## Table K-3-4. (Continued)
## Analysis of Systolic Blood Pressure (mm Hg) (Continuous)
## Total Cholesterol, HDL, Body Fat, and Diabetic Class Removed from Final Model

| c) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Current Dioxin Category Adjusted Mean/(n) | | | Analysis Results for $Log_2$ (Current Dioxin + 1) | | | |
| Model[a] | Low | Medium | High | $R^2$ | Adj. Slope (Std. Error) | p-Value | Covariate Remarks |
| 4 | 123.72 (292) | 124.37 (294) | 126.70 (297) | 0.112 | 1.055 (0.412) | 0.011 | AGE ($p<0.001$)<br>CSMOK ($p<0.001$)<br>BPMED ($p<0.001$) |
| 5 | 123.23 (297) | 124.54 (291) | 126.95 (295) | 0.114 | 1.020 (0.353) | 0.004 | AGE ($p<0.001$)<br>CSMOK ($p<0.001$)<br>BPMED ($p<0.001$) |
| 6[b] | 123.45 (296) | 124.52 (291) | 126.69 (295) | 0.113 | 0.901 (0.383) | 0.019 | AGE ($p<0.001$)<br>CSMOK ($p<0.001$)<br>BPMED ($p<0.001$) |

[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] Adjusted for $log_2$ 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 K-3-5.
## Analysis of Systolic Blood Pressure (Discrete)
## HDL, Body Fat, and Diabetic Class 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 |
|---|---|---|---|
| 513 | 1.03 (0.85,1.23) | 0.788 | AGE (p=0.032) |

[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 | 1,046 | | | AGE (p<0.001) BPMED (p<0.001) CSMOK (p=0.033) |
| Background RH | 370 | 0.87 (0.61,1.24) | 0.434 | |
| Low RH | 254 | 0.93 (0.64,1.37) | 0.728 | |
| High RH | 259 | 1.11 (0.76,1.64) | 0.580 | |
| Low plus High RH | 513 | 1.02 (0.76,1.37) | 0.904 | |

[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 K-3-5. (Continued)
## Analysis of Systolic Blood Pressure (Discrete)
## HDL, Body Fat, and Diabetic Class 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 | 883 | 1.16 (1.02,1.33) | 0.027 | AGE (p=0.002)<br>BPMED (p<0.001) |
| 5 | 883 | 1.14 (1.02,1.28) | 0.025 | AGE (p=0.002)<br>BPMED (p<0.001) |
| 6[c] | 882 | 1.16 (1.02,1.31) | 0.025 | AGE (p=0.002)<br>BPMED (p<0.001) |

[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 K-3-6.
## Analysis of Heart Sounds
## Diabetic Class 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 |
|---|---|---|---|
| 504 | 0.98 (0.83,1.17)** | 0.847** | INIT*AGE (p=0.023)<br>HRTDIS (p=0.055) |

[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.

** $Log_2$ (initial 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 K-4-2 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 | Covariate Remarks |
|---|---|---|---|---|
| Comparison | 1,042 | | | DXCAT*AGE (p=0.037)<br>PACKYR (p=0.119)<br>CSMOK (p=0.004) |
| Background RH | 368 | 1.01 (0.74,1.37)** | 0.963** | |
| Low RH | 253 | 1.10 (0.78,1.54)** | 0.592** | |
| High RH | 259 | 1.10 (0.78,1.56)** | 0.578** | |
| Low plus High RH | 512 | 1.10 (0.84,1.43)** | 0.481** | |

[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 ($0.01 < p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table K-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 K-3-6. (Continued)
## Analysis of Heart Sounds
## Diabetic Class 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 | 868 | 1.07 (0.95,1.21) | 0.249 | AGE (p=0.007)<br>CSMOK (p=0.020)<br>HRTDIS (p=0.051) |
| 5 | 868 | 1.07 (0.96,1.18) | 0.225 | AGE (p=0.007)<br>CSMOK (p=0.019)<br>HRTDIS (p=0.051) |
| 6[c] | 866 | 1.08 (0.96,1.20) | 0.186 | AGE (p=0.001)<br>PACKYR (p=0.048)<br>HRTDIS (p=0.057) |

[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 K-3-7.
## Analysis of Overall Electrocardiograph (ECG)
## Total Cholesterol and Diabetic Class 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 |
|---|---|---|---|
| 513 | 1.02 (0.85,1.21) | 0.840 | AGE ($p<0.001$)<br>RACE ($p=0.036$) |

[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 | 1,044 | | | AGE ($p<0.001$)<br>RACE ($p=0.003$) |
| Background RH | 371 | 0.63 (0.46,0.86) | 0.004 | |
| Low RH | 254 | 0.90 (0.64,1.25) | 0.524 | |
| High RH | 259 | 0.81 (0.56,1.17) | 0.263 | |
| Low plus High RH | 513 | 0.86 (0.66,1.12) | 0.263 | |

[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 $\leq$ 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 K-3-7. (Continued)
## Analysis of Electrocardiograph (ECG)
## Total Cholesterol and Diabetic Class 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 | 884 | 1.15 (1.02,1.31) | 0.024 | AGE (p<0.001)<br>RACE (p=0.089)<br>CSMOK (p=0.139) |
| 5 | 884 | 1.14 (1.02,1.27) | 0.018 | AGE (p<0.001)<br>RACE (p=0.083)<br>CSMOK (p=0.142) |
| 6[c] | 883 | 1.12 (1.00,1.26) | 0.054 | AGE (p<0.001)<br>RACE (p=0.077)<br>CSMOK (p=0.154) |

[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 K-3-8.
## Analysis of ECG: Right Bundle Branch Block (RBBB)
## Diabetic Class 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 |
|---|---|---|---|
| 513 | 1.35 (0.79,2.29)** | 0.287** | INIT*PACKYR (p=0.041)<br>AGE (p=0.008)<br>CSMOK (p=0.111) |

[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.

