

Table 5-27

Pre-post SEA Counts and Rates of Eye Anomalies

Variable: Eye Anomalies
 Restrictions: Full Siblings of Ranch Hands and Comparisons
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1250	6	4.8	812	3	3.7		All Exp Categ	
Unknown	514	4	7.8	221	3	13.6		Unk vs Bkgd	
Low	244	0	0.0	148	1	6.8		Low vs Bkgd	
High	148	0	0.0	195	3	15.4		High vs Bkgd	
Total	2156			1376					

Anomalies of the Ear, Face and Neck (All Children)

Model 1: Children of Ranch Hands - Log_2 (Initial Dioxin)

There is insufficient data (Table 5-28) to assess the significance of variation in the association between anomalies of the ear, face and neck and initial dioxin with time of conception among full sibling children of Ranch Hands.

Table 5-28

Pre-post SEA Counts and Rates of
Ear, Face and Neck Anomalies

Variable: Ear, Face and Neck Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 1: $\log_2(\text{Initial Dioxin})$

Ranch Hands - $\log_2(\text{Initial Dioxin})$ - UnadjustedTime of Conception Relative
to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	n	Pre-SEA		Post-SEA		p-Value
			Abn	Rate	n	Abn	
a) D>10 ppt (n=1208)	Low	249	1	4.0	106	0	0.0
	Medium	338	1	3.0	245	4	16.3
	High	113	0	0.0	157	3	19.1
b) D>5 ppt (n=1748)	Low	286	3	10.5	155	4	25.8
	Medium	616	1	1.6	308	3	9.7
	High	156	1	6.4	227	4	17.6

Anomalies of the Ear, Face and Neck (All Children)

Model 2: Children of Ranch Hands - $\log_2(\text{Current Dioxin})$ and Time

There is insufficient data (Table 5-29) to assess the significance of variation in the association between anomalies of the ear, face and neck and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands.

Table 5-29

Pre-post SEA Counts and Rates of
Ear, Face and Neck Anomalies

Variable: Ear, Face and Neck Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 2: $\text{Log}_2(\text{Current Dioxin})$, Time

Ranch Hands - $\text{Log}_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Current Dioxin Low	Medium	High	
a) D>10 ppt (n=1210)	Pre-SEA	≤18.6	0.0 (0/137)	5.5 (1/183)	0.0 (0/37)	
		>18.6	0.0 (0/95)	5.8 (1/171)	0.0 (0/78)	
	Post-SEA	≤18.6	0.0 (0/62)	7.5 (1/134)	0.0 (0/72)	
		>18.6	25.0 (1/40)	18.5 (2/108)	32.3 (3/93)	
b) D>5 ppt (n=1748)	Pre-SEA	≤18.6	6.4 (1/157)	6.4 (2/313)	0.0 (0/66)	
		>18.6	6.7 (1/150)	3.7 (1/270)	0.0 (0/102)	
	Post-SEA	≤18.6	33.3 (3/90)	11.5 (2/174)	0.0 (0/110)	
		>18.6	0.0 (0/63)	14.7 (2/136)	34.2 (4/117)	

Anomalies of the Ear, Face and Neck (All Children)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

There is insufficient data (Table 5-30) to assess the significance of variation in the association between anomalies of the ear, face and neck and categorized current dioxin with time of conception.

Table 5-30

Pre-post SEA Counts and Rates of Ear, Face and Neck Anomalies

Variable: Ear, Face and Neck Anomalies
Restrictions: All Children of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1459	8	5.5	981	11	11.2	2.06	All Exp Categ	
Unknown	582	5	8.6	282	5	17.7	2.08	Unk vs Bkgd	
Low	290	2	6.9	174	2	11.5	1.67	Low vs Bkgd	
High	168	0	0.0	227	4	17.6	----	High vs Bkgd	
Total	2499			1664					

Anomalies of the Ear, Face and Neck (Full Siblings)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

There is insufficient data (Table 5-31) to assess the significance of variation in the association between anomalies of the ear, face and neck and initial dioxin with time of conception among full sibling children of Ranch Hands.

