

## APPENDIX H-3.

### Psychology Analysis Tables Occupation Removed from Final Model

This appendix contains results of exposure analyses after occupation has been removed from those final dioxin models (Models 2 through 6) that contained occupation. These analyses are performed to investigate the relationship of the dependent variable to dioxin without removing any effects due to occupation. The format of these tables closely parallels the adjusted panels of Chapter 12 tables. A summary of the tables found in this appendix follows.

Appendix H-3 Table	Chapter 12 Table	Dependent Variable
H-3-1	12-6	Anxiety
H-3-2	12-6	Anxiety (Occupation Removed, Education Added)
H-3-3	12-7	Other Neuroses
H-3-4	12-8	SCL-90-R Anxiety
H-3-5	12-10	SCL-90-R Hostility
H-3-6	12-10	SCL-90-R Hostility (Occupation Removed, Education Added)
H-3-7	12-11	SCL-90-R Interpersonal Sensitivity
H-3-8	12-11	SCL-90-R Interpersonal Sensitivity (Occupation Removed, Education Added)
H-3-9	12-12	SCL-90-R Obsessive-Compulsive Behavior
H-3-10	12-13	SCL-90-R Paranoid Ideation
H-3-11	12-14	SCL-90-R Phobic Anxiety
H-3-12	12-15	SCL-90-R Psychoticism
H-3-13	12-16	SCL-90-R Somatization
H-3-14	12-16	SCL-90-R Somatization (Occupation Removed, Education Added)
H-3-15	12-17	SCL-90-R Global Severity Index
H-3-16	12-18	SCL-90-R Positive Symptom Total
H-3-17	12-18	SCL-90-R Positive Symptom Total (Occupation Removed, Education Added)
H-3-18	12-19	SCL-90-R Positive Symptom Distress Index

**Table H-3-1.  
Analysis of Anxiety  
Occupation Removed from Final Model**

<b>a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED</b>			
<b>Analysis Results for Log<sub>e</sub> (Initial Dioxin)<sup>a</sup></b>			
<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>b</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
516	1.06 (0.88,1.28)	0.521	AGE (p<0.001) RACE (p=0.070) EMPLOY (p<0.001)

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

<sup>b</sup> Relative risk for a twofold increase in initial dioxin.

<b>b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,044			RACE (p=0.245) INC (p<0.001) MARITAL (p=0.078)
Background RH	364	1.03 (0.72,1.48)	0.855	
Low RH	255	0.89 (0.59,1.34)	0.563	
High RH	257	1.26 (0.88,1.81)	0.199	
Low plus High RH	512	0.97 (0.72,1.31)	0.840	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤10 ppt.

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

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

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

**Table H-3-1. (Continued)**  
**Analysis of Anxiety**  
**Occupation Removed from Final Model**

c) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED				
Model <sup>a</sup>	Analysis Results for Log <sub>2</sub> (Current Dioxin + 1)			
	n	Adj. Relative Risk (95% C.I.) <sup>b</sup>	p-Value	Covariate Remarks
4	887	1.14 (1.01,1.29)	0.037	RACE (p=0.089) EMPLOY (p=0.051) MARITAL (p=0.055)
5	887	1.13 (1.01,1.26)	0.029	RACE (p=0.094) EMPLOY (p=0.049) MARITAL (p=0.057)
6 <sup>c</sup>	886	1.10 (0.98,1.24)	0.104	RACE (p=0.111) EMPLOY (p=0.049) MARITAL (p=0.063)

<sup>a</sup> Model 4: Log<sub>2</sub> (lipid-adjusted current dioxin + 1).

Model 5: Log<sub>2</sub> (whole-weight current dioxin + 1).

Model 6: Log<sub>2</sub> (whole-weight current dioxin + 1), adjusted for log<sub>2</sub> total lipids.

<sup>b</sup> Relative risk for a twofold increase in current dioxin.

<sup>c</sup> Adjusted for log<sub>2</sub> total lipids in addition to covariates specified under "Covariate Remarks" column.