** $Log_2$ (initial 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 K-4-3 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 | Covariate Remarks |
|---|---|---|---|---|
| Comparison | 1,043 | | | AGE (p=0.028)<br>RACE (p=0.125)<br>PACKYR (p=0.095) |
| Background RH | 370 | 0.54 (0.15,1.89) | 0.332 | |
| Low RH | 254 | 0.92 (0.30,2.85) | 0.886 | |
| High RH | 259 | 1.58 (0.56,4.49) | 0.388 | |
| Low plus High RH | 513 | 1.20 (0.51,2.81) | 0.671 | |

[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 K-3-9.
## Analysis of ECG: Non-Specific ST- and T- Wave Changes
## Body Fat, Total Cholesterol, and Diabetic Class 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 |
|---|---|---|---|
| 512 | 1.04 (0.85,1.27) | 0.676 | AGE ($p<0.001$)<br>RACE ($p=0.006$)<br>PERS ($p=0.080$) |

[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 | 1,043 | | | DXCAT*PACKYR ($p=0.031$)<br>AGE ($p<0.001$)<br>RACE ($p<0.001$) |
| Background RH | 370 | 0.70 (0.47,1.03)** | 0.067** | |
| Low RH | 254 | 0.97 (0.66,1.43)** | 0.892** | |
| High RH | 259 | 1.04 (0.69,1.57)** | 0.849** | |
| Low plus High RH | 513 | 1.00 (0.74,1.37)** | 0.981** | |

[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 ($0.01<p\leq0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table K-4-4 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 K-3-9. (Continued)
## Analysis of ECG: Non-Specific ST- and T- Wave Changes
## Body Fat, Total Cholesterol, and Diabetic Class 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 | 883 | 1.25 (1.08,1.44) | 0.003 | AGE (p<0.001)<br>RACE (p=0.016)<br>PACKYR (p=0.008) |
| 5 | 883 | 1.22 (1.07,1.39) | 0.012 | AGE (p<0.001)<br>RACE (p=0.014)<br>PACKYR (p=0.008) |
| 6[c] | 882 | 1.20 (1.05,1.39) | 0.009 | AGE (p<0.001)<br>RACE (p=0.012)<br>PACKYR (p=0.009) |

[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 K-3-10.
## Analysis of ECG: Bradycardia
## Total Cholesterol, HDL, Body Fat, and Diabetic Class 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 |
|---|---|---|---|
| 499 | 0.51 (0.27,0.94) | 0.018 | AGE (p=0.014)<br>PERS (p=0.009)<br>DRKYR (p=0.115) |

[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 | 1,045 | | | DXCAT*PERS (p=0.014)<br>AGE (p=0.013) |
| Background RH | 371 | 2.25 (1.18,4.28)** | 0.013** | |
| Low RH | 253 | 1.49 (0.65,3.39)** | 0.346** | |
| High RH | 259 | 0.48 (0.14,1.64)** | 0.242** | |
| Low plus High RH | 512 | 0.96 (0.46,2.00)** | 0.905** | |

[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 ($0.01 < p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table K-4-5 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 K-3-10. (Continued)
## Analysis of ECG: Bradycardia
## Total Cholesterol, HDL, Body Fat, and Diabetic Class 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 | 863 | 0.71 (0.53,0.94)** | 0.014** | CURR*PERS (p=0.002)<br>DRKYR (p=0.042) |
| 5 | 863 | 0.73 (0.59,0.91)** | 0.005** | CURR*PERS (p=0.016)<br>AGE (p=0.083)<br>DRKYR (p=0.047) |
| 6[c] | 862 | 0.76 (0.60,0.96)** | 0.023** | CURR*PERS (p=0.019)<br>AGE (p=0.114)<br>DRKYR (p=0.061) |

[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.

** $Log_2$ (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; refer to Appendix Table K-4-5 for further analysis of this interaction.

## Table K-3-11.
## Analysis of ECG: Arrhythmia
## Diabetic Class and HDL 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 |
|---|---|---|---|
| 513 | 1.06 (0.79,1.42)** | 0.719** | INIT*CSMOK (p=0.006)<br>AGE (p=0.017) |

[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.

** $Log_2$ (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; refer to Appendix Table K-4-6 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 | Covariate Remarks |
|---|---|---|---|---|
| Comparison | 1,045 | | | AGE (p<0.001) |
| Background RH | 371 | 0.69 (0.36,1.33) | 0.271 | |
| Low RH | 254 | 1.20 (0.65,2.20) | 0.565 | |
| High RH | 259 | 1.49 (0.79,2.80) | 0.215 | |
| Low plus High RH | 513 | 1.32 (0.81,2.15) | 0.263 | |

[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 K-3-12.
## Analysis of ECG: Evidence of Prior Myocardial Infarction
## Diabetic Class, HDL, and Body Fat 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 |
|---|---|---|---|
| 511 | 1.10 (0.78,1.55) | 0.586 | RACE (p=0.124)<br>CSMOK (p=0.194)<br>PERS (p=0.029) |

[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.)[b] | p-Value | Covariate Remarks |
|---|---|---|---|---|
| Comparison | 1,030 | | | AGE (p<0.001)<br>CSMOK (p=0.054)<br>PERS (p=0.186)<br>HRTDIS (p=0.029) |
| Background RH | 365 | 0.92 (0.45,1.88) | 0.825 | |
| Low RH | 248 | 0.77 (0.33,1.80) | 0.547 | |
| High RH | 255 | 1.58 (0.77,3.26) | 0.215 | |
| Low plus High RH | 513 | 1.12 (0.61,2.05) | 0.706 | |

[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 K-3-12. (Continued)
## Analysis of ECG: Evidence of Prior Myocardial Infarction
## Diabetic Class, HDL, and Body Fat Removed from Final Model

| c) MODELS 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 |
| 5 | 882 | 1.27 (1.01,1.60) | 0.043 | AGE (p=0.001)<br>RACE (p=0.131)<br>CSMOK (p=0.008) |
| 6[c] | 880 | 1.13 (0.88,1.47) | 0.345 | AGE (p=0.002)<br>RACE (p=0.147)<br>CSMOK (p=0.015)<br>PERS (p=0.153) |

[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 K-3-13.
## Analysis of ECG: Other Diagnoses
## Occupation, Diabetic Class, and Body Fat Removed from Final Model

| a) 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 | 883 | 1.12 (0.74,1.69) | 0.593 | CSMOK (p=0.026)<br>PERS (p=0.144) |
| 5 | 883 | 1.12 (0.78,1.61) | 0.545 | RACE (p=0.501)<br>CSMOK (p=0.024)<br>PERS (p=0.146) |
| 6[c] | 882 | 1.11 (0.74,1.66) | 0.609 | CSMOK (p=0.025)<br>PERS (p=0.147) |

[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 K-3-14.
## Analysis of Diastolic Blood Pressure (mm Hg) (Continuous)
## Occupation, Cholesterol, Body Fat, and Diabetic Class Removed from Final Model

**a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED**

| Initial Dioxin Category Summary Statistics | | | Analysis Results for $Log_2$ (Initial Dioxin)[a] | | | |
|---|---|---|---|---|---|---|
| Initial Dioxin | n | Adj. Mean[a] | $R^2$ | Adj. Slope (Std. Error) | p-Value | Covariate Remarks |
| Low | 169 | 73.93 | 0.063 | 0.363 (0.319) | 0.255 | RACE (p=0.018) BPMED (p=0.006) |
| Medium | 172 | 76.10 | | | | |
| High | 172 | 75.59 | | | | |

[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.