Table 5-31

Pre-post SEA Counts and Rates of
Ear, Face and Neck Anomalies

Variable: Ear, Face and Neck Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 1: \log_2 (Initial Dioxin)

Ranch Hands - \log_2 (Initial Dioxin) - UnadjustedTime of Conception Relative
to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	n	Pre-SEA		Post-SEA		p-Value
			Abn	Rate	n	Abn	
a) D>10 ppt (n=1030)	Low	231	1	4.3	78	0	0.0
	Medium	276	0	0.0	206	4	19.4
	High	103	0	0.0	136	3	22.1
b) D>5 ppt (n=1489)	Low	252	2	7.9	114	3	26.3
	Medium	545	1	1.8	245	3	12.2
	High	135	0	0.0	198	4	20.2

Anomalies of the Ear, Face and Neck (Full Siblings)

Model 2: Children of Ranch Hands - \log_2 (Current Dioxin) and Time

There is insufficient data (Table 5-32) to assess the significance of variation in the association between ear, face and neck anomalies and current dioxin with time since duty in SEA and time of conception among full sibling children of Ranch Hands.

Table 5-32

Pre-post SEA Counts and Rates of
Ear, Face and Neck Anomalies

Variable: Ear, Face and Neck Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 2: \log_2 (Current Dioxin), Time

Ranch Hands - \log_2 (Current Dioxin), Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Medium	High	
a) D>10 ppt (n=1032)	Pre-SEA	≤18.6	0.0 (0/124)	6.5 (1/155)	0.0 (0/35)	
		>18.6	0.0 (0/85)	0.0 (0/143)	0.0 (0/69)	
	Post-SEA	≤18.6	0.0 (0/47)	8.7 (1/115)	0.0 (0/64)	
		>18.6	35.7 (1/28)	21.7 (2/92)	40.0 (3/75)	
b) D>5 ppt (n=1489)	Pre-SEA	≤18.6	0.0 (0/126)	7.2 (2/276)	0.0 (0/60)	
		>18.6	6.9 (1/145)	0.0 (0/237)	0.0 (0/88)	
	Post-SEA	≤18.6	33.9 (2/59)	13.9 (2/144)	0.0 (0/98)	
		>18.6	0.0 (0/53)	18.9 (2/106)	41.2 (4/97)	

Anomalies of the Ear, Face and Neck (Full Siblings)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

There is insufficient data (Table 5-33) to assess the significance of variation in the association between ear, face and neck anomalies and categorized current dioxin with time of conception among full siblings.

Table 5-33

Pre-post SEA Counts and Rates of Ear, Face and Neck Anomalies

Variable: Ear, Face and Neck Anomalies

Restrictions: Full Siblings of Ranch Hands and Comparisons

Categories: Time of Conception Relative to the Father's Duty in SEA

Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1250	8	6.4	812	11	13.5	2.13	All Exp Categ	
Unknown	514	4	7.8	221	4	18.1	2.35	Unk vs Bkgd	
Low	244	1	4.1	148	2	13.5	5.03	Low vs Bkgd	
High	148	0	0.0	195	4	20.5	--	High vs Bkgd	
Total	2156			1376					

Circulatory System and Heart Anomalies (All Children)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-34 [a]), there is borderline significant variation in the association between circulatory system and heart anomalies and initial dioxin with time of conception among children of Ranch Hands having more than 10 ppt current dioxin ($p=0.071$). This borderline significance is due to the relatively high anomaly rate among post-SEA children of Ranch Hands with low initial dioxin (28.3 per 1000) compared to the corresponding rate among pre-SEA children (4.0 per 1000) and a reversed pattern among children of Ranch Hands with high levels of initial dioxin.

Without adjustment for covariates (Table 5-34 [b]), there is no significant variation in the association between circulatory system and heart anomalies and initial dioxin with time of conception among children of Ranch Hands having more than 5 ppt current dioxin ($p=0.500$).

