		High vs. Normal	4	1.21 (0.79,1.86)	0.377
			5	1.20 (0.82,1.76)	0.354
			6	1.23 (0.82,1.84)	0.308
16-6	White Blood Cell (WBC) Count	Low vs. Normal	4	1.04 (0.77,1.39)**	0.821**
			5	1.06 (0.82,1.37)**	0.660**
			6	1.04 (0.80,1.36)**	0.769**
		High vs. Normal	4	0.79 (0.65,0.98)**	0.029**
			5	0.87 (0.74,1.02)**	0.081**
			6	0.83 (0.70,0.99)**	0.034**
16-8	Hemoglobin	Low vs. Normal	4	0.91 (0.68,1.23)	0.548
			5	0.91 (0.70,1.18)	0.486
			6	0.93 (0.71,1.22)	0.610
		High vs. Normal	4	1.20 (0.88,1.65)	0.242
			5	1.19 (0.90,1.56)	0.219
			6	1.23 (0.92,1.64)	0.165
18-5	Diabetic Severity	No Treatment vs. Nondiabetic	4	1.04 (0.83,1.30)**	0.718**
			5	1.08 (0.89,1.31)**	0.453**
			6	****	****
		Diet Only vs. Nondiabetic	4	1.61 (1.14,2.28)**	0.007**
			5	1.77 (1.29,2.44)**	<0.001**
			6	****	****
		Oral Hypoglycemic vs. Nondiabetic	4	3.96 (2.17,7.21)**	<0.001**
			5	3.90 (2.20,6.89)**	<0.001**
			6	****	****
		Insulin Dependent vs. Nondiabetic	4	0.71 (0.43,1.17)**	0.177**
			5	0.78 (0.55,1.11)**	0.168**
			6	****	****

Table Q-1-24. (Continued)
Summary of Adjusted Results for Polychotomous Variables
Models 4, 5, and 6: Ranch Hands − Log_2 (Current Dioxin + 1)

Table Ref.	Clinical Parameter	Contrast	Model[a]	Adj. Relative Risk (95% C.I.)	p-Value
18-37	Serum Insulin (All Participants)	Low vs. Normal	4	0.86 (0.68,1.10)**	0.223**
			5	0.88 (0.73,1.07)**	0.198**
			6	0.86 (0.71,1.06)	0.156
		High vs. Normal	4	1.05 (0.94,1.17)**	0.407**
			5	1.07 (0.97,1.17)**	0.157**
			6	1.04 (0.94,1.15)	0.451
18-41	Serum Insulin (Nondiabetics)	Low vs. Normal	4	0.93 (0.72,1.20)	0.581
			5	0.93 (0.76,1.15)	0.520
			6	****	****
		High vs. Normal	4	1.19 (1.06,1.35)	0.005
			5	1.22 (1.09,1.36)	<0.001
			6	****	****
20-11	Loss of Vital Capacity	Mild vs. None	4	1.12 (0.90,1.40)**	0.297**
			5	1.12 (0.93,1.36)**	0.229**
			6	1.15 (0.94,1.40)	0.187
		Moderate or Severe vs. None	4	1.05 (0.62,1.78)**	0.852**
			5	1.05 (0.67,1.66)**	0.826**
			6	1.05 (0.64,1.72)	0.839
20-12	Obstructive Abnormality	Mild vs. None	4	0.88 (0.77,1.01)	0.061
			5	0.91 (0.82,1.02)	0.123
			6	0.91 (0.81,1.03)	0.135
		Moderate or Severe vs. None	4	0.86 (0.67,1.09)	0.206
			5	0.88 (0.72,1.08)	0.228
			6	0.89 (0.72,1.11)	0.303

[a] Model 4: Log_2 (lipid-adjusted current dioxin + 1).
Model 5: Log_2 (whole-weight current dioxin + 1).
Model 6: Log_2 (whole-weight current dioxin + 1), adjusted for log_2 total lipids.

** Log_2 (current dioxin + 1)-by-covariate interaction ($0.01 < p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction.

**** Log_2 (current dioxin + 1)-by-covariate interaction ($p \leq 0.01$); adjusted relative risk, confidence interval, and p-value not presented.

Note: Relative risk for a twofold increase in current dioxin.

APPENDIX Q-2.

Graphical Presentations of Continuous Clinical Parameters versus Current Dioxin

This appendix contains bivariate scatterplots describing the relationship between selected clinical parameters and lipid-adjusted current dioxin. The clinical parameter transformation used in the statistical analysis has been used in the scatterplots, and consequently the axis marks are equally spaced on the transformed scale. The axis marks for current lipid-adjusted dioxin are equally spaced for twofold increases, because a logarithmic (base 2) transformation was used. For the scatterplots, the reference line indicates the general relationship, unadjusted for any covariates, between the (transform of the) clinical parameter and $\log_2$ (current lipid-adjusted dioxin + 1). Participants excluded from the analyses are not displayed on these scatterplots, and consequently the graphical displays parallel the unadjusted Model 4 analyses of these selected clinical parameters.

A listing of the clinical parameter presented in each graphical display, along with a reference to a table in Chapters 9 through 20 and the transformation used on the clinical parameter, is given below.

Appendix Q-2 Figure	Chapter 9 through 20 Reference Table	Clinical Parameter (units)	Transformation
Q-2-1	9-6	Body Fat (percent)	Natural logarithm
Q-2-2	9-10	Sedimentation Rate (mm/hr)	Natural logarithm
Q-2-3	10-40	Prostate-Specific Antigen (ng/ml) (Measurements at or Above Sensitivity Limit)	Natural logarithm
Q-2-4	11-28	Vibrotactile Threshold Measurement of Right Great Toe (microns)	Natural logarithm
Q-2-5	11-29	Vibrotactile Threshold Measurement of Left Great Toe (microns)	Natural logarithm
Q-2-6	13-25	Cholesterol (mg/dl)	Natural logarithm
Q-2-7	13-27	HDL Cholestrol (mg/dl)	Natural logarithm
Q-2-8	13-31	Triglycerides (mg/dl)	Natural logarithm
Q-2-9	16-5	White Blood Cell (WBC) Count (thousand/mm^3)	Natural logarithm
Q-2-10	16-11	Platelet Count (thousand/mm^3)	Square root
Q-2-11	18-19	Thyroid Stimulating Hormone (TSH) (μIU/ml)	Natural logarithm
Q-2-12	18-21	Thyroxine (T_4) (μg/dl)	--
Q-2-13	18-24	Fasting Glucose (mg/dl) (All Participants)	Natural logarithm

Appendix Q-2 Figure	Chapter 9 through 20 Reference Table	Clinical Parameter (units)	Transformation
Q-2-14	18-30	2-Hour Postprandial Glucose (mg/dl) (Nondiabetics)	Natural logarithm
Q-2-15	18-38	Serum Insulin (mIU/ml) (Diabetics)	Natural logarithm
Q-2-16	18-40	Serum Insulin (mIU/ml) (Nondiabetics)	Natural logarithm
Q-2-17	18-59	Total Testosterone (ng/dl)	Square root
Q-2-18	19-6	CD4 Cells (cells/mm^3)	Natural logarithm
Q-2-19	19-8	CD8 Cells (cells/mm^3)	Natural logarithm
Q-2-20	19-13	CD4-CD8 Ratio	Natural logarithm
Q-2-21	19-19	IgA (mg/dl)	Natural logarithm
Q-2-22	19-20	IgG (mg/dl)	Natural logarithm
Q-2-23	19-21	IgM (mg/dl)	Natural logarithm
Q-2-24	20-8	Forced Vital Capacity (FVC) (percent of predicted)	--
Q-2-25	20-9	Forced Expiratory Volume in 1 Second (FEV_1) (percent of predicted)	--
Q-2-26	20-10	Ratio of Observed FEV_1 to Observed FVC	Natural logarithm (1 - clinical parameter)