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

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

| Dioxin Category | n | Adj. Mean[a] | Difference of Adj. Mean vs. Comparisons (95% C.I.) | p-Value | Covariate Remarks |
|---|---|---|---|---|---|
| Comparison | 1,035 | 73.51** | | | DXCAT*HRTDIS (p=0.029) CSMOK (p<0.001) PACKYR (p=0.105) BPMED (p<0.001) |
| Background RH | 364 | 72.82** | -0.70 (-1.83,0.44)** | 0.228** | |
| Low RH | 249 | 72.88** | -0.63 (-1.93,0.67)** | 0.343** | |
| High RH | 256 | 73.68** | 0.16 (-1.13,1.45)** | 0.805** | |
| Low plus High RH | 505 | 73.28** | -0.23 (-1.23,0.77)** | 0.653** | |

[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.

** Categorized dioxin-by-covariate interaction ($0.01 < p \leq 0.05$); adjusted mean, difference of adjusted means, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table K-4-7 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 K-3-14. (Continued)
## Analysis of Diastolic Blood Pressure (mm Hg) (Continuous)
## Occupation, Cholesterol, Body Fat, and Diabetic Class Removed from Final Model

| c) MODELS 4, 5, AND 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Current Dioxin Category Adjusted Mean/(n) | | | Analysis Results for $Log_2$ (Current Dioxin + 1) | | | |
| Model[a] | Low | Medium | High | $R^2$ | Adj. Slope (Std. Error) | p-Value | Covariate Remarks |
| 4 | 74.28 (292) | 73.84 (294) | 75.63 (297) | 0.072 | 0.529 (0.227) | 0.020 | AGE (p=0.142)<br>RACE (p=0.109)<br>CSMOK (p<0.001)<br>BPMED (p<0.001) |
| 5 | 73.96 (297) | 73.89 (291) | 75.94 (295) | 0.074 | 0.543 (0.195) | 0.005 | AGE (p=0.142)<br>RACE (p=0.109)<br>CSMOK (p<0.001)<br>BPMED (p<0.001) |
| 6[b] | 74.33 (296) | 73.97 (291) | 75.66 (295) | 0.078 | 0.383 (0.211) | 0.070 | AGE (p=0.101)<br>RACE (p=0.081)<br>CSMOK (p<0.001)<br>BPMED (p<0.001) |

[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] Adjusted for $log_2$ 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 K-3-15.
## Analysis of Diastolic Blood Pressure (Discrete)
## Occupation, HDL, and Body Fat 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 | 1,034 | | | DXCAT*HRTDIS (p=0.009) PACKYR (p=0.013) PERS (p=0.049) BPMED (p=0.034) |
| Background RH | 364 | **** | **** | |
| Low RH | 248 | **** | **** | |
| High RH | 256 | **** | **** | |
| Low plus High RH | 504 | **** | **** | |

[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 ($p \leq 0.01$); adjusted relative risk, confidence interval, and p-value not presented; refer to Appendix Table K-4-8 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.

**b) 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 | 882 | 1.13 (0.87,1.49) | 0.363 | AGE (p=0.155) PACKYR (p=0.123) BPMED (p=0.012) |
| 5 | 882 | 1.11 (0.88,1.42) | 0.380 | AGE (p=0.145) PACKYR (p=0.118) BPMED (p=0.012) |
| 6[c] | 881 | 1.15 (0.89,1.49) | 0.297 | AGE (p=0.166) PACKYR (p=0.143) BPMED (p=0.011) |

[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)

[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 K-3-16.
## Analysis of Funduscopic Examination
## Occupation, Body Fat, and Diabetic Class 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 |
|---|---|---|---|
| 509 | 1.16 (0.91,1.47)** | 0.236** | INIT*RACE (p=0.014)<br>CSMOK (p=0.070) |

[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.

** $Log_2$ (initial 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 K-4-9 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 | Covariate Remarks |
|---|---|---|---|---|
| Comparison | 1,032 | | | AGE (p=0.001)<br>RACE (p=0.024)<br>PACKYR (p=0.013)<br>HRTDIS (p=0.002) |
| Background RH | 363 | 1.26 (0.75,2.11) | 0.382 | |
| Low RH | 246 | 0.99 (0.54,1.80) | 0.961 | |
| High RH | 255 | 1.87 (1.10,3.20) | 0.021 | |
| Low plus High RH | 501 | 1.38 (0.88,2.15) | 0.159 | |

[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 K-3-16. (Continued)
## Analysis of Funduscopic Examination
## Occupation, Body Fat, and Diabetic Class Removed from Final Model

| c) MODELS 4 AND 5: 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 | 864 | 1.25 (1.04,1.50) | 0.021 | AGE (p=0.011)<br>PACKYR (p=0.039)<br>HRTDIS (p=0.032) |
| 5 | 864 | 1.23 (1.04,1.45) | 0.014 | AGE (p=0.011)<br>PACKYR (p=0.043)<br>HRTDIS (p=0.032) |

[a] Model 4: $Log_2$ (lipid-adjusted current dioxin + 1).
Model 5: $Log_2$ (whole-weight current dioxin + 1).

[b] Relative risk for a twofold increase in current dioxin.

## Table K-3-17.
## Analysis of Carotid Bruits
## Occupation and Total Cholesterol 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 |
| 492 | 0.86 (0.48,1.52)** | 0.586** | INIT*PACKYR (p=0.002)<br>INIT*HRTDIS (p=0.041)<br>AGE (p=0.029)<br>DRKYR (p=0.039) |

[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.

** $Log_2$ (initial dioxin)-by-covariate interactions ($p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of these interactions; refer to Appendix Table K-4-10 for further analysis of these interactions.

| b) MODELS 4 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 | 884 | 0.83 (0.55,1.23) | 0.342 | AGE (p=0.009) |
| 6[c] | 850 | **** | **** | CURR*HRTDIS (p=0.003)<br>AGE (p=0.003)<br>PACKYR (p=0.137)<br>DRKYR (p=0.032) |

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

**** $Log_2$ (current dioxin)-by-covariate interaction ($p \leq 0.01$); adjusted relative risk, confidence interval, and p-value not presented, refer to Appendix Table K-4-10 for further analysis of this interaction.

