

APPENDIX E-3.

General Health 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 9 tables. A summary of the tables found in this appendix follows.

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**Table E-3-1.
Analysis of Self-Perception of Health
Occupation Removed from Final Model**

a) MODEL 2: RANCH HANDS – INITIAL DIOXIN – ADJUSTED			
Analysis Results for Log_e (Initial Dioxin)^a			
n	Adj. Relative Risk (95% C.I.)^b	p-Value	Covariate Remarks
520	1.30 (1.06,1.58)	0.010	AGE (p=0.025)

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

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

b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY – ADJUSTED				
Dioxin Category	n	Adj. Relative Risk (95% C.I.)^{ab}	p-Value	Covariate Remarks
Comparison	1,061			AGE (p=0.003)
Background RH	374	0.95 (0.59,1.53)	0.842	
Low RH	260	1.50 (0.94,2.39)	0.090	
High RH	260	2.55 (1.68,3.89)	<0.001	
Low plus High RH	520	1.98 (1.39,2.82)	<0.001	

^a Relative risk and confidence interval relative to Comparisons.

^b Adjusted for percent body fat at time of duty in SEA, change in percent body fat from 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 E-3-1. (Continued)
Analysis of Self-Perception of Health
Occupation Removed from Final Model

c) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED				
Analysis Results for Log_2 (Current Dioxin + 1)				
Model ^a	n	Adj. Relative Risk (95% C.I.) ^b	p-Value	Covariate Remarks
4	894	1.35 (1.16,1.57)	<0.001	AGE (p=0.001)
5	894	1.33 (1.16,1.53)	<0.001	AGE (p=0.001)
6 ^c	893	1.25 (1.08,1.45)	0.003	AGE (p=0.003)

^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.

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

^c Adjusted for log_2 total lipids in addition to covariates specified under "Covariate Remarks" column.

Table E-3-2.
Analysis for Relative Age Appearance
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.) ^{ab}	p-Value	Covariate Remarks
Comparison	1,063			RACE (p=0.007)
Background RH	374	0.67 (0.38,1.18)	0.166	
Low RH	260	0.70 (0.36,1.35)	0.285	
High RH	260	1.30 (0.77,2.19)	0.329	
Low plus High RH	520	1.00 (0.64,1.55)	0.984	

^a Relative risk and confidence interval relative to Comparisons.

^b Adjusted for percent body fat at time of duty in SEA, change in percent body fat from 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 \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 E-3-3.
Analysis of Body Fat (Percent) (Continuous)
Occupation Removed from Final Model**

a) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED							
Model ^b	Current Dioxin Category Adjusted Mean ^a /(n)			Analysis Results for Log ₂ (Current Dioxin + 1)			
	Low	Medium	High	R ²	Adj. Slope (Std. Error) ^c	p-Value	Covariate Remarks
4	20.07 (295)	22.34 (300)	23.16 (299)	0.089	0.0489 (0.0053)	<0.001	AGE (p=0.127)
5	20.00 (300)	22.32 (297)	23.30 (297)	0.098	0.0439 (0.0045)	<0.001	AGE (p=0.173)
6 ^d	20.11 (299)	22.34 (297)	23.17 (297)	0.092	0.0412 (0.0047)	<0.001	

^a Transformed from natural logarithm scale.

^b Model 4: Log₂ (lipid-adjusted current dioxin + 1).
 Model 5: Log₂ (whole-weight current dioxin + 1).
 Model 6: Log₂ (whole-weight current dioxin + 1), adjusted for log₂ total lipids.

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

^d Adjusted for log₂ total lipids.

Note: Model 4: Low = ≤8.1 ppt; Medium = >8.1-20.5 ppt; High = >20.5 ppt.
 Models 5 and 6: Low = ≤46 ppq; Medium = >46-128 ppq; High = >128 ppq.

Table E-3-4.
Analysis of Body Fat (Percent) with Adjustment for Caloric Intake (Continuous)
Occupation Removed from Final Model

a) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED							
Model ^b	Current Dioxin Category Adjusted Mean ^a /(n)			Analysis Results for Log ₂ (Current Dioxin + 1)			
	Low	Medium	High	R ²	Adj. Slope (Std. Error) ^c	p-Value	Covariate Remarks
4	20.10 (295)	22.32 (300)	23.12 (297)	0.095	0.0481 (0.0053)	<0.001	AGE*CALINT (p=0.081)
5	20.03 (300)	22.32 (297)	23.26 (295)	0.104	0.0432 (0.0045)	<0.001	AGE*CALINT (p=0.095)
6 ^d	20.12 (299)	22.32 (297)	23.18 (295)	0.100	0.0422 (0.0048)	<0.001	AGE*CALINT (p=0.101)

^a Transformed from natural logarithm scale.