**Table H-3-2.**  
**Analysis of Anxiety**  
**Occupation Removed from and Education Added to Final Model**

a) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED				
Analysis Results for Log <sub>2</sub> (Current Dioxin + 1)				
Model <sup>a</sup>	n	Adj. Relative Risk (95% C.I.) <sup>b</sup>	p-Value	Covariate Remarks
4	887	1.08 (0.94,1.22)	0.276	RACE (p=0.072) EDUC (p<0.001) EMPLOY (p=0.071) MARITAL (p=0.078)
5	887	1.07 (0.96,1.20)	0.219	RACE (p=0.075) EDUC (p<0.001) EMPLOY (p=0.069) MARITAL (p=0.080)
6 <sup>c</sup>	886	1.04 (0.92,1.18)	0.494	RACE (p=0.091) EDUC (p<0.001) EMPLOY (p=0.068) MARITAL (p=0.089)

<sup>a</sup> Model 4: Log<sub>2</sub> (lipid-adjusted current dioxin + 1).

Model 5: Log<sub>2</sub> (whole-weight current dioxin + 1).

Model 6: Log<sub>2</sub> (whole-weight current dioxin + 1), adjusted for log<sub>2</sub> total lipids.

<sup>b</sup> Relative risk for a twofold increase in current dioxin.

<sup>c</sup> Adjusted for log<sub>2</sub> total lipids in addition to covariates specified under "Covariate Remarks" column.

**Table H-3-3.**  
**Analysis of Other Neuroses**  
**Occupation Removed from Final Model**

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED				
Dioxin Category	n	Adj. Relative Risk (95% C.I.) <sup>ab</sup>	p-Value	Covariate Remarks
Comparison	1,022			DXCAT*DRKYR (p=0.017) DXCAT*EDUC (p<0.001) DXCAT*INC (p=0.012) DXCAT*COMBDAYS (p=0.036)
Background RH	352	1.02 (0.77,1.37)**	0.871**	EMPLOY (p=0.176) MARITAL (p<0.001)
Low RH	247	1.30 (0.95,1.79)**	0.101**	
High RH	248	1.25 (0.91,1.73)**	0.093**	
Low plus High RH	495	1.28 (0.99,1.66)**	0.063**	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

\*\* Categorized dioxin-by-covariate interactions (p≤0.05); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of these interactions; refer to Appendix Table H-4-1 for further analysis of these interactions.

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 H-3-3. (Continued)**  
**Analysis of Other Neuroses**  
**Occupation Removed from Final Model**

b) MODELS 4, 5, AND 6: RANCH HANDS -- CURRENT DIOXIN -- ADJUSTED				
Model <sup>a</sup>	Analysis Results for Log <sub>2</sub> (Current Dioxin + 1)			
	n	Adj. Relative Risk (95% C.I.) <sup>b</sup>	p-Value	Covariate Remarks
4	858	1.05 (0.95,1.16)**	0.372**	CURR*DRKYR (p=0.031) EDUC (p<0.001) EMPLOY (p=0.043) MARITAL (p=0.001) PARENT (p=0.039)
5	858	1.06 (0.97,1.16)**	0.193**	CURR*DRKYR (p=0.010) EDUC (p<0.001) EMPLOY (p=0.039) MARITAL (p=0.001) PARENT (p=0.043)
6 <sup>c</sup>	857	1.00 (0.91,1.11)**	0.921**	CURR*DRKYR (p=0.011) EDUC (p<0.001) EMPLOY (p=0.030) MARITAL (p=0.001) PARENT (p=0.023)

<sup>a</sup> Model 4: Log<sub>2</sub> (lipid-adjusted current dioxin + 1).  
 Model 5: Log<sub>2</sub> (whole-weight current dioxin + 1).  
 Model 6: Log<sub>2</sub> (whole-weight current dioxin + 1), adjusted for log<sub>2</sub> total lipids.

<sup>b</sup> Relative risk for a twofold increase in current dioxin.

<sup>c</sup> Adjusted for log<sub>2</sub> total lipids in addition to covariates specified under "Covariate Remarks" column.

\*\* Log<sub>2</sub> (current dioxin + 1)-by-covariate interaction (p≤0.05); adjusted relative risk, confidence interval, and p-value derived after deletion of this interaction; refer to Appendix Table H-4-1 for further analysis of this interaction.