Table 5-34

Pre-post SEA Counts and Rates of Circulatory System and Heart Anomalies

Variable: Circulatory System and Heart Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 1: $\text{Log}_2(\text{Initial Dioxin})$

Ranch Hands - $\text{Log}_2(\text{Initial Dioxin})$ - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	n	Pre-SEA		Post-SEA		p-Value	
			Abn	Rate	n	Abn		
a) D>10 ppt (n=1208)	Low	249	1	4.0	106	3	28.3	0.071
	Medium	338	6	17.8	245	9	36.7	
	High	113	2	17.7	157	1	6.4	
b) D>5 ppt (n=1748)	Low	286	4	14.0	155	2	12.9	0.500
	Medium	616	5	8.1	308	10	32.5	
	High	156	4	25.6	227	2	8.8	

Circulatory System and Heart Anomalies (All Children)

Model 2: Children of Ranch Hands - $\text{Log}_2(\text{Current Dioxin})$ and Time

Without adjustment for covariates (Table 5-35 [a] and [b]), there is no significant variation in the association between circulatory system and heart anomalies and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands having more than 10 ppt ($p=0.739$) or more than 5 ppt ($p=0.778$) current dioxin.

Table 5-35

Pre-post SEA Counts and Rates of Circulatory System and Heart Anomalies

Variable: Circulatory System and Heart Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 2: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value	
			Current Dioxin Low	Medium	High		
a) D>10 ppt (n=1210)	Pre-SEA	≤ 18.6	7.3 (1/137)	10.9 (2/183)	27.0 (1/37)	0.739	
		>18.6	0.0 (0/95)	23.4 (4/171)	12.8 (1/78)		
	Post-SEA	≤ 18.6	16.1 (1/62)	37.3 (5/134)	0.0 (0/72)		
		>18.6	50.0 (2/40)	37.0 (4/108)	10.8 (1/93)		
	b) D>5 ppt (n=1748)	Pre-SEA	≤ 18.6	12.7 (2/157)	9.6 (3/313)	15.2 (1/66)	0.778
		>18.6	13.3 (2/150)	14.8 (4/270)	9.8 (1/102)		
		Post-SEA	≤ 18.6	11.1 (1/90)	28.7 (5/174)	9.1 (1/110)	
			>18.6	0.0 (0/63)	44.1 (6/136)	8.5 (1/117)	

Circulatory System and Heart Anomalies (All Children)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-36), there is no significant variation in the overall association between circulatory system and heart anomalies and categorized current dioxin with time of conception ($p=0.788$). The corresponding contrasts of children of Ranch Hands in the High ($p=0.470$), Low ($p=0.587$) and Unknown ($p=0.846$) categories versus children of Comparisons in the Background category are not significant.

Table 5-36

Pre-post SEA Counts and Rates of Circulatory System and Heart Anomalies

Variable: Circulatory System and Heart Anomalies
Restrictions: All Children of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category		Pre-SEA		Post-SEA		Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate		
Background	1459	15	10.3	981	16	16.3	1.60	All Exp Categ 0.788
Unknown	582	6	10.3	282	4	14.2	1.38	Unk vs Bkgd 0.846
Low	290	6	20.7	174	8	46.0	2.28	Low vs Bkgd 0.587
High	168	2	11.9	227	2	8.8	0.74	High vs Bkgd 0.470
Total	2499			1664				

Circulatory System and Heart Anomalies (Full Siblings)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-37 [a] and [b]), there is no significant variation in the association between circulatory system and heart anomalies and initial dioxin with time of conception among full sibling children of Ranch Hands having more than 10 ppt ($p=0.154$) or more than 5 ppt ($p=0.727$) current dioxin.