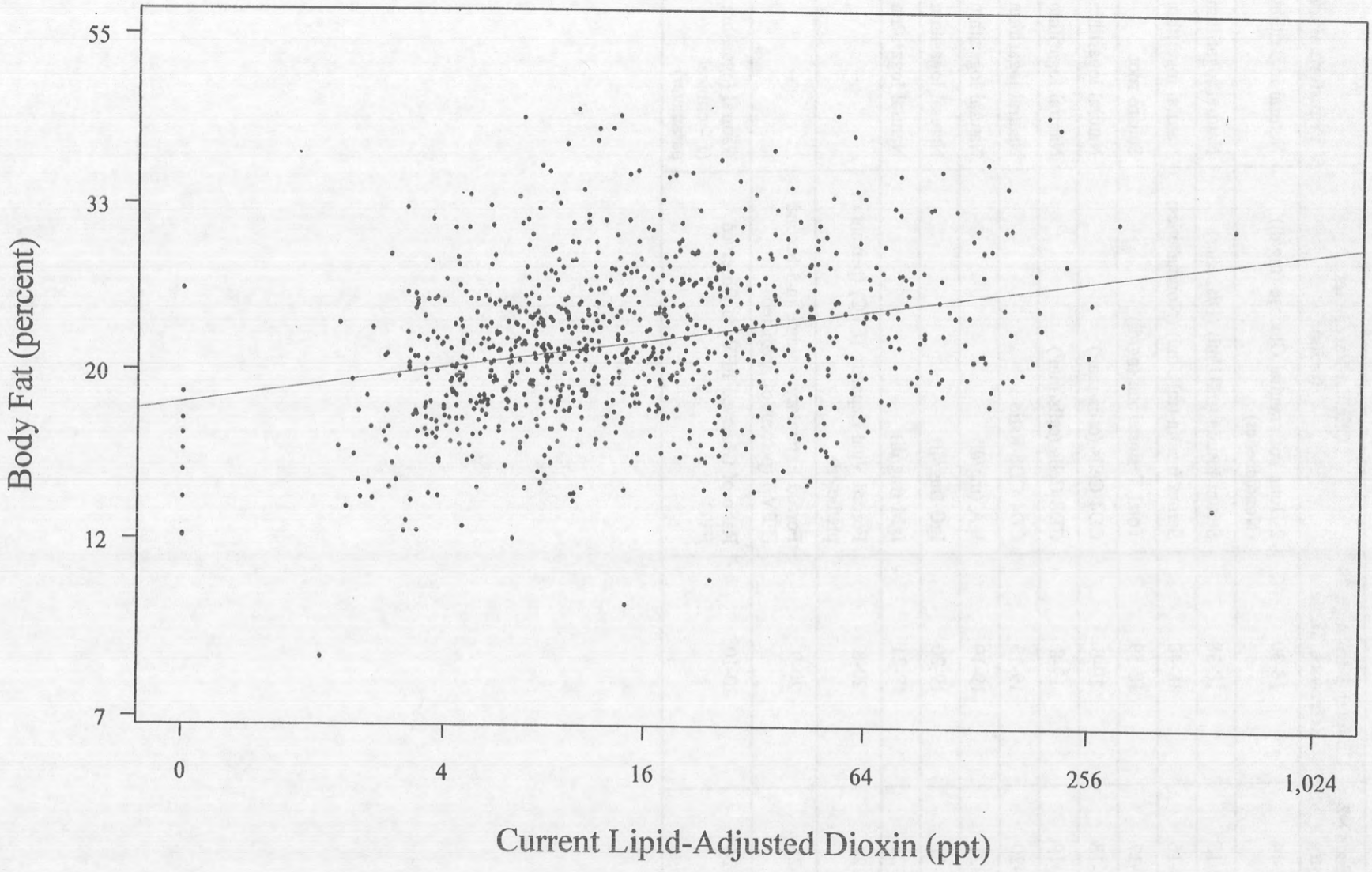

Figure Q-2-1.
Body Fat versus Current Lipid-Adjusted Dioxin (Table 9-6)

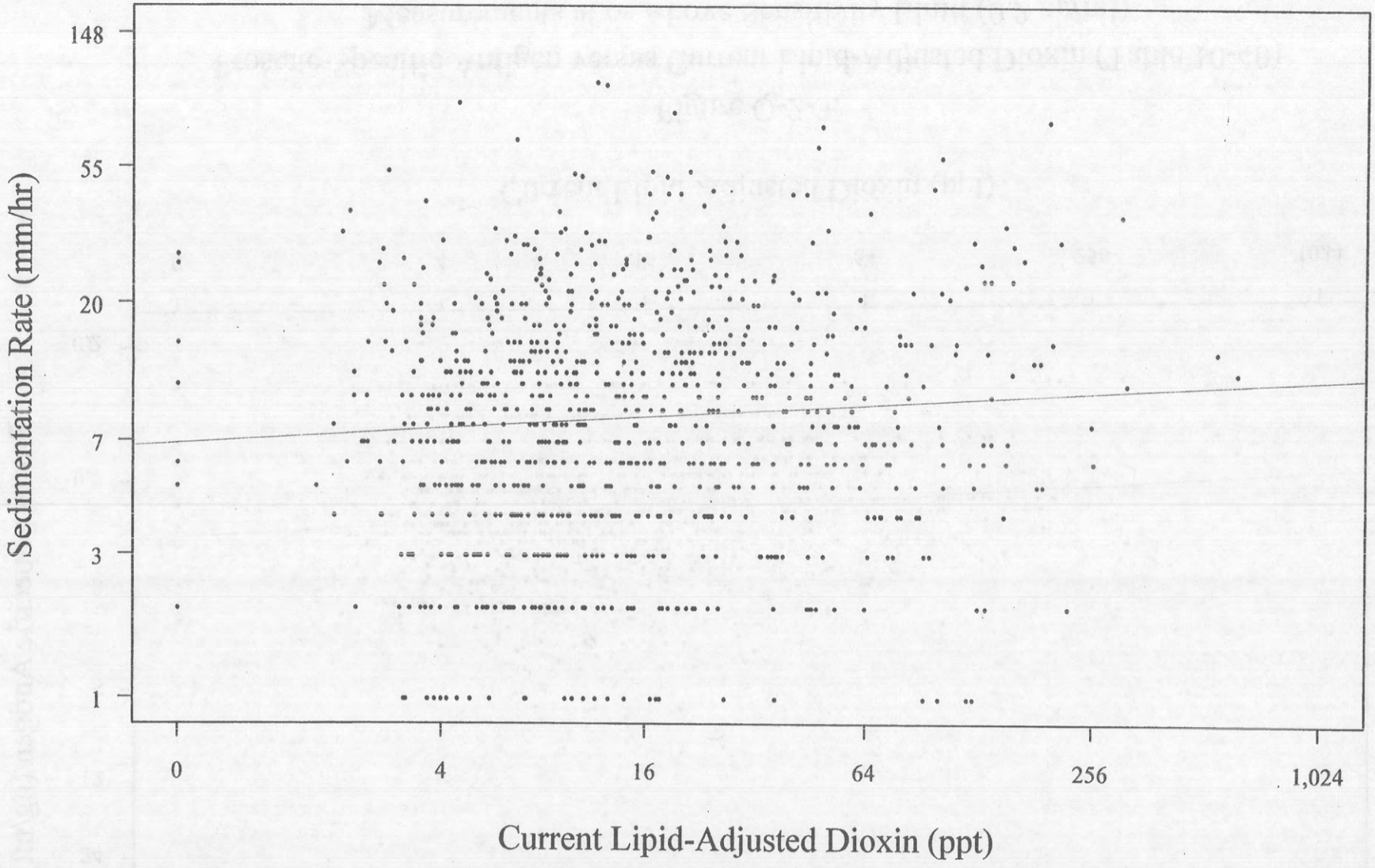

Figure Q-2-2.
Sedimentation Rate versus Current Lipid-Adjusted Dioxin (Table 9-10)