**Table H-3-4.**  
**Analysis of SCL-90-R Anxiety**  
**Occupation Removed from Final Model**

<b>a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED</b>			
<b>Analysis Results for Log<sub>2</sub> (Initial Dioxin)<sup>a</sup></b>			
<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>b</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
500	1.06 (0.83,1.34)**	0.652**	INIT*ALC (p=0.023) DRKYR (p=0.018) EDUC (p=0.086) INC (p=0.007) MARITAL (p=0.046) COMBDAYS (p=0.131)

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

<sup>b</sup> Relative risk for a twofold increase in initial dioxin.

\*\* Log<sub>2</sub> (initial dioxin)-by-covariate interaction (0.01 < p ≤ 0.05); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table H-4-2 for further analysis of this interaction.

<b>b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,031			DRKYR (p=0.011) INC (p<0.001) EMPLOY (p=0.236)
Background RH	359	1.18 (0.68,2.06)	0.566	
Low RH	249	1.32 (0.74,2.34)	0.345	
High RH	251	1.89 (1.16,3.08)	0.010	
Low plus High RH	500	1.62 (1.07,2.46)	0.022	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

**Table H-3-5.  
Analysis of SCL-90-R Hostility  
Occupation Removed from Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,031			ALC (p=0.015) DRKYR (p<0.001) INC (p<0.001)
Background RH	359	1.41 (0.78,2.55)	0.261	
Low RH	249	1.08 (0.55,2.15)	0.819	
High RH	251	1.84 (1.07,3.18)	0.027	
Low plus High RH	500	1.49 (0.93,2.40)	0.098	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

<b>b) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED</b>				
<b>Model<sup>a</sup></b>	<b>n</b>	<b>Analysis Results for Log<sub>2</sub> (Current Dioxin + 1)</b>		
		<b>Adj. Relative Risk (95% C.I.)<sup>b</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
4	870	1.13 (0.93,1.37)	0.222	AGE (p=0.030) DRKYR (p<0.001) EDUC (p<0.001) EMPLOY (p=0.094)
5	870	1.14 (0.96,1.35)	0.133	AGE (p=0.031) DRKYR (p<0.001) EDUC (p<0.001) EMPLOY (p=0.090)
6 <sup>c</sup>	869	1.09 (0.91,1.31)	0.359	AGE (p=0.022) DRKYR (p<0.001) EDUC (p<0.001) EMPLOY (p=0.077)

<sup>a</sup> Model 4: Log<sub>2</sub> (lipid-adjusted current dioxin + 1).

Model 5: Log<sub>2</sub> (whole-weight current dioxin + 1).

Model 6: Log<sub>2</sub> (whole-weight current dioxin + 1), adjusted for log<sub>2</sub> total lipids.

<sup>b</sup> Relative risk for a twofold increase in current dioxin.

<sup>c</sup> Adjusted for log<sub>2</sub> total lipids in addition to covariates specified under "Covariate Remarks" column.

**Table H-3-6.**  
**Analysis of SCL-90-R Hostility**  
**Occupation Removed from and Education Added to Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY -- ADJUSTED</b>				
Dioxin Category	n	Adj. Relative Risk (95% C.I.) <sup>ab</sup>	p-Value	Covariate Remarks
Comparison	1,031			ALC (p=0.015) DRKYR (p<0.001) EDUC (p=0.082) INC (p=0.004)
Background RH	359	1.45 (0.80,2.63)	0.219	
Low RH	249	1.05 (0.53,2.09)	0.888	
High RH	251	1.74 (1.01,3.02)	0.046	
Low plus High RH	500	1.43 (0.89,2.30)	0.144	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

**Table H-3-7.**  
**Analysis of SCL-90-R Interpersonal Sensitivity**  
**Occupation Removed from Final Model**

<b>a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED</b>			
<b>Analysis Results for Log<sub>e</sub> (Initial Dioxin)<sup>a</sup></b>			
<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>b</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
500	0.99 (0.79,1.24)	0.935	DRKYR (p=0.009) EDUC (p=0.126) INC (p=0.025) MARITAL (p=0.011) PARENT (p=0.017)

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

<sup>b</sup> Relative risk for a twofold increase in initial dioxin.