## Table K-3-18.
## Analysis of Femoral Pulses
## Body Fat and Diabetic Class 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 |
|---|---|---|---|
| 512 | 0.54 (0.27,1.07) | 0.045 | CSMOK (p=0.003)<br>PERS (p=0.022) |

[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 | 1,044 | | | CSMOK (p=0.001) |
| Background RH | 371 | 0.61 (0.07,5.39) | 0.657 | |
| Low RH | 254 | 6.41 (1.91,21.60) | 0.003 | |
| High RH | 259 | 1.63 (0.30,8.83) | 0.571 | |
| Low plus High RH | 513 | 3.89 (1.23,12.30) | 0.020 | |

[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 K-3-18. (Continued)
## Analysis of Femoral Pulses
## Body Fat and Diabetic Class 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 | 883 | 1.09 (0.72,1.66) | 0.681 | CSMOK (p=0.016)<br>PERS (p=0.066) |
| 5 | 883 | 1.12 (0.78,1.60) | 0.545 | CSMOK (p=0.016)<br>PERS (p=0.065) |
| 6[c] | 883 | 1.04 (0.70,1.55) | 0.834 | CSMOK (p=0.024) |

[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 K-3-19.
## Analysis of Popliteal Pulses
## Occupation, Body Fat, and Diabetic Class and Body Fat 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 |
|---|---|---|---|
| 513 | 0.92 (0.56,1.51) | 0.740 | AGE ($p<0.001$)<br>CSMOK ($p<0.001$) |

[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) 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 | 1,043 | | | AGE ($p<0.001$)<br>CSMOK ($p<0.001$) |
| Background RH | 371 | 0.40 (0.08,2.03) | 0.267 | |
| Low RH | 254 | 2.78 (1.01,7.68) | 0.049 | |
| High RH | 259 | 4.14 (1.55,11.10) | 0.005 | |
| Low plus High RH | 513 | 3.38 (1.45,7.84) | 0.005 | |

[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 K-3-19. (Continued)
## Analysis of Popliteal Pulses
## Occupation, Body Fat, and Diabetic Class 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 | 884 | 1.42 (1.01,2.01) | 0.049 | AGE ($p<0.001$)<br>CSMOK ($p<0.001$) |
| 5 | 884 | 1.48 (1.08,2.01) | 0.013 | AGE ($p<0.001$)<br>CSMOK ($p<0.001$) |
| 6[c] | 883 | 1.32 (0.94,1.85) | 0.112 | AGE ($p<0.001$)<br>CSMOK ($p=0.001$) |

[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 K-3-20.
## Analysis of Dorsalis Pedis Pulses
## Occupation, Total Cholesterol, HDL, Body Fat, and Diabetic Class 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 |
|---|---|---|---|
| 512 | 1.12 (0.88,1.43) | 0.359 | AGE (p=0.042)<br>PACKYR (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) 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 | 1,043 | | | DXCAT*AGE (p=0.048)<br>PACKYR (p=0.005)<br>CSMOK (p=0.043) |
| Background RH | 369 | 1.11 (0.71,1.71)** | 0.651** | |
| Low RH | 254 | 0.95 (0.56,1.61)** | 0.853** | |
| High RH | 258 | 1.48 (0.91,2.41)** | 0.116** | |
| Low plus High RH | 512 | 1.19 (0.80,1.76)** | 0.389** | |

[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 ($0.01 < p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table K-4-11 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 K-3-20. (Continued)
## Analysis of Dorsalis Pedis Pulses
## Occupation, Total Cholesterol, HDL, Body Fat, and Diabetic Class 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 | 881 | 1.11 (0.94,1.31) | 0.235 | AGE ($p<0.001$)<br>PACKYR ($p<0.001$) |
| 5 | 881 | 1.08 (0.94,1.25) | 0.279 | AGE ($p<0.001$)<br>PACKYR ($p<0.001$) |
| 6[c] | 880 | 1.10 (0.94,1.29) | 0.224 | AGE ($p<0.001$)<br>PACKYR ($p<0.001$) |

[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 K-3-21.
## Analysis of Posterior Tibial Pulses
## Occupation, HDL, Body Fat, and Diabetic Class 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 |
|---|---|---|---|
| 505 | 0.89 (0.57,1.38)** | 0.595** | INIT*PACKYR (p=0.019)<br>AGE (p<0.001)<br>CSMOK (p<0.001)<br>HRTDIS (p=0.806) |

[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.

** $Log_2$ (initial 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 K-4-12 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 | Covariate Remarks |
|---|---|---|---|---|
| Comparison | 1,043 | | | DXCAT*CSMOK (p=0.030)<br>AGE (p<0.001)<br>RACE (p=0.011) |
| Background RH | 371 | 0.97 (0.44,2.15)** | 0.949** | |
| Low RH | 254 | 1.69 (0.77,3.70)** | 0.187** | |
| High RH | 259 | 3.14 (1.51,6.55)** | 0.002** | |
| Low plus High RH | 513 | 2.29 (1.24,4.23)** | 0.008** | |

[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 ($0.01 < p \leq 0.05$); adjusted relative risk, confidence interval, and p-value derived from a model fitted after deletion of this interaction; refer to Appendix Table K-4-12 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 K-3-21. (Continued)
## Analysis of Posterior Tibial Pulses
## Occupation, HDL, Body Fat, and Diabetic Class 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 | 884 | 1.19 (0.91,1.55) | 0.204 | AGE (p<0.001)<br>RACE (p=0.102)<br>CSMOK (p<0.001) |
| 5 | 884 | 1.22 (0.97,1.53) | 0.093 | AGE (p<0.001)<br>RACE (p=0.093)<br>CSMOK (p<0.001) |
| 6[c] | 883 | 1.14 (0.89,1.47) | 0.303 | AGE (p<0.001)<br>RACE (p=0.075)<br>CSMOK (p<0.001) |

[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 K-3-22.
## Analysis of Leg Pulses
## Occupation, HDL, Body Fat, Total Cholesterol, and Diabetic Class 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 |
|---|---|---|---|
| 511 | 1.14 (0.90,1.45)** | 0.278** | INIT*PERS (p=0.021)<br>AGE (p=0.010)<br>PACKYR (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.