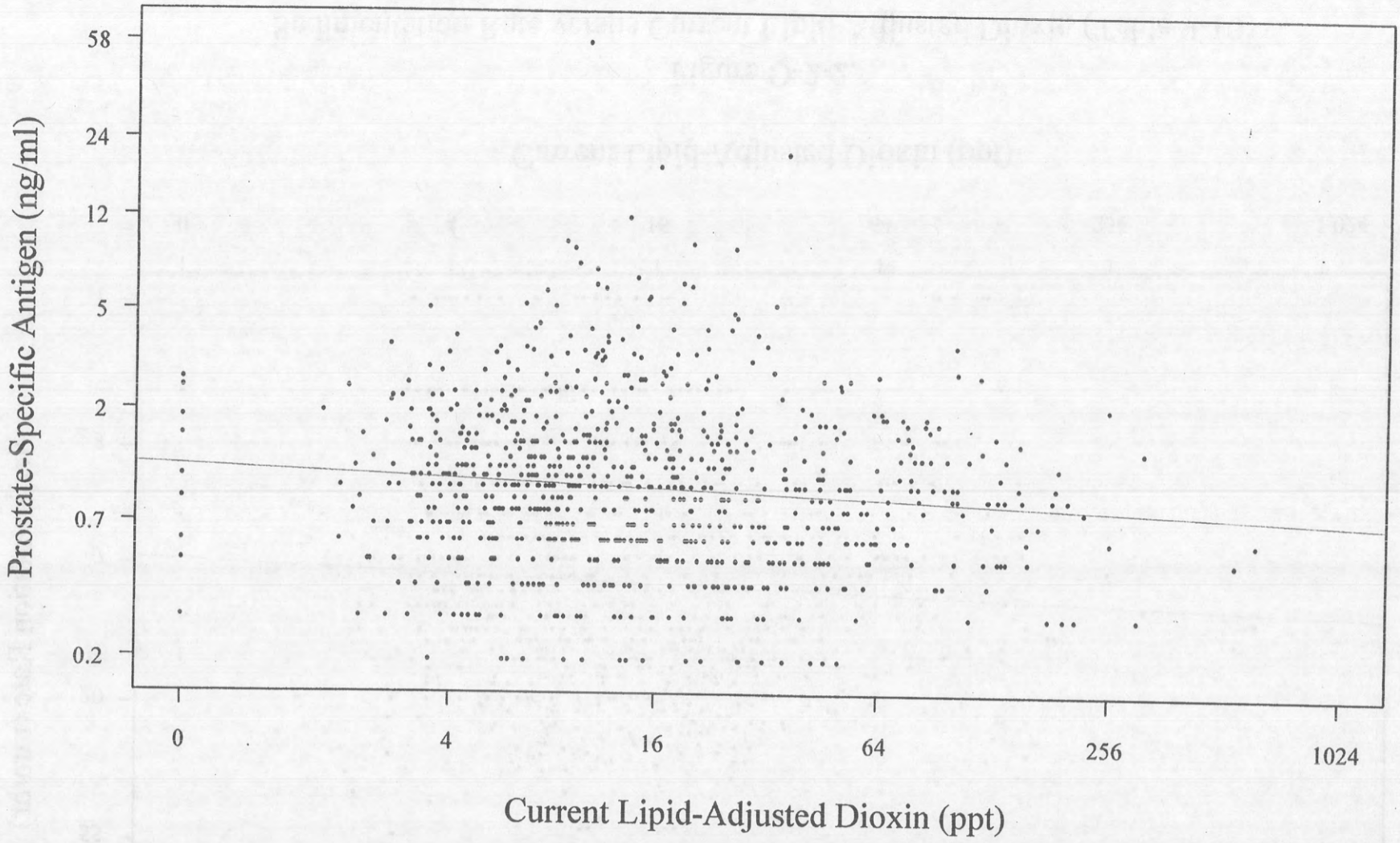

Figure Q-2-3.
Prostate-Specific Antigen versus Current Lipid-Adjusted Dioxin (Table 10-40)
Measurements at or Above Sensitivity Limit (0.2 ng/ml)

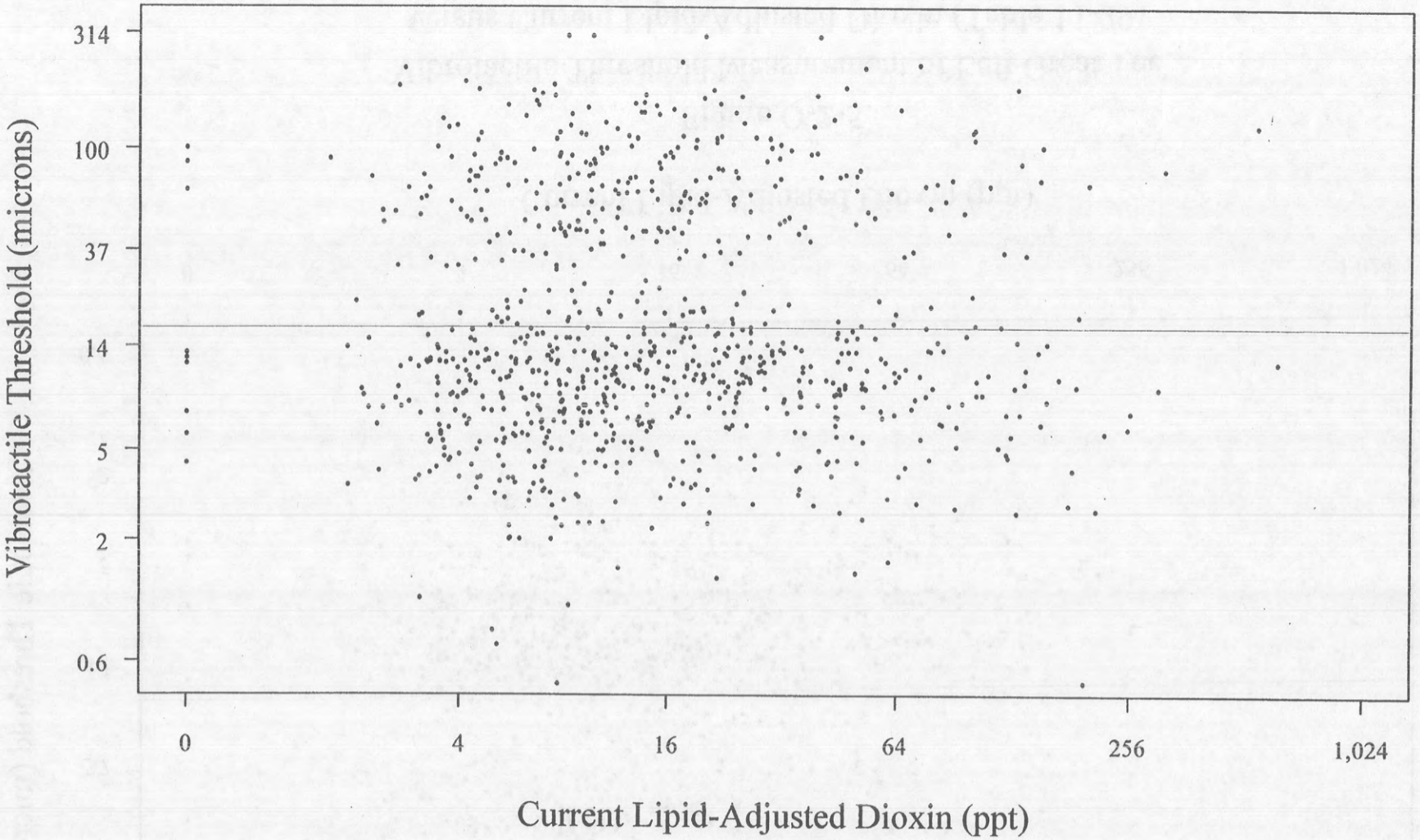

Figure Q-2-4.
Vibrotactile Threshold Measurement of Right Great Toe
versus Current Lipid-Adjusted Dioxin (Table 11-28)