<b>b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,031			DRKYR (p=0.032) INC (p<0.001) MARITAL (p=0.125)
Background RH	359	1.10 (0.70,1.74)	0.672	
Low RH	249	1.10 (0.67,1.81)	0.703	
High RH	251	1.48 (0.96,2.28)	0.075	
Low plus High RH	500	1.30 (0.91,1.87)	0.152	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

**Table H-3-8.**  
**Analysis of SCL-90-R Interpersonal Sensitivity**  
**Occupation Removed from and Education Added to Final Model**

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY -- ADJUSTED				
Dioxin Category	n	Adj. Relative Risk (95% C.I.) <sup>ab</sup>	p-Value	Covariate Remarks
Comparison	1,031			DRKYR (p=0.046) EDUC (p=0.047) INC (p<0.001) MARITAL (p=0.116)
Background RH	359	1.13 (0.72,1.79)	0.598	
Low RH	249	1.08 (0.66,1.77)	0.767	
High RH	251	1.41 (0.91,2.17)	0.121	
Low plus High RH	500	1.25 (0.87,1.80)	0.220	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤10 ppt.

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

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

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

**Table H-3-9.**  
**Analysis of SCL-90-R Obsessive-Compulsive Behavior**  
**Occupation Removed from Final Model**

<b>a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED</b>			
<b>Analysis Results for Log<sub>2</sub> (Initial Dioxin)<sup>a</sup></b>			
<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>b</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
500	1.12 (0.90,1.39)**	0.313**	INIT*INC (p=0.039) ALC (p=0.046) DRKYR (p=0.002) COMBDAYS (p=0.016)

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

<sup>b</sup> Relative risk for a twofold increase in initial dioxin.

\*\* Log<sub>2</sub> (initial dioxin)-by-covariate interaction (0.01 < p ≤ 0.05); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table H-4-3 for further analysis of this interaction.

<b>b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,031			DRKYR (p=0.005) INC (p<0.001) EMPLOY (p=0.108)
Background RH	359	1.59 (1.05,2.40)	0.027	
Low RH	249	0.99 (0.60,1.64)	0.968	
High RH	251	1.43 (0.92,2.22)	0.113	
Low plus High RH	500	1.21 (0.84,1.75)	0.299	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

**Table H-3-10.**  
**Analysis of SCL-90-R Paranoid Ideation**  
**Occupation Removed from Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,031			DXCAT*MARITAL (p=0.033) RACE (p=0.048) DRKYR (p<0.001) INC (p<0.001)
Background RH	359	1.88 (1.09,3.24)**	0.023**	
Low RH	249	1.27 (0.66,2.44)**	0.465**	
High RH	251	1.83 (1.06,3.18)**	0.031**	
Low plus High RH	500	1.57 (0.98,2.52)**	0.059**	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin  $\leq$  10 ppt.

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

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

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

**Table H-3-10. (Continued)**  
**Analysis of SCL-90-R Paranoid Ideation**  
**Occupation Removed from Final Model**

<b>b) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED</b>				
<b>Model<sup>a</sup></b>	<b>Analysis Results for Log<sub>2</sub> (Current Dioxin + 1)</b>			
	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>b</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
4	859	0.98 (0.81,1.18)**	0.819**	CURR*MARITAL (p=0.016) CURR*COMBDAYS (p<0.001) DRKYR (p<0.001) EDUC (p=0.270) INC (p=0.002)
5	859	1.01 (0.86,1.18)**	0.943**	CURR*MARITAL (p=0.016) CURR*COMBDAYS (p=0.001) DRKYR (p=0.001) EDUC (p=0.298) INC (p=0.003)
6 <sup>c</sup>	858	0.98 (0.82,1.16)**	0.790**	CURR*MARITAL (p=0.014) CURR*COMBDAYS (p=0.001) DRKYR (p=0.001) EDUC (p=0.288) INC (p=0.002)

<sup>a</sup> Model 4: Log<sub>2</sub> (lipid-adjusted current dioxin + 1).

Model 5: Log<sub>2</sub> (whole-weight current dioxin + 1).

Model 6: Log<sub>2</sub> (whole-weight current dioxin + 1), adjusted for log<sub>2</sub> total lipids.

<sup>b</sup> Relative risk for a twofold increase in current dioxin.

<sup>c</sup> Adjusted for log<sub>2</sub> total lipids in addition to covariates specified under "Covariate Remarks" column.

\*\* Log<sub>2</sub> (current dioxin + 1)-by-covariate interactions (p ≤ 0.05); adjusted relative risk, confidence interval, and p-value derived after deletion of these interactions; refer to Appendix Table H-4-4 for further analysis of these interactions.

