

APPENDIX J-3.

Dermatology 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 14 tables. A summary of the tables found in this appendix follows.

| Appendix J-3 Table | Chapter 14 Table | Dependent Variable |
|--------------------|------------------|--|
| J-3-1 | 14-3 | Occurrence of Acne |
| J-3-2 | 14-4 | Acne Relative to Time of Duty in SEA (Pre- & Post-SEA and Post-SEA vs. Pre-SEA and None) |
| J-3-3 | 14-5 | Acne Relative to Time of Duty in SEA (Post-SEA vs. None) |
| J-3-4 | 14-8 | Location of Acne (Post-SEA) |
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**Table J-3-1.
Analysis of Occurrence of Acne
Occupation Removed from Final Model**

| a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED | | | |
|--|--|----------------|------------------------------|
| Analysis Results for Log₂ (Initial Dioxin)^a | | | |
| n | Adj. Relative Risk (95% C.I.)^b | p-Value | Covariate Remarks |
| 520 | 1.03 (0.84,1.26) | 0.780 | AGE (p=0.002) |

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

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

| b) MODELS 4, 5, 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 | 1.03 (0.90,1.18) | 0.672 | AGE (p < 0.001) |
| 5 | 894 | 0.98 (0.92,1.15) | 0.649 | AGE (p < 0.001) |
| 6 ^c | 894 | 1.02 (0.90,1.16) | 0.750 | AGE (p < 0.001) |

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

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

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

Table J-3-2.
Analysis of Acne Relative to Time of Duty in SEA
(Pre- and Post-SEA and Post-SEA vs. Pre-SEA and None)
Occupation Removed from Final Model

| a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED | | | |
|--|--|----------------|---------------------------------------|
| Analysis Results for Log₂ (Initial Dioxin)^a | | | |
| n | Adj. Relative Risk (95% C.I.)^b | p-Value | Covariate Remarks |
| 520 | 1.05 (0.85,1.28) | 0.665 | AGE (p < 0.001) PRESEA (p = 0.019) |

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

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

| b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED | | | | |
|--|----------|---|----------------|---------------------------------------|
| Dioxin Category | n | Adj. Relative Risk (95% C.I.)^{ab} | p-Value | Covariate Remarks |
| Comparison | 1,063 | | | AGE (p < 0.001) PRESEA (p < 0.001) |
| Background RH | 374 | 1.20 (0.83,1.73) | 0.324 | |
| Low RH | 260 | 1.06 (0.70,1.60) | 0.773 | |
| High RH | 260 | 1.07 (0.73,1.59) | 0.721 | |
| Low plus High RH | 520 | 1.07 (0.78,1.46) | 0.674 | |

^a Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

Table J-3-2. (Continued)
Analysis of Acne Relative to Time of Duty in SEA
(Pre- and Post-SEA and Post-SEA vs. Pre-SEA and None)
Occupation Removed from Final Model

| c) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED | | | | |
|---|----------|--|----------------|---------------------------------------|
| Model^a | n | Analysis Results for Log₂ (Current Dioxin + 1) | | |
| | | Adj. Relative Risk (95% C.I.)^b | p-Value | Covariate Remarks |
| 4 | 894 | 1.03 (0.90,1.18) | 0.638 | AGE (p < 0.001) PRESEA (p = 0.001) |
| 5 | 894 | 1.03 (0.92,1.16) | 0.635 | AGE (p < 0.001) PRESEA (p = 0.001) |
| 6 ^c | 894 | 1.03 (0.91,1.16) | 0.693 | AGE (p < 0.001) PRESEA (p = 0.001) |

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

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

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

Table J-3-3.
Analysis of Acne Relative to Time of Duty in SEA
(Post-SEA vs. None)
Occupation Removed from Final Model

| a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED | | | |
|--|--|----------------|------------------------------|
| Analysis Results for Log₂ (Initial Dioxin)^a | | | |
| n | Adj. Relative Risk (95% C.I.)^b | p-Value | Covariate Remarks |
| 470 | 1.03 (0.84,1.27) | 0.761 | AGE (p < 0.001) |

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

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

| b) MODELS 4, 5, 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 | 807 | 1.04 (0.90,1.19) | 0.619 | AGE (p < 0.001) |
| 5 | 807 | 1.03 (0.92,1.16) | 0.602 | AGE (p < 0.001) |
| 6 ^c | 807 | 1.03 (0.90,1.17) | 0.686 | AGE (p < 0.001) |

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

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

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

**Table J-3-4.
Analysis of Location of Acne (Post-SEA)
Occupation Removed from Final Model**

| a) MODELS 5 AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED | | | | |
|---|----------|--|----------------|---------------------------------|
| Model^a | n | Analysis Results for Log₂ (Current Dioxin + 1) | | |
| | | Adj. Relative Risk (95% C.I.)^b | p-Value | Covariate Remarks |
| 5 | 692 | 0.97 (0.88,1.06) | 0.469 | AGE (p=0.001) RACE (p=0.004) |
| 6 ^c | 692 | 0.97 (0.88,1.07) | 0.513 | AGE (p=0.001) RACE (p=0.005) |