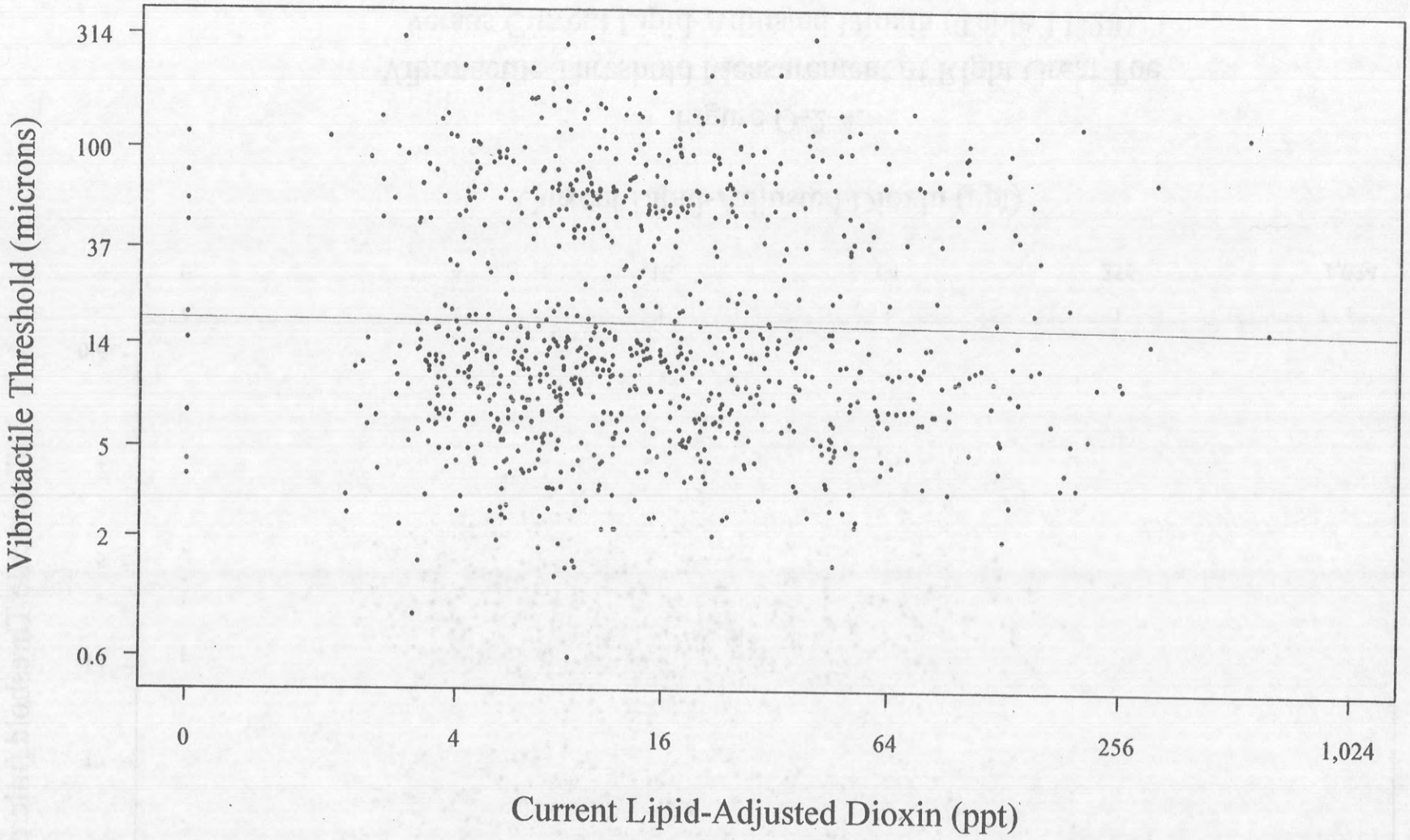

Figure Q-2-5.
Vibrotactile Threshold Measurement of Left Great Toe
versus Current Lipid-Adjusted Dioxin (Table 11-29)

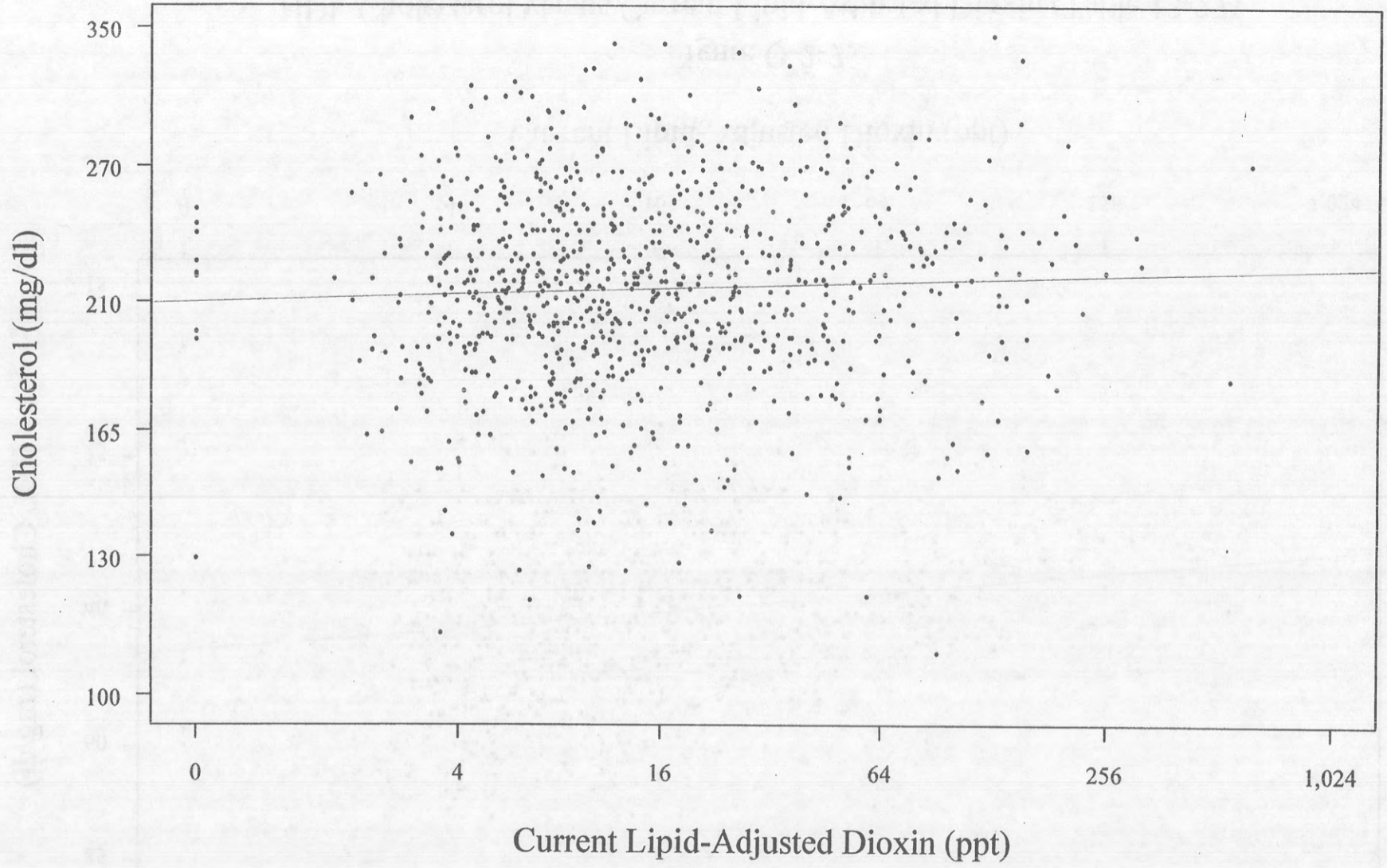

Figure Q-2-6.
Cholesterol versus Current Lipid-Adjusted Dioxin (Table 13-25)