** $Log_2$ (initial 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 K-4-13 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 | Covariate Remarks |
|---|---|---|---|---|
| Comparison | 1,028 | | | AGE (p=0.002)<br>RACE (p=0.075)<br>PACKYR (p<0.001)<br>DRKYR (p=0.110) |
| Background RH | 363 | 1.13 (0.74,1.73) | 0.566 | |
| Low RH | 248 | 0.83 (0.49,1.41) | 0.480 | |
| High RH | 251 | 1.59 (0.99,2.53) | 0.054 | |
| Low plus High RH | 499 | 1.16 (0.79,1.70) | 0.450 | |

[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 K-3-22. (Continued)
## Analysis of Leg Pulses
## Occupation, HDL, Body Fat, Total Cholesterol, and Diabetic Class 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 | 881 | 1.09 (0.93,1.29) | 0.289 | AGE ($p<0.001$)<br>PACKYR ($p<0.001$) |
| 5 | 881 | 1.07 (0.93,1.23) | 0.329 | AGE ($p<0.001$)<br>PACKYR ($p<0.001$) |
| 6[c] | 880 | 1.09 (0.94,1.27) | 0.271 | AGE ($p<0.001$)<br>PACKYR ($p<0.001$) |

[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 K-3-23.
## Analysis of Peripheral Pulses
## Occupation, HDL, Body Fat, Total Cholesterol, and Diabetic Class 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 |
|---|---|---|---|
| 511 | 1.14 (0.90,1.45)** | 0.278** | INIT*PERS (p=0.021)<br>AGE (p=0.010)<br>PACKYR (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.

** $Log_2$ (initial 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 K-4-14 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 | Covariate Remarks |
|---|---|---|---|---|
| Comparison | 1,043 | | | AGE (p<0.001)<br>RACE (p=0.068)<br>PACKYR (p=0.004)<br>CSMOK (p=0.045) |
| Background RH | 369 | 1.08 (0.71,1.64) | 0.717 | |
| Low RH | 254 | 0.85 (0.51,1.42) | 0.537 | |
| High RH | 258 | 1.55 (0.98,2.46) | 0.061 | |
| Low plus High RH | 512 | 1.16 (0.80,1.68) | 0.448 | |

[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 K-3-23. (Continued)
## Analysis of Peripheral Pulses
## Occupation, HDL, Body Fat, Total Cholesterol, and Diabetic Class 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 | 881 | 1.08 (0.92,1.28) | 0.328 | AGE ($p<0.001$)<br>PACKYR ($p<0.001$) |
| 5 | 881 | 1.07 (0.93,1.22) | 0.369 | AGE ($p<0.001$)<br>PACKYR ($p<0.001$) |
| 6[c] | 880 | 1.08 (0.93,1.26) | 0.310 | AGE ($p<0.001$)<br>PACKYR ($p<0.001$) |

[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 K-3-24.
## Analysis of Kidney, Urethra, and Bladder (KUB) X Ray (Excluding Kidney Stones)
## 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 | 1,028 | | | AGE ($p<0.001$) DRKYR ($p=0.075$) CSMOK ($p=0.014$) |
| Background RH | 363 | 0.90 (0.68,1.18) | 0.425 | |
| Low RH | 248 | 0.81 (0.59,1.11) | 0.190 | |
| High RH | 251 | 1.00 (0.73,1.39) | 0.979 | |
| Low plus High RH | 499 | 0.90 (0.70,1.15) | 0.388 | |

[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 K-3-25.
## Analysis of Intermittent Claudication and Vascular Insufficiency (ICVI) Index
## Total Cholesterol, HDL, Body Fat, and Diabetic Class 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 |
|---|---|---|---|
| 513 | 1.09 (0.74,1.62) | 0.663 | AGE (p=0.012)<br>CSMOK (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) 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 | 1,019 | | | AGE (p<0.001)<br>PACKYR (p=0.487)<br>DRKYR (p=0.336)<br>HRTDIS (p=0.128)<br>CSMOK (p=0.004) |
| Background RH | 359 | 1.20 (0.58,2.48) | 0.696 | |
| Low RH | 243 | 1.44 (0.63,3.28) | 0.459 | |
| High RH | 249 | 2.05 (0.94,4.45) | 0.082 | |
| Low plus High RH | 492 | 1.65 (0.88,3.09) | 0.121 | |

[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 K-3-25. (Continued)
## Analysis of Intermittent Claudication and Vascular Insufficiency (ICVI) Index
## Total Cholesterol, HDL, Body Fat, and Diabetic Class 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 | 884 | 1.11 (0.86,1.44) | 0.439 | AGE (p=0.003)<br>CSMOK (p=0.008) |
| 5 | 884 | 1.20 (0.96,1.50) | 0.108 | AGE (p=0.002)<br>CSMOK (p=0.008) |
| 6[c] | 883 | 1.02 (0.79,1.30) | 0.905 | AGE (p=0.003)<br>CSMOK (p=0.015) |

[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.

# APPENDIX K-4.

## Interaction Tables for the Cardiovascular Assessment Occupation, Body Fat, Total Cholesterol, HDL, and Diabetic Class Removed from Final Model

This appendix contains results of exposure analyses of interactions between covariates and dioxin, after occupation, percent body fat, total cholesterol, HDL, and diabetic class have been removed from those final statistical models that used dioxin as a measure of exposure (Models 2 through 6) and contained any of these covariates. These tables are supplements to tables in Appendix K-3, which are main effects results with these covariates removed from the model. Results are presented for separate strata of the covariate and include sample sizes, percent abnormal, relative risks, confidence intervals, and p-values for discrete dependent variables. Sample sizes, adjusted means, differences of adjusted means and confidence intervals or adjusted slopes and standard errors, and p-values are given for continuous dependent variables. Chapter 7, Statistical Methods, provides further details on the analytical approaches used in the interaction analyses. The analysis model, the covariate involved in the interaction, and a reference to the analysis table in Chapter 15, Cardiovascular Assessment, are given in the heading of each subtable. A summary of the interactions described in this appendix follows.