Table 5-37

**Pre-post SEA Counts and Rates of
Circulatory System and Heart Anomalies**

Variable: Circulatory System and Heart Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 1: $\text{Log}_2(\text{Initial Dioxin})$

Ranch Hands - $\text{Log}_2(\text{Initial Dioxin})$ - Unadjusted

Time of Conception Relative
to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	n	Pre-SEA		Post-SEA			p-Value
			Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1030)	Low	231	1	4.3	78	1	12.8	0.154
	Medium	276	3	10.9	206	7	34.0	
	High	103	2	19.4	136	0	0.0	
b) D>5 ppt (n=1489)	Low	252	4	15.9	114	1	8.8	0.727
	Medium	545	4	7.3	245	7	28.6	
	High	135	2	14.8	198	1	5.1	

Circulatory System and Heart Anomalies (Full Siblings)

Model 2: Children of Ranch Hands - $\text{Log}_2(\text{Current Dioxin})$ and Time

Without adjustment for covariates (Table 5-38 [a] and [b]), there is no significant variation in the association between circulatory system and heart anomalies and current dioxin with time since duty in SEA and time of conception among full sibling children of Ranch Hands having more than 10 ppt (p=0.621) or more than 5 ppt (p=0.892) current dioxin.

Table 5-38

Pre-post SEA Counts and Rates of Circulatory System and Heart Anomalies

Variable: Circulatory System and Heart Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 2: \log_2 (Current Dioxin), Time

Ranch Hands - \log_2 (Current Dioxin), Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Current Dioxin Low	Medium	High	
a) D>10 ppt (n=1032)	Pre-SEA	≤18.6	8.1 (1/124)	6.5 (1/155)	28.6 (1/35)	0.621
		>18.6	0.0 (0/85)	14.0 (2/143)	14.5 (1/69)	
	Post-SEA	≤18.6	0.0 (0/47)	26.1 (3/115)	0.0 (0/64)	0.892
		>18.6	35.7 (1/28)	43.5 (4/92)	0.0 (0/75)	
b) c>5 ppt (n=1489)	Pre-SEA	≤18.6	15.9 (2/126)	7.2 (2/276)	16.7 (1/60)	0.892
		>18.6	13.8 (2/145)	8.4 (2/237)	11.4 (1/88)	
	Post-SEA	≤18.6	16.9 (1/59)	20.8 (3/144)	0.0 (0/98)	
		>18.6	0.0 (0/53)	47.2 (5/106)	0.0 (0/97)	

Circulatory System and Heart Anomalies (Full Siblings)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-39), there is borderline significant variation in the overall association between circulatory system and heart anomalies and categorized current dioxin with time of conception among full siblings ($p=0.095$). However, the association between circulatory system and heart anomalies and time of conception among children of Ranch Hands in the Unknown ($p=0.992$), Low ($p=0.234$) and High ($p=0.377$) categories do not differ significantly from the corresponding association among children of Comparisons in the Background category.

Table 5-39

Pre-post SEA Counts and Rates of Circulatory System and Heart Anomalies

Variable: Circulatory System and Heart Anomalies
Restrictions: Full Siblings of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1250	14	11.2	812	14	17.2	1.55	All Exp Categ	0.095
Unknown	514	6	11.7	221	4	18.1	1.56	Unk vs Bkgd	0.992
Low	244	3	12.3	148	7	47.3	3.99	Low vs Bkgd	0.234
High	148	2	13.5	195	0	0.0	----	High vs Bkgd	0.377
Total	2156			1376					

Respiratory System Anomalies (All Children)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

There is insufficient data (Table 5-40) to assess the significance of variation in the association between respiratory system anomalies and initial dioxin with time of conception among children of Ranch Hands.

Table 5-40

Pre-post SEA Counts and Rates of Respiratory System Anomalies

Variable: Respiratory System Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 1: $\log_2(\text{Initial Dioxin})$

Ranch Hands - $\log_2(\text{Initial Dioxin})$ - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) c>10 ppt (n=1208)	Low	249	0	0.0	106	0	0.0	
	Medium	338	0	0.0	245	1	4.1	
	High	113	0	0.0	157	1	6.4	
b) c>5 ppt (n=1748)	Low	286	0	0.0	155	1	6.5	
	Medium	616	0	0.0	308	1	3.2	
	High	156	0	0.0	227	1	4.4	

Respiratory System Anomalies (All Children)

Model 2: Children of Ranch Hands - $\log_2(\text{Current Dioxin})$ and Time

There is insufficient data (Table 5-41) to assess the significance of variation in the association between respiratory system anomalies and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands.