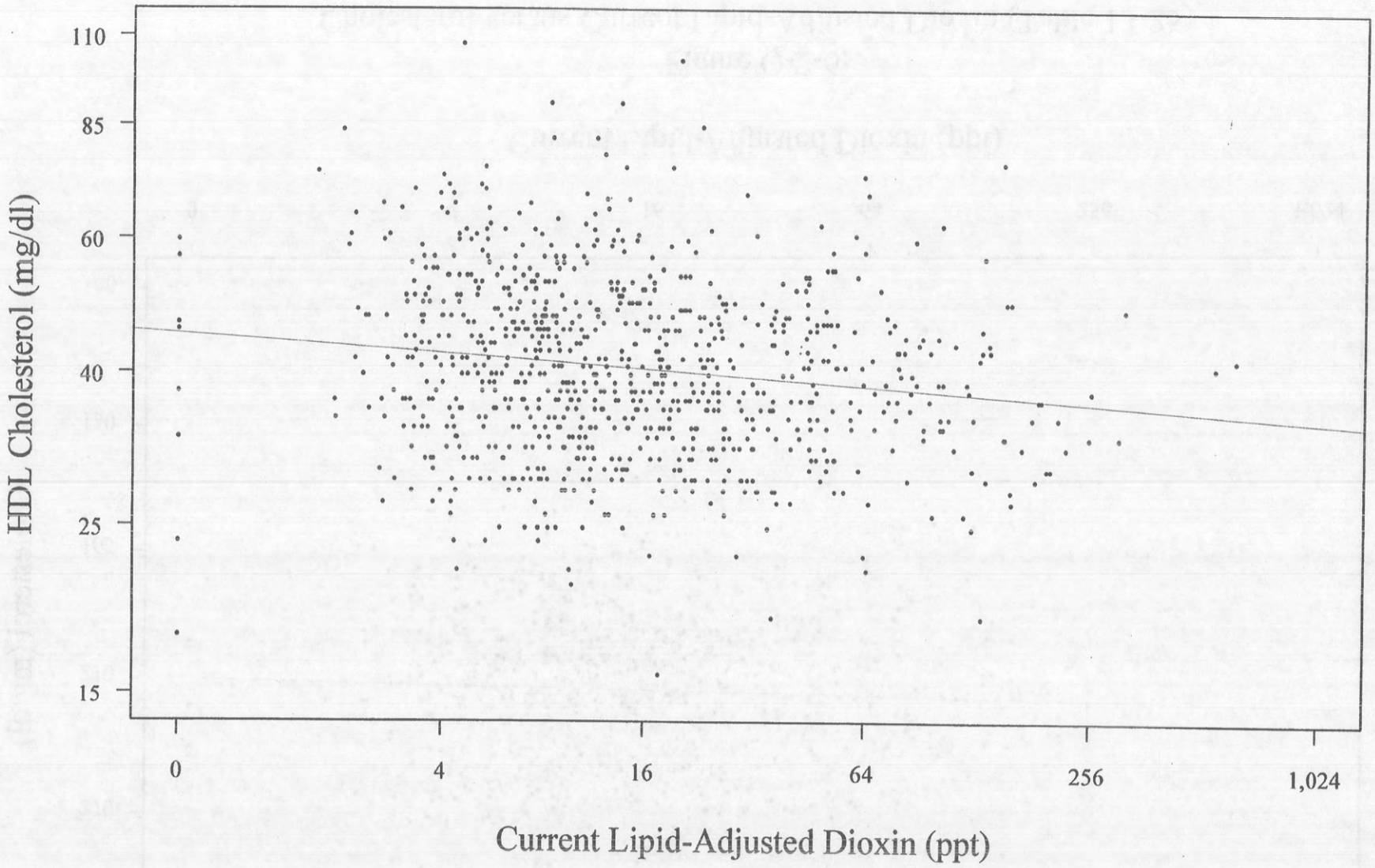

Figure Q-2-7.
HDL Cholesterol versus Current Lipid-Adjusted Dioxin (Table 13-27)

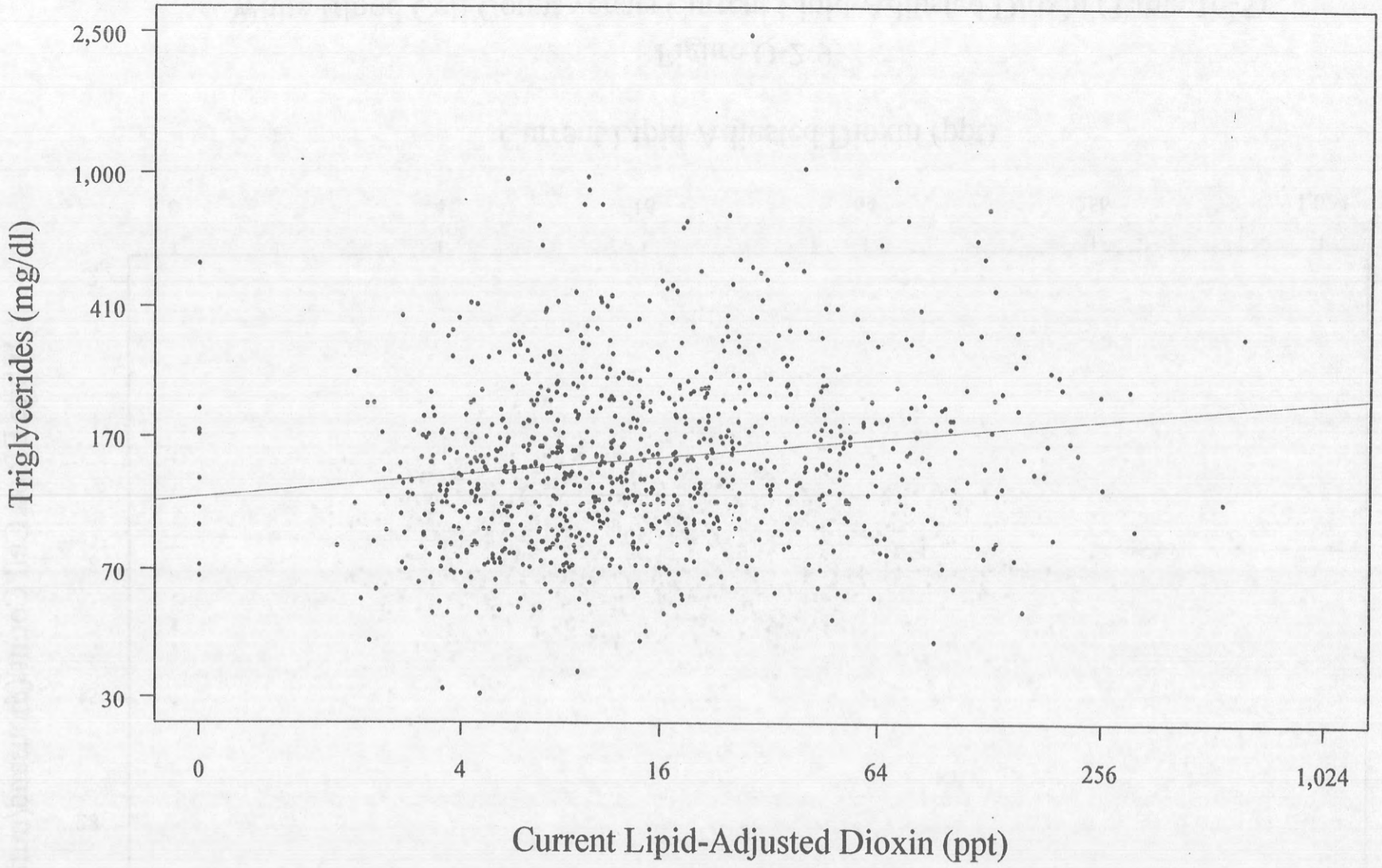

Figure Q-2-8.
Triglycerides versus Current Lipid-Adjusted Dioxin (Table 13-31)