| Appendix K-4 Table | Chapter 15 Table | Appendix K-3 Table | Dependent Variable | Model | Covariate |
|---|---|---|---|---|---|
| K-4-1 | 15-5 | K-3-3 | Verified Myocardial Infarction | 4<br>5<br>6 | Race<br>Race<br>Race |
| K-4-2 | 15-8 | K-3-6 | Heart Sounds | 2<br>3 | Age<br>Age |
| K-4-3 | 15-10 | K-3-8 | ECG: Right Bundle Branch Block (RBBB) | 2 | Lifetime Cigarette Smoking History |
| K-4-4 | 15-12 | K-3-9 | ECG: Non-Specific ST- and T-Wave Changes | 3 | Lifetime Cigarette Smoking History |
| K-4-5 | 15-13 | K-3-10 | ECG: Bradycardia | 3<br>4<br>5<br>6 | Personality Type<br>Personality Type<br>Personality Type<br>Personality Type |
| K-4-6 | 15-15 | K-3-11 | ECG: Arrhythmia | 2 | Current Cigarette Smoking |
| K-4-7 | 15-18 | K-3-14 | Diastolic Blood Pressure (Continuous) | 3 | History of Heart Disease |
| K-4-8 | 15-19 | K-3-15 | Diastolic Blood Pressure (Discrete) | 3 | History of Heart Disease |

| Appendix K-4 Table | Chapter 15 Table | Appendix K-3 Table | Dependent Variable | Model | Covariate |
|---|---|---|---|---|---|
| K-4-9 | 15-20 | K-3-16 | Funduscopic Examination | 2 | Race |
| K-4-10 | 15-21 | K-3-17 | Carotid Bruits | 2 | Lifetime Cigarette Smoking History, History of Heart Disease |
| | | | | 6 | History of Heart Disease |
| K-4-11 | 15-25 | K-3-20 | Dorsalis Pedis Pulses | 3 | Age |
| K-4-12 | 15-26 | K-3-21 | Posterior Tibial Pulses | 2 | Lifetime Cigarette Smoking History |
| | | | | 3 | Current Cigarette Smoking |
| K-4-13 | 15-27 | K-3-22 | Leg Pulses | 2 | Personality Type |
| K-4-14 | 15-28 | K-3-23 | Peripheral Pulses | 2 | Personality Type |

## Table K-4-1.
## Interaction Table for Verified Myocardial Infarction
## Occupation and HDL Removed from Final Model

**a) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED**
**(Current Dioxin-by-Race: Tables 15-5 and K-3-3)**

| Current Dioxin Category Summary Statistics | | | | Analysis Results for $Log_2$ (Current Dioxin + 1) | |
|---|---|---|---|---|---|
| Stratum | Current Dioxin | n | Percent Yes | Adjusted Relative Risk (95% C.I.)[a] | p-Value |
| Non-Black | Low | 277 | 5.8 | 1.19 (0.98,1.44) | 0.086 |
| | Medium | 267 | 6.4 | | |
| | High | 277 | 9.0 | | |
| Black | Low | 12 | 8.3 | 0.09 (0.00,5.71) | 0.252 |
| | Medium | 21 | 0.0 | | |
| | High | 16 | 0.0 | | |

**b) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED**
**(Current Dioxin-by-Race: Tables 15-5 and K-3-3)**

| Current Dioxin Category Summary Statistics | | | | Analysis Results for $Log_2$ (Current Dioxin + 1) | |
|---|---|---|---|---|---|
| Stratum | Current Dioxin | n | Percent Yes | Adjusted Relative Risk (95% C.I.)[a] | p-Value |
| Non-Black | Low | 280 | 5.4 | 1.17 (0.99,1.39) | 0.068 |
| | Medium | 265 | 6.0 | | |
| | High | 276 | 9.8 | | |
| Black | Low | 13 | 7.7 | 0.13 (0.01,2.94) | 0.200 |
| | Medium | 22 | 0.0 | | |
| | High | 14 | 0.0 | | |

## Table K-4-1. (Continued)
## Interaction Table for Verified Myocardial Infarction
## Occupation and HDL Removed from Final Model

**c) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED**
**(Current Dioxin-by-Race: Tables 15-5 and K-3-3)**

| Current Dioxin Category Summary Statistics | | | | Analysis Results for $Log_2$ (Current Dioxin + 1) | |
|---|---|---|---|---|---|
| Stratum | Current Dioxin | n | Percent Yes | Adjusted Relative Risk (95% C.I.)[a] | p-Value |
| **Non-Black** | Low | 279 | 5.0 | 1.15 (0.96,1.39) | 0.138 |
| | Medium | 265 | 6.0 | | |
| | High | 276 | 9.8 | | |
| **Black** | Low | 13 | 7.7 | 0.12 (0.01,3.00) | 0.199 |
| | Medium | 22 | 0.0 | | |
| | High | 14 | 0.0 | | |

[a] Relative risk for a twofold increase in current dioxin.

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 K-4-2.
## Interaction Table for Heart Sounds
## Diabetic Class Removed from Final Model

**a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED**
**(Initial Dioxin-by-Age: Tables 15-8 and K-3-6)**

| Initial Dioxin Category Summary Statistics | | | | Analysis Results for $Log_2$ (Initial Dioxin) | |
|---|---|---|---|---|---|
| Stratum | Initial Dioxin | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[a] | p-Value |
| Born ≥ 1942 | Low | 54 | 22.2 | 0.79 (0.62,1.02) | 0.069 |
| | Medium | 71 | 26.8 | | |
| | High | 111 | 13.5 | | |
| Born < 1942 | Low | 113 | 21.2 | 1.16 (0.92,1.47) | 0.199 |
| | Medium | 96 | 22.9 | | |
| | High | 59 | 27.1 | | |

**b) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED**
**(Dioxin Category-by-Age: Tables 15-8 and K-3-6)**

| Stratum | Dioxin Category | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[b] | p-Value |
|---|---|---|---|---|---|
| Born ≥ 1942 | Comparison | 445 | 20.0 | | |
| | Background RH | 127 | 17.3 | 0.89 (0.53,1.49) | 0.648 |
| | Low RH | 84 | 23.8 | 1.26 (0.72,2.19) | 0.422 |
| | High RH | 154 | 17.5 | 0.83 (0.51,1.34) | 0.440 |
| | Low plus High RH | 238 | 19.7 | 0.97 (0.65,1.44) | 0.878 |
| Born < 1942 | Comparison | 597 | 19.6 | | |
| | Background RH | 241 | 20.7 | 1.11 (0.76,1.61) | 0.591 |
| | Low RH | 169 | 20.7 | 1.05 (0.69,1.61) | 0.820 |
| | High RH | 105 | 25.7 | 1.45 (0.68,3.13) | 0.338 |
| | Low plus High RH | 274 | 22.6 | 1.20 (0.84,1.70) | 0.319 |

[a] Relative risk for a twofold increase in initial dioxin.