**Table H-3-11.**  
**Analysis of SCL-90-R Phobic Anxiety**  
**Occupation Removed from Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
Dioxin Category	n	Adj. Relative Risk (95% C.I.) <sup>ab</sup>	p-Value	Covariate Remarks
Comparison	1,031			AGE (p=0.004) DRKYR (p=0.092) EDUC (p<0.001) INC (p<0.001) EMPLOY (p=0.014) PARENT (p=0.039)
Background RH	359	1.34 (0.83,2.16)	0.229	
Low RH	249	0.78 (0.44,1.39)	0.398	
High RH	251	1.11 (0.69,1.79)	0.659	
Low plus High RH	500	0.96 (0.64,1.44)	0.848	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

<b>b) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED</b>				
<b>Analysis Results for Log<sub>2</sub> (Current Dioxin + 1)</b>				
Model <sup>a</sup>	n	Adj. Relative Risk (95% C.I.) <sup>b</sup>	p-Value	Covariate Remarks
4	870	1.06 (0.90,1.26)	0.494	DRKYR (p=0.078) EDUC (p<0.001) EMPLOY (p=0.006) MARITAL (p=0.045)
5	870	1.06 (0.91,1.22)	0.455	DRKYR (p=0.080) EDUC (p<0.001) EMPLOY (p=0.006) MARITAL (p=0.046)
6 <sup>c</sup>	869	1.01 (0.86,1.18)	0.914	DRKYR (p=0.094) EDUC (p<0.001) EMPLOY (p=0.006) MARITAL (p=0.056)

<sup>a</sup> Model 4: Log<sub>2</sub> (lipid-adjusted current dioxin + 1).

Model 5: Log<sub>2</sub> (whole-weight current dioxin + 1).

Model 6: Log<sub>2</sub> (whole-weight current dioxin + 1), adjusted for log<sub>2</sub> total lipids.

<sup>b</sup> Relative risk for a twofold increase in current dioxin.

<sup>c</sup> Adjusted for log<sub>2</sub> total lipids in addition to covariates specified under "Covariate Remarks" column.

**Table H-3-12.  
Analysis of SCL-90-R Psychoticism  
Occupation Removed from Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY -- ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,031			CURR*ALC (p=0.022) AGE (p=0.327) RACE (p=0.016) DRKYR (p=0.016) INC (p<0.001) EMPLOY (p=0.186)
Background RH	359	1.27 (0.82,1.98)**	0.287**	
Low RH	249	0.89 (0.52,1.52)**	0.670**	
High RH	251	1.26 (0.79,2.02)**	0.325**	
Low plus High RH	500	1.08 (0.73,1.58)**	0.699**	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

\*\* Categorized dioxin-by-covariate interaction ( $0.01 < p \leq 0.05$ ); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table H-4-5 for further analysis of this interaction.

Note: RH = Ranch Hand.

Comparison: Current Dioxin  $\leq 10$  ppt.

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

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

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

**Table H-3-12. (Continued)**  
**Analysis of SCL-90-R Psychoticism**  
**Occupation Removed from Final Model**

<b>b) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED</b>				
<b>Analysis Results for Log<sub>2</sub> (Current Dioxin + 1)</b>				
<b>Model<sup>a</sup></b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>b</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
4	859	1.02 (0.87,1.20)	0.778	ALC (p=0.246) DRKYR (p=0.026) INC (p=0.001) EMPLOY (p=0.157)
5	859	1.04 (0.90,1.19)	0.626	ALC (p=0.251) DRKYR (p=0.026) INC (p=0.002) EMPLOY (p=0.149)
6 <sup>c</sup>	858	1.01 (0.87,1.17)	0.929	DRKYR (p=0.008) INC (p=0.002) EMPLOY (p=0.178)

<sup>a</sup> Model 4: Log<sub>2</sub> (lipid-adjusted current dioxin + 1).

Model 5: Log<sub>2</sub> (whole-weight current dioxin + 1).

Model 6: Log<sub>2</sub> (whole-weight current dioxin + 1), adjusted for log<sub>2</sub> total lipids.

<sup>b</sup> Relative risk for a twofold increase in current dioxin.

<sup>c</sup> Adjusted for log<sub>2</sub> total lipids in addition to covariates specified under "Covariate Remarks" column.