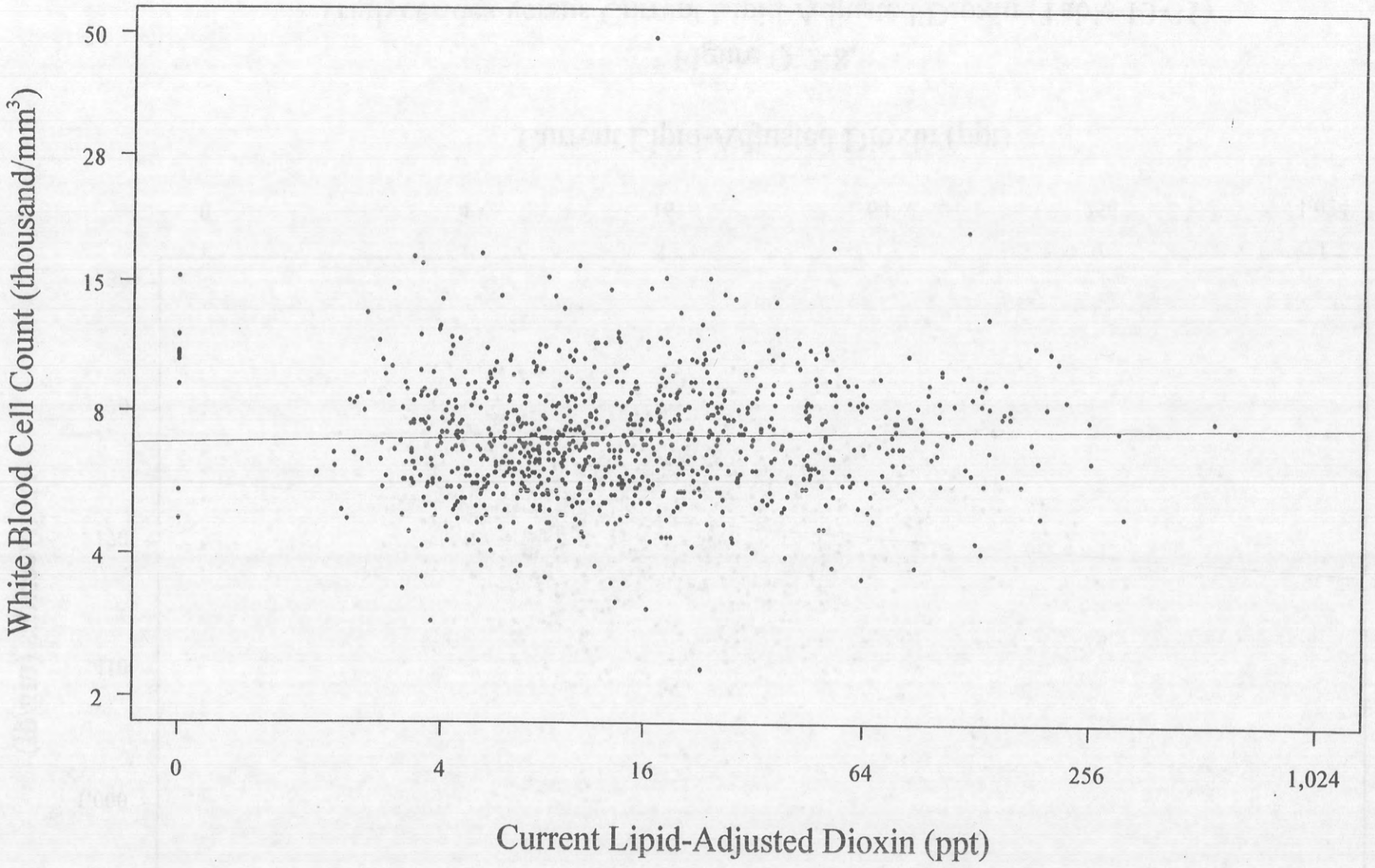

Figure Q-2-9.
White Blood Cell Count versus Current Lipid-Adjusted Dioxin (Table 16-5)

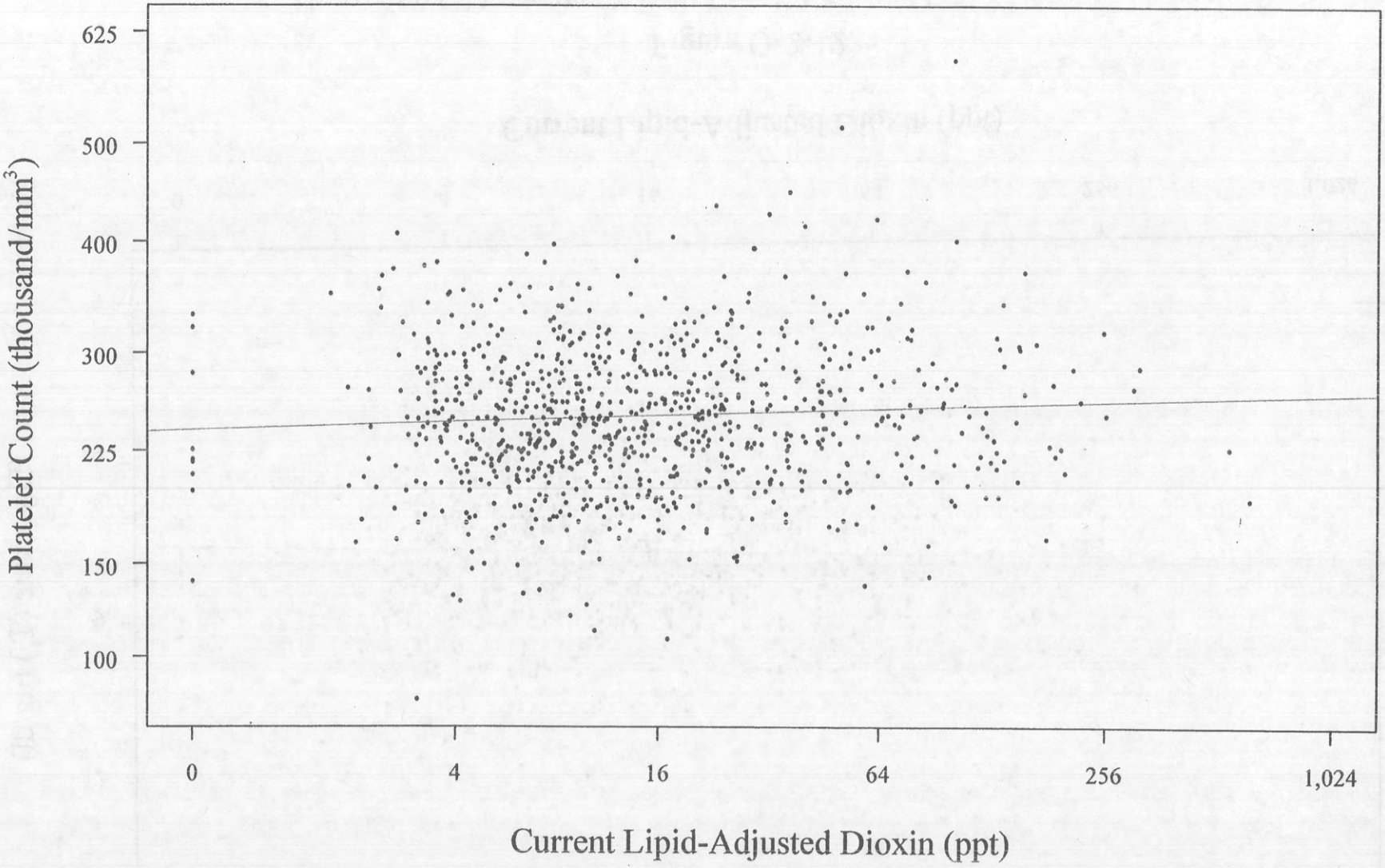

Figure Q-2-10.
Platelet Count versus Current Lipid-Adjusted Dioxin (Table 16-11)