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

Note: Model 2: Low = 39-98 ppt; Medium = > 98-232 ppt; High = > 232 ppt.
Model 3: RH = Ranch Hand.
Comparison: Current Dioxin ≤ 10 ppt.
Background (Ranch Hand): Current Dioxin ≤ 10 ppt.
Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.
High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

## Table K-4-3.
## Interaction Table for Right Bundle Branch Block (RBBB)
## Diabetic Class Removed from Final Model

| a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED (Initial Dioxin-by-Lifetime Cigarette Smoking History: Tables 15-10 and K-3-8) | | | | | |
|---|---|---|---|---|---|
| **Initial Dioxin Category Summary Statistics** | | | | **Analysis Results for $Log_2$ (Initial Dioxin)** | |
| **Stratum** | **Initial Dioxin** | **n** | **Percent Abnormal** | **Adjusted Relative Risk (95% C.I.)[a]** | **p-Value** |
| **0 Pack-years** | Low | 45 | 0.0 | 1.17 (0.24,5.68) | 0.845 |
| | Medium | 38 | 2.6 | | |
| | High | 53 | 0.0 | | |
| **>0-10 Pack-years** | Low | 52 | 0.0 | 3.97 (1.08,14.61) | 0.038 |
| | Medium | 44 | 0.0 | | |
| | High | 65 | 3.1 | | |
| **>10 Pack-years** | Low | 72 | 4.2 | 0.71 (0.30,1.70) | 0.447 |
| | Medium | 90 | 3.3 | | |
| | High | 54 | 0.0 | | |

[a] Relative risk for a twofold increase in initial dioxin.

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

## Table K-4-4.
## Interaction Table for ECG: Non-Specific ST- and T-Wave Changes
## Body Fat, Total Cholesterol, and Diabetic Class Removed from Final Model

**a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED**
**(Dioxin Category-by-Lifetime Cigarette Smoking History: Tables 15-12 and K-3-9)**

| Stratum | Dioxin Category | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[a] | p-Value |
|---|---|---|---|---|---|
| **0 Pack-years** | Comparison | 276 | 14.9 | | |
| | Background RH | 109 | 8.3 | 0.48 (0.22,1.05) | 0.068 |
| | Low RH | 69 | 13.0 | 0.67 (0.30,1.48) | 0.320 |
| | High RH | 67 | 13.4 | 0.86 (0.38,1.94) | 0.714 |
| | Low plus High RH | 136 | 13.2 | 0.75 (0.40,1.39) | 0.363 |
| **>0-10 Pack-years** | Comparison | 319 | 11.6 | | |
| | Background RH | 108 | 5.6 | 0.48 (0.19,1.20) | 0.117 |
| | Low RH | 69 | 20.3 | 1.71 (0.84,3.45) | 0.137 |
| | High RH | 92 | 7.6 | 0.72 (0.30,1.72) | 0.454 |
| | Low plus High RH | 161 | 13.0 | 1.17 (0.64,2.11) | 0.613 |
| **>10 Pack-years** | Comparison | 448 | 17.0 | | |
| | Background RH | 153 | 15.7 | 0.95 (0.56,1.59) | 0.833 |
| | Low RH | 116 | 17.2 | 0.87 (0.50,1.53) | 0.630 |
| | High RH | 100 | 20.0 | 1.43 (0.81,2.52) | 0.223 |
| | Low plus High RH | 216 | 18.5 | 1.09 (0.70,1.70) | 0.692 |

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

Note: Model 3: RH = Ranch Hand.
Comparison: Current Dioxin ≤ 10 ppt.
Background (Ranch Hand): Current Dioxin ≤ 10 ppt.
Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.
High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

## Table K-4-5.
## Interaction Table for ECG: Bradycardia
## Total Cholesterol, HDL Cholesterol, Body Fat, and Diabetic Class Removed from Final Model

**a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED**
**(Dioxin Category-by-Personality Type: Tables 15-13 and K-3-10)**

| Stratum | Dioxin Category | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[a] | p-Value |
|---|---|---|---|---|---|
| Type A | Comparison | 438 | 3.0 | | |
| | Background RH | 175 | 2.9 | 1.08 (0.38,3.13) | 0.883 |
| | Low RH | 111 | 5.4 | 1.97 (0.72,5.35) | 0.184 |
| | High RH | 100 | 3.0 | 0.93 (0.26,3.38) | 0.912 |
| | Low plus High RH | 211 | 4.3 | 1.45 (0.60,3.47) | 0.406 |
| Type B | Comparison | 607 | 1.6 | | |
| | Background RH | 196 | 6.6 | 3.80 (1.62,8.93) | 0.002 |
| | Low RH | 142 | 1.4 | 0.86 (0.18,3.98) | 0.843 |
| | High RH | 159 | 0.0 | -- | -- |
| | Low plus High RH | 301 | 0.7 | 0.38 (0.08,1.78) | 0.221 |

**b) MODEL 4: RANCH HANDS — CURRENT DIOXIN — ADJUSTED**
**(Current Dioxin-by-Personality Type: Tables 15-13 and K-3-10)**

| Current Dioxin Category Summary Statistics | | | | Analysis Results for $Log_2$ (Current Dioxin + 1) | |
|---|---|---|---|---|---|
| Stratum | Current Dioxin | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[b] | p-Value |
| Type A | Low | 136 | 3.7 | 1.06 (0.73,1.54) | 0.759 |
| | Medium | 130 | 3.8 | | |
| | High | 114 | 3.5 | | |
| Type B | Low | 154 | 7.1 | 0.40 (0.24,0.68) | 0.001 |
| | Medium | 155 | 2.6 | | |
| | High | 174 | 0.0 | | |

## Table K-4-5. (Continued)
## Interaction Table for ECG: Bradycardia
## Total Cholesterol, HDL Cholesterol, Body Fat, and Diabetic Class Removed from Final Model

**c) MODEL 5: RANCH HANDS — CURRENT DIOXIN — ADJUSTED**
**(Current Dioxin-by-Personality Type: Tables 15-13 and K-3-10)**

| Current Dioxin Category Summary Statistics | | | | Analysis Results for $Log_2$ (Current Dioxin + 1) | |
|---|---|---|---|---|---|
| Stratum | Current Dioxin | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[b] | p-Value |
| Type A | Low | 128 | 3.1 | 0.94 (0.69,1.29) | 0.704 |
| | Medium | 136 | 4.4 | | |
| | High | 116 | 3.4 | | |
| Type B | Low | 166 | 6.0 | 0.54 (0.38,0.76) | <0.001 |
| | Medium | 147 | 3.4 | | |
| | High | 170 | 0.0 | | |

**d) MODEL 6: RANCH HANDS — CURRENT DIOXIN — ADJUSTED**
**(Current Dioxin-by-Personality Type: Tables 15-13 and K-3-10)**

| Current Dioxin Category Summary Statistics | | | | Analysis Results for $Log_2$ (Current Dioxin + 1) | |
|---|---|---|---|---|---|
| Stratum | Current Dioxin | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[b] | p-Value |
| Type A | Low | 127 | 3.1 | 0.99 (0.70,1.38) | 0.932 |
| | Medium | 136 | 4.4 | | |
| | High | 116 | 3.4 | | |
| Type B | Low | 166 | 6.0 | 0.57 (0.40,0.81) | 0.002 |
| | Medium | 147 | 3.4 | | |
| | High | 170 | 0.0 | | |

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

[b] Relative risk for a twofold increase in current dioxin.