**Table H-3-13.  
Analysis of SCL-90-R Somatization  
Occupation Removed from Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,031			DRKYR (p=0.077) INC (p<0.001) EMPLOY (p=0.097) MARITAL (p=0.141)
Background RH	359	1.47 (0.93,2.32)	0.099	
Low RH	249	1.28 (0.77,2.13)	0.347	
High RH	251	1.65 (1.05,2.59)	0.029	
Low plus High RH	500	1.47 (1.01,2.15)	0.043	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

**Table H-3-14.**  
**Analysis of SCL-90-R Somatization**  
**Occupation Removed from and Education Added to Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
Dioxin Category	n	Adj. Relative Risk (95% C.I.) <sup>ab</sup>	p-Value	Covariate Remarks
Comparison	1,031			DRKYR (p=0.111) EDUC (p=0.015) INC (p<0.001)
Background RH	359	1.51 (0.96,2.39)	0.077	EMPLOY (p=0.083) MARITAL (p=0.124)
Low RH	249	1.24 (0.74,2.07)	0.408	
High RH	251	1.55 (0.99,2.45)	0.056	
Low plus High RH	500	1.41 (0.96,2.06)	0.076	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

**Table H-3-15.**  
**Analysis of SCL-90-R Global Severity Index**  
**Occupation Removed from Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
Dioxin Category	n	Adj. Relative Risk (95% C.I.) <sup>ab</sup>	p-Value	Covariate Remarks
Comparison	1,031			DRKYR (p=0.006) EDUC (p=0.003) INC (p<0.001)
Background RH	359	1.34 (0.83,2.14)	0.228	EMPLOY (p=0.248)
Low RH	249	1.13 (0.67,1.90)	0.640	MARITAL (p=0.004)
High RH	251	1.57 (1.01,2.46)	0.047	
Low plus High RH	500	1.37 (0.94,1.99)	0.105	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

**Table H-3-16.**  
**Analysis of SCL-90-R Positive Symptom Total**  
**Occupation Removed from Final Model**

<b>a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED</b>			
<b>Analysis Results for Log<sub>2</sub> (Initial Dioxin)<sup>a</sup></b>			
<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>b</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
500	1.04 (0.84,1.29)**	0.698**	INIT*INC (p=0.036) ALC (p=0.051) DRKYR (p=0.002) EDUC (p=0.090) MARITAL (p=0.005) PARENT (p=0.081)

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

<sup>b</sup> Relative risk for a twofold increase in initial dioxin.

\*\* Log<sub>2</sub> (initial dioxin)-by-covariate interaction (0.01 < p ≤ 0.05); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table H-4-6 for further analysis of this interaction.

<b>b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,031			DRKYR (p=0.003) INC (p<0.001) EMPLOY (p=0.179) MARITAL (p=0.017)
Background RH	359	1.19 (0.77,1.84)	0.433	
Low RH	249	1.13 (0.70,1.82)	0.616	
High RH	251	1.47 (0.97,2.25)	0.072	
Low plus High RH	500	1.31 (0.92,1.86)	0.133	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

**Table H-3-17.**  
**Analysis of SCL-90-R Positive Symptom Total**  
**Occupation Removed from and Education Added to Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>					
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>		<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,031				DRKYR (p=0.006) EDUC (p=0.028) INC (p<0.001) EMPLOY (p=0.157) MARITAL (p=0.015)
Background RH	359	1.23	(0.79,1.90)	0.363	
Low RH	249	1.11	(0.69,1.78)	0.678	
High RH	251	1.40	(0.91,2.14)	0.126	
Low plus High RH	500	1.31	(0.92,1.86)	0.202	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

**Table H-3-18.**  
**Analysis of SCL-90-R Positive Symptom Distress Index**  
**Occupation Removed from Final Model**

<b>a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED</b>				
<b>Dioxin Category</b>	<b>n</b>	<b>Adj. Relative Risk (95% C.I.)<sup>ab</sup></b>	<b>p-Value</b>	<b>Covariate Remarks</b>
Comparison	1,046			INC (p < 0.001) PARENT (p = 0.015)
Background RH	366	0.94 (0.57,1.55)	0.800	
Low RH	255	1.06 (0.63,1.79)	0.819	
High RH	258	1.21 (0.75,1.97)	0.435	
Low plus High RH	513	1.14 (0.77,1.69)	0.512	

<sup>a</sup> Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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