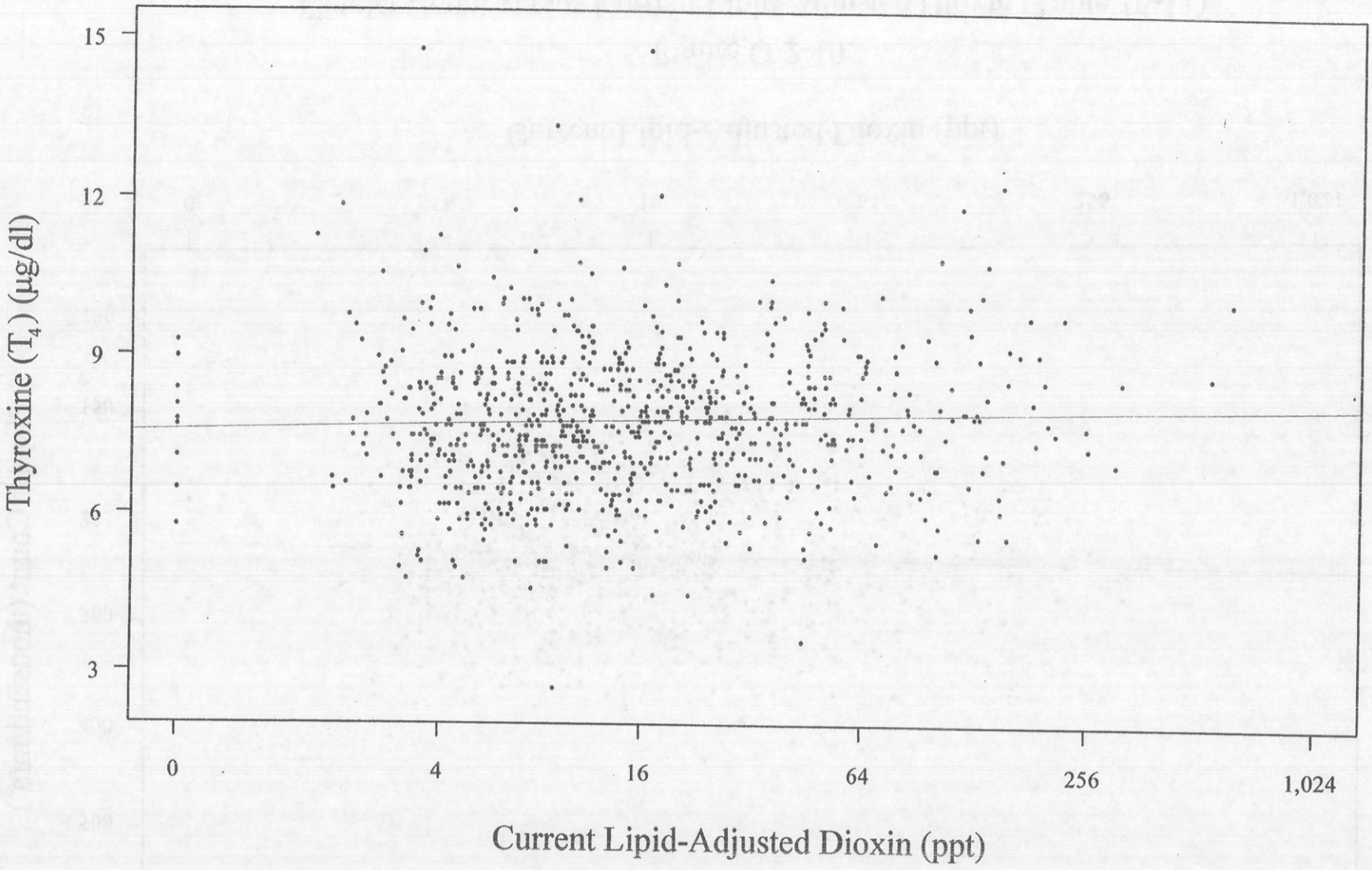

Figure Q-2-12.
Thyroxine (T_4) versus Current Lipid-Adjusted Dioxin (Table 18-21)

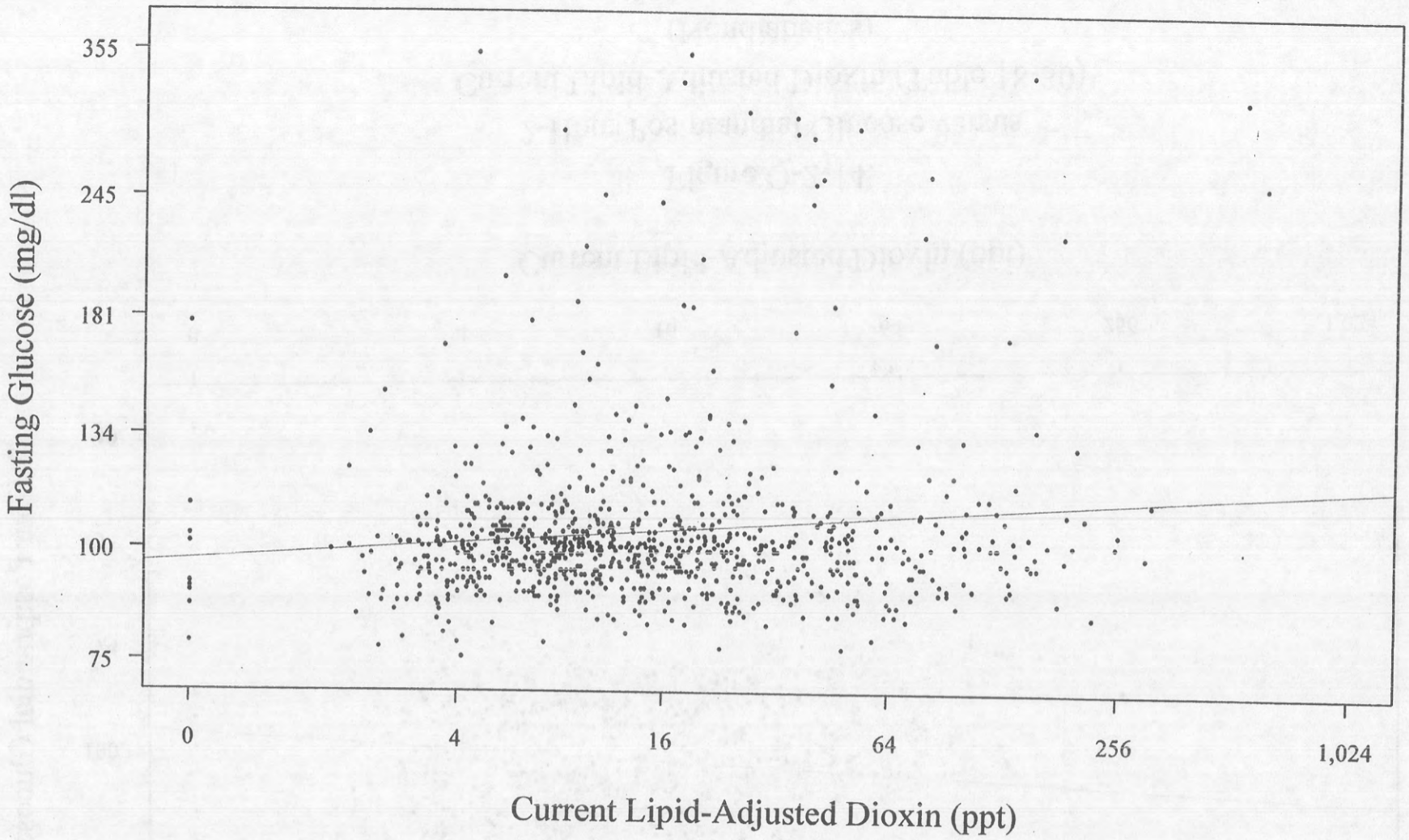

Figure Q-2-13.
Fasting Glucose versus Current Lipid-Adjusted Dioxin (Table 18-24)
(All Participants)