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

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

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

Table J-3-5.
Analysis of Location of Acne
(Pre- and Post-SEA and Post-SEA)
Occupation Removed from Final Model

| a) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED | | | | |
|--|-----|--|---------|---------------------------------|
| Model ^a | n | Analysis Results for Log ₂ (Current Dioxin + 1) | | |
| | | Adj. Relative Risk (95% C.I.) ^b | p-Value | Covariate Remarks |
| 4 | 775 | 0.99 (0.89,1.09) | 0.778 | AGE (p=0.001) RACE (p=0.012) |
| 5 | 775 | 0.98 (0.90,1.06) | 0.596 | AGE (p=0.001) RACE (p=0.011) |
| 6 ^c | 774 | 0.98 (0.89,1.07) | 0.641 | AGE (p=0.001) RACE (p=0.013) |

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

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

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

**Table J-3-6.
Analysis of Other Abnormalities
Occupation Removed from Final Model**

| a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED | | | |
|---|--|----------------|--|
| Analysis Results for Log ₂ (Initial Dioxin) ^a | | | |
| n | Adj. Relative Risk (95% C.I.)^b | p-Value | Covariate Remarks |
| 520 | 1.02 (0.84,1.23)** | 0.840** | INIT*PRESEA (p=0.041) RACE*PRESEA (p=0.106) AGE*PRESEA (p=0.640) |

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

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

** Log₂ (initial dioxin)-by-covariate interaction (0.01 < p ≤ 0.05); adjusted relative risk, confidence interval, and p-value derived from model after deletion of this interaction; refer to Appendix Table J-4-1 for further analysis of this interaction.

| b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED | | | |
|--|----------|---|----------------|
| Dioxin Category | n | Adj. Relative Risk (95% C.I.)^{ab} | p-Value |
| Comparison | 1,061 | | |
| Background RH | 374 | 1.27 (0.90,1.79) | 0.168 |
| Low RH | 260 | 1.14 (0.77,1.68) | 0.515 |
| High RH | 260 | 1.11 (0.78,1.59) | 0.555 |
| Low plus High RH | 520 | 1.12 (0.85,1.50) | 0.420 |

^a Relative risk and confidence interval relative to Comparisons.

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

Note: RH = Ranch Hand.

Comparison: Current Dioxin ≤ 10 ppt.

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

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

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

Table J-3-6. (Continued)
Analysis of Other Abnormalities
Occupation Removed from Final Model

| c) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED | | | | |
|---|--|--|----------------|---|
| Model^a | Analysis Results for Log₂ (Current Dioxin + 1) | | | |
| | n | Adj. Relative Risk (95% C.I.)^b | p-Value | Covariate Remarks |
| 4 | 894 | 0.98 (0.87,1.11) | 0.750 | AGE (p < 0.001) PRESEA (p = 0.050) RACE (p = 0.562) |
| 5 | 894 | 1.00 (0.90,1.11) | 0.991 | AGE (p < 0.001) PRESEA (p = 0.051) RACE (p = 0.572) |
| 6 ^c | 894 | 0.97 (0.86,1.09) | 0.580 | AGE (p < 0.001) PRESEA (p = 0.641) RACE (p = 0.540) |

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

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

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

**Table J-3-7.
Analysis of Dermatology Index
Occupation Removed from Final Model**

| a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED | | | |
|--|--|----------------|------------------------------------|
| Analysis Results for Log₂ (Initial Dioxin)^a | | | |
| n | Adj. Relative Risk (95% C.I.)^b | p-Value | Covariate Remarks |
| 520 | 1.04 (0.91,1.19) | 0.603 | RACE (p=0.028) PRESEA (p=0.060) |

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

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

| b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED | | | | |
|--|----------|---|----------------|---|
| Dioxin Category | n | Adj. Relative Risk (95% C.I.)^{ab} | p-Value | Covariate Remarks |
| Comparison | 1,062 | | | DXCAT*AGE (p=0.009) RACE (p<0.001) PRESEA (p<0.001) |
| Background RH | 374 | 1.14 (0.90,1.45)** | 0.280** | |
| Low RH | 260 | 0.80 (0.61,1.07)** | 0.129** | |
| High RH | 260 | 0.87 (0.66,1.15)** | 0.338** | |
| Low plus High RH | 520 | 0.84 (0.67,1.04)** | 0.107** | |

^a Relative risk and confidence interval relative to Comparisons.

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

** Categorized dioxin-by-covariate interaction (p≤0.01); adjusted relative risk, confidence interval, and p-value derived from model after deletion of this interaction; refer to Appendix Table J-4-2 for further analysis of this interaction.

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 J-3-7. (Continued)
Analysis of Dermatology Index
Occupation Removed from Final Model

| c) MODELS 4, 5 AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED | | | | |
|--|--|--|----------------|------------------------------------|
| Model^a | Analysis Results for Log₂ (Current Dioxin + 1) | | | |
| | n | Adj. Relative Risk (95% C.I.)^b | p-Value | Covariate Remarks |
| 4 | 894 | 0.94 (0.85,1.03) | 0.158 | RACE (p=0.005) PRESEA (p=0.006) |
| 5 | 894 | 0.94 (0.87,1.01) | 0.102 | RACE (p=0.005) PRESEA (p=0.007) |
| 6 ^c | 894 | 0.95 (0.87,1.03) | 0.221 | RACE (p=0.006) PRESEA (p=0.008) |

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

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

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