Table 5-41

Pre-post SEA Counts and Rates of
Respiratory System Anomalies

Variable: Respiratory System Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 2: \log_2 (Current Dioxin), Time

Ranch Hands - \log_2 (Current Dioxin), Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Medium	High	
a) D>10 ppt (n=1210)	Pre-SEA	≤18.6	0.0 (0/137)	0.0 (0/183)	0.0 (0/37)	
		>18.6	0.0 (0/95)	0.0 (0/171)	0.0 (0/78)	
	Post-SEA	≤18.6	0.0 (0/62)	0.0 (0/134)	0.0 (0/72)	
		>18.6	0.0 (0/40)	9.3 (1/108)	10.8 (1/93)	
b) D>5 ppt (n=1748)	Pre-SEA	≤18.6	0.0 (0/157)	0.0 (0/313)	0.0 (0/66)	
		>18.6	0.0 (0/150)	0.0 (0/270)	0.0 (0/102)	
	Post-SEA	≤18.6	11.1 (1/90)	0.0 (0/174)	0.0 (0/110)	
		>18.6	0.0 (0/63)	7.4 (1/136)	8.5 (1/117)	

Respiratory System Anomalies (All Children)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

There is insufficient data (Table 5-42) to assess the significance of variation in the association between respiratory system anomalies and categorized current dioxin with time of conception.

Table 5-42

Pre-post SEA Counts and Rates of Respiratory System Anomalies

Variable: Respiratory System Anomalies
Restrictions: All Children of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1459	1	0.7	981	2	2.0		All Exp Categ	
Unknown	582	0	0.0	282	2	7.1		Unk vs Bkgd	
Low	290	0	0.0	174	1	5.7		Low vs Bkgd	
High	168	0	0.0	227	1	4.4		High vs Bkgd	
Total	2499			1664					

Respiratory System Anomalies (Full Siblings)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

There is insufficient data (Table 5-43) to assess the significance of variation in the association between respiratory system anomalies and initial dioxin with time of conception among full sibling children of Ranch Hands.

Table 5-43

Pre-post SEA Counts and Rates of
Respiratory System Anomalies

Variable: Respiratory System Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 1: $\text{Log}_2(\text{Initial Dioxin})$

Ranch Hands - $\text{Log}_2(\text{Initial Dioxin})$ - UnadjustedTime of Conception Relative
to the Father's Duty in SEA

Exposure Assumption	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1030)	Low	231	0	0.0	78	0	0.0	
	Medium	276	0	0.0	206	1	4.9	
	High	103	0	0.0	136	1	7.4	
b) D>5 ppt (n=1489)	Low	252	0	0.0	114	1	8.8	
	Medium	545	0	0.0	245	1	4.1	
	High	135	0	0.0	198	1	5.1	

Respiratory System Anomalies (Full Siblings)

Model 2: Children of Ranch Hands - $\text{Log}_2(\text{Current Dioxin})$ and Time

There is insufficient data (Table 5-44) to assess the significance of variation in the association between respiratory system anomalies and current dioxin with time since duty in SEA and time of conception among full sibling children of Ranch Hands.

Table 5-44

Pre-post SEA Counts and Rates of Respiratory System Anomalies

Variable: Respiratory System Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 2: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Current Dioxin Low	Medium	High	
a) D>10 ppt (n=1032)	Pre-SEA	≤18.6	0.0 (0/124)	0.0 (0/155)	0.0 (0/35)	
		>18.6	0.0 (0/85)	0.0 (0/143)	0.0 (0/69)	
	Post-SEA	≤18.6	0.0 (0/47)	0.0 (0/115)	0.0 (0/64)	
		>18.6	0.0 (0/28)	10.9 (1/92)	13.3 (1/75)	
b) D>5 ppt (n=1489)	Pre-SEA	≤18.6	0.0 (0/126)	0.0 (0/276)	0.0 (0/60)	
		>18.6	0.0 (0/145)	0.0 (0/237)	0.0 (0/88)	
	Post-SEA	≤18.6	16.9 (1/59)	0.0 (0/144)	0.0 (0/98)	
		>18.6	0.0 (0/53)	9.4 (1/106)	10.3 (1/97)	

Respiratory System Anomalies (Full Siblings)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

There is insufficient data (Table 5-45) to assess the significance of variation in the association between respiratory system anomalies and categorized current dioxin with time of conception among full siblings.