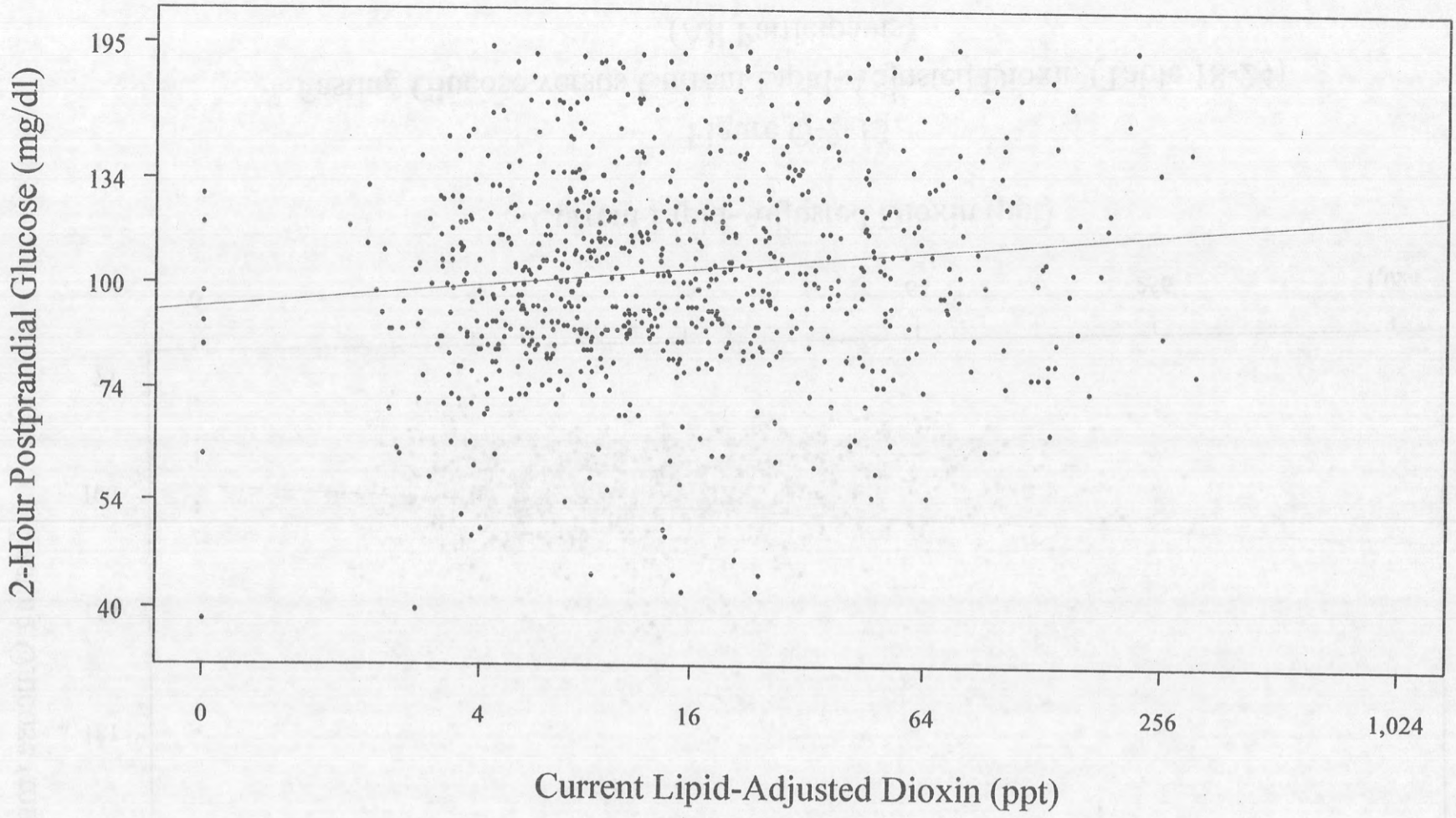

Figure Q-2-14.
2-Hour Postprandial Glucose versus
Current Lipid-Adjusted Dioxin (Table 18-30)
(Nondiabetics)

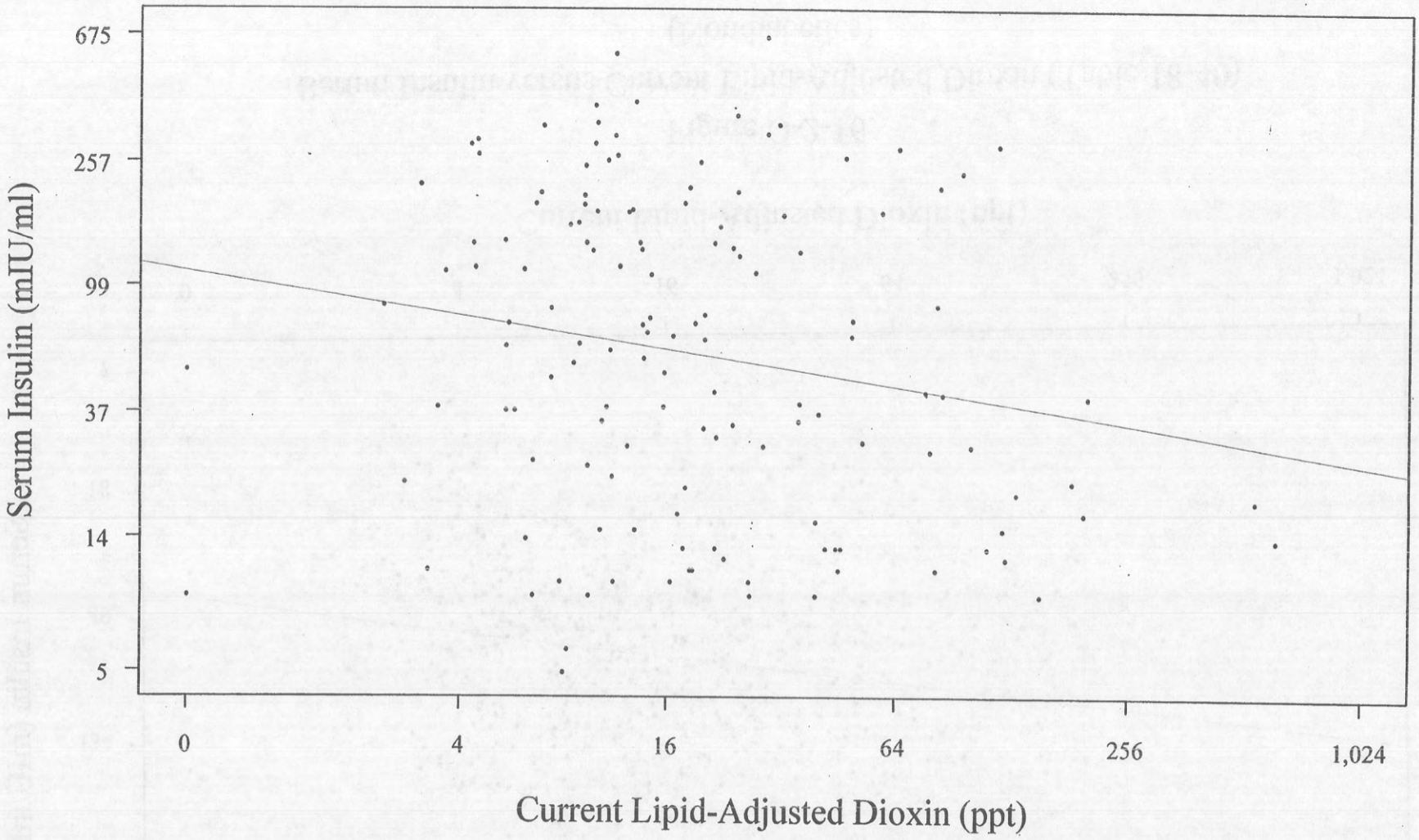

Figure Q-2-15.
Serum Insulin versus Current Lipid-Adjusted Dioxin (Table 18-38)
(Diabetics)