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

Note: Model 3: RH = Ranch Hand.
Comparison: Current Dioxin ≤ 10 ppt.
Background (Ranch Hand): Current Dioxin ≤ 10 ppt.
Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.
High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.
Model 4: Low = ≤ 8.1 ppt; Medium = > 8.1-20.5 ppt; High = >20.5 ppt.
Models 5 and 6: Low = ≤ 46 ppq; Medium = > 46-128 ppq; High = > 128 ppq.

## Table K-4-6.
## Interaction Table for ECG: Arrhythmia
## Diabetic Class and HDL Removed from Final Model

**a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED**
**(Initial Dioxin-by-Current Cigarette Smoking: Tables 15-15 and K-3-11)**

| Initial Dioxin Category Summary Statistics | | | | Analysis Results for $Log_2$ (Initial Dioxin) | |
|---|---|---|---|---|---|
| Stratum | Initial Dioxin | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[a] | p-Value |
| **0-Never Smoked** | Low | 45 | 2.2 | 1.71 (1.06,2.77) | 0.029 |
| | Medium | 38 | 2.6 | | |
| | High | 53 | 11.3 | | |
| **0-Former Smoker** | Low | 88 | 6.8 | 1.06 (0.66,1.71) | 0.810 |
| | Medium | 80 | 3.8 | | |
| | High | 67 | 3.0 | | |
| **>0-20 Cigarettes/Day** | Low | 24 | 12.5 | 0.52 (0.23,1.16) | 0.111 |
| | Medium | 30 | 13.3 | | |
| | High | 34 | 0.0 | | |
| **>20 Cigarettes/Day** | Low | 12 | 8.3 | 0.36 (0.06,2.00) | 0.242 |
| | Medium | 24 | 8.3 | | |
| | High | 18 | 0.0 | | |

[a] Relative risk for a twofold increase in initial dioxin.

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

## Table K-4-7.
## Interaction Table for Diastolic Blood Pressure (mm Hg) (Continuous) Cholesterol, Body Fat, and Diabetic Class Removed from Final Model

**a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Family History of Heart Disease: Tables 15-18 and K-3-14)**

| Stratum | Dioxin Category | n | Adjusted Mean | Difference of Adjusted Mean vs. Comparisons (95% C.I.) | p-Value |
|---|---|---|---|---|---|
| No | Comparison | 451 | 72.90 | | |
| | Background RH | 139 | 73.64 | 0.74 (-1.05,2.53) | 0.419 |
| | Low RH | 113 | 73.76 | 0.86 (-1.07,2.80) | 0.384 |
| | High RH | 108 | 72.45 | -0.45 (-2.42,1.53) | 0.658 |
| | Low plus High RH | 221 | 73.11 | 0.23 (-1.29,1.74) | 0.770 |
| Yes | Comparison | 584 | 74.07 | | |
| | Background RH | 225 | 72.45 | -1.62 (-3.07,-0.18) | 0.028 |
| | Low RH | 136 | 72.22 | -1.85 (-3.61,-0.10) | 0.039 |
| | High RH | 148 | 74.65 | 0.58 (-1.12,2.28) | 0.506 |
| | Low plus High RH | 284 | 73.48 | -0.59 (-1.92,0.75) | 0.390 |

Note: Model 3: RH = Ranch Hand.
Comparison: Current Dioxin ≤ 10 ppt.
Background (Ranch Hand): Current Dioxin ≤ 10 ppt.
Low (Ranch Hand): Current Dioxin > 10 ppt, 10 ppt < Initial Dioxin ≤ 143 ppt.
High (Ranch Hand): Current Dioxin > 10 ppt, Initial Dioxin > 143 ppt.

## Table K-4-8.
## Interaction Table for Diastolic Blood Pressure (Discrete)
## Body Fat Removed from Final Model

**a) MODEL 3: RANCH HANDS AND COMPARISONS BY DIOXIN CATEGORY — ADJUSTED (Dioxin Category-by-Family History of Heart Disease: Tables 15-19 and K-3-15)**

| Stratum | Dioxin Category | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[a] | p-Value |
|---|---|---|---|---|---|
| No | Comparison | 450 | 3.3 | | |
| | Background RH | 139 | 3.6 | 1.27 (0.45,3.59) | 0.657 |
| | Low RH | 112 | 4.5 | 1.50 (0.53,4.28) | 0.444 |
| | High RH | 108 | 2.8 | 0.68 (0.19,2.44) | 0.555 |
| | Low plus High RH | 220 | 3.6 | 1.04 (0.43,2.52) | 0.925 |
| Yes | Comparison | 584 | 2.9 | | |
| | Background RH | 225 | 1.3 | 0.48 (0.14,1.67) | 0.248 |
| | Low RH | 136 | 0.0 | -- | -- |
| | High RH | 148 | 5.4 | 1.79 (0.75,4,28) | 0.192 |
| | Low plus High RH | 284 | 2.8 | 0.91 (0.38,2.15) | 0.822 |

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

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

Note: Model 3: RH = Ranch Hand.
Comparison: Current Dioxin ≤ 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 K-4-9.
## Interaction Table for Funduscopic Examination
## Occupation, Body Fat, and Diabetic Class Removed from Final Model

**a) MODEL 2: RANCH HANDS — INITIAL DIOXIN — ADJUSTED**
**(Initial Dioxin-by-Race: Tables 15-20 and K-3-16)**

| Initial Dioxin Category Summary Statistics | | | | Analysis Results for $Log_2$ (Initial Dioxin) | |
|---|---|---|---|---|---|
| Stratum | Initial Dioxin | n | Percent Abnormal | Adjusted Relative Risk (95% C.I.)[a] | p-Value |
| **Non-Black** | Low | 151 | 4.6 | 1.20 (0.94,1.52) | 0.144 |
| | Medium | 162 | 8.0 | | |
| | High | 162 | 9.9 | | |
| **Black** | Low | 16 | 12.5 | 0.04 (0.00,2.30) | 0.121 |
| | Medium | 9 | 0.0 | | |
| | High | 9 | 0.0 | | |

[a] Relative risk for a twofold increase in initial dioxin.

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