^b Model 4: Log₂ (lipid-adjusted current dioxin + 1).
 Model 5: Log₂ (whole-weight current dioxin + 1).
 Model 6: Log₂ (whole-weight current dioxin + 1), adjusted for log₂ total lipids.

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

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

Note: Model 4: Low = ≤8.1 ppt; Medium = >8.1-20.5 ppt; High = >20.5 ppt.
 Models 5 and 6: Low = ≤46 ppq; Medium = >46-128 ppq; High = >128 ppq.

Table E-3-5.
Analysis of Body Fat (Discrete)
Occupation Removed from Final Model

a) MODEL 4: RANCH HANDS – CURRENT DIOXIN – ADJUSTED				
Analysis Results for Log₂ (Current Dioxin + 1)				
Model^a	n	Adj. Relative Risk (95% C.I.)^b	p-Value	Covariate Remarks
4	894	1.42 (1.27,1.58)	<0.001	AGE*RACE (p=0.059)

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

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

Table E-3-6.
Analysis of Body Fat (Percent) with Adjustment for Caloric Intake (Discrete)
Occupation Removed from Final Model

a) MODEL 4: RANCH HANDS – CURRENT DIOXIN – ADJUSTED				
Analysis Results for Log₂ (Current Dioxin + 1)				
Model^a	n	Adj. Relative Risk (95% C.I.)^b	p-Value	Covariate Remarks
4	892	1.41 (1.26,1.58)	<0.001	AGE*RACE (p=0.061) CALINT (p=0.407)

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

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

Table E-3-7.
Analysis of Sedimentation Rate (mm/hr) (Continuous)
Occupation Removed from Final Model

a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED					
Dioxin Category	n	Adj. Mean^{ab}	Difference of Adj. Mean vs. Comparisons (95% C.I.)^c	p-Value^d	Covariate Remarks
Comparison	1,062	8.04			AGE*PERS (p=0.004)
Background RH	374	7.71	-0.33 --	0.409	
Low RH	259	8.69	0.66 --	0.176	
High RH	260	9.21	1.18 --	0.019	
Low plus High RH	519	8.95	0.90 --	0.017	

^a Transformed from natural logarithm scale of sedimentation rate + 0.1.

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

^c Difference of adjusted means after transformation to original scale; confidence interval on difference of adjusted means not presented because analysis was performed on natural logarithm scale of sedimentation rate + 0.1.

^d P-value is based on difference of means on natural logarithm scale of sedimentation rate + 0.1.

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) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED							
Model^b	Current Dioxin Category Adjusted Mean^a/(n)			Analysis Results for Log₂ (Current Dioxin + 1)			
	Low	Medium	High	R²	Adj. Slope (Std. Error)^c	p-Value	Covariate Remarks
4	7.29 (295)	8.27 (299)	9.53 (299)	0.067	0.0746 (0.0198)	<0.001	AGE (p<0.001) PERS (p=0.008)
5	7.22 (300)	8.32 (296)	9.57 (297)	0.072	0.0733 (0.0168)	<0.001	AGE (p<0.001) PERS (p=0.008)
6 ^d	7.54 (299)	8.37 (296)	9.06 (297)	0.086	0.0524 (0.0182)	0.004	AGE (p<0.001) PERS (p=0.003)

^a Transformed from natural logarithm scale of sedimentation rate + 0.1.

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

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

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

^c Slope and standard error based on natural logarithm of sedimentation rate of + 0.1 versus log₂ (current dioxin + 1).

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

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

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

Table E-3-8.
Analysis of Sedimentation Rate (Discrete)
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.)^{ab}	p-Value	Covariate Remarks
Comparison	1,062			AGE*PERS (p=0.005)
Background RH	374	0.78 (0.56,1.11)	0.167	
Low RH	259	1.28 (0.91,1.81)	0.150	
High RH	260	1.25 (0.88,1.78)	0.213	
Low plus High RH	519	1.27 (0.97,1.66)	0.086	

^a Relative risk and confidence interval relative to Comparisons.

^b Adjusted for percent body fat at time of duty in SEA, change in percent body fat from 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) MODELS 4 AND 6: RANCH HANDS – CURRENT DIOXIN – ADJUSTED				
Analysis Results for Log₂ (Current Dioxin + 1)				
Model^a	n	Adj. Relative Risk (95% C.I.)^b	p-Value	Covariate Remarks
4	894	1.20 (1.06,1.35)	0.003	AGE (p=0.003)
6 ^c	893	1.15 (1.02,1.29)	0.021	AGE (p=0.004) RACE (p=0.064)

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

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

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

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