Table 5-45

Pre-post SEA Counts and Rates of Respiratory System Anomalies

Variable: Respiratory System Anomalies
Restrictions: Full Siblings of Ranch Hands of Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	n	Pre-SEA		Post-SEA		Odds Ratio	Category Contrast	p-Value
		Abn	Rate	n	Abn	Rate		
Background	1250	1	0.8	812	2	2.5	All Exp Categ	
Unknown	514	0	0.0	221	2	9.0	Unk vs Bkgd	
Low	244	0	0.0	148	1	6.8	Low vs Bkgd	
High	148	0	0.0	195	1	5.1	High vs Bkgd	
Total	2156			1376				

Digestive System Anomalies (All Children)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-46 [a] and [b]), there is no significant variation in the association between digestive system anomalies and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands having more than 10 ppt ($p=0.704$) or more than 5 ppt ($p=0.926$) current dioxin.

Table 5-46

Pre-post SEA Counts and Rates of
Digestive System Anomalies

Variable: Digestive System Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 1: \log_2 (Initial Dioxin)

Ranch Hands - \log_2 (Initial Dioxin) - UnadjustedTime of Conception Relative
to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1208)	Low	249	7	28.1	106	2	18.9	0.704
	Medium	338	3	8.9	245	6	24.5	
	High	113	2	17.7	157	4	25.5	
b) D>5 ppt (n=1748)	Low	286	3	10.5	155	3	19.4	0.926
	Medium	616	8	13.0	308	8	26.0	
	High	156	3	19.2	227	5	22.0	

Digestive System Anomalies (All Children)

Model 2: Children of Ranch Hands - \log_2 (Current Dioxin) and Time

Without adjustment for covariates (Table 5-47 [a]), there is significant variation in the association between digestive system anomalies and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands having more than 10 ppt current dioxin ($p=0.030$). This significance is caused by high rates of digestive anomalies in post-SEA children of Ranch Hands with late tours and high dioxin levels (27.8 per 1000) in post-SEA children of Ranch Hands with early tours and intermediate dioxin levels (37.0 per 1000), as compared with the corresponding pre-SEA rates (0.0 per 1000 and 5.8 per 1000).

Without adjustment for covariates (Table 5-47 [b]), there is borderline significant variation in the association between digestive system anomalies and current dioxin with time of conception among children of Ranch Hands having more than 5 ppt current dioxin ($p=0.071$). This borderline significance is caused by high rates of digestive anomalies in post-SEA children of Ranch

Hands with late tours and high dioxin levels (18.2 per 1000) and in post-SEA children of Ranch Hands with early tours and intermediate dioxin levels (51.5 per 1000), as compared with the corresponding pre-SEA rates (0.0 per 1000 and 3.7 per 1000).

Table 5-47

Pre-post SEA Counts and Rates of
Digestive System Anomalies

Variable: Digestive System Anomalies
Restrictions: All Children of Ranch Hands
Categories: Time of Conception Relative to the
Father's Duty in SEA
Model 2: $\text{Log}_2(\text{Current Dioxin})$, Time

Ranch Hands - $\text{Log}_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Current Dioxin Medium	High	
a) D>10 ppt (n=1210)	Pre-SEA	≤18.6	36.5 (5/137)	16.4 (3/183)	0.0 (0/37)	0.030
		>18.6	10.5 (1/95)	5.8 (1/171)	25.6 (2/78)	
	Post-SEA	≤18.6	16.1 (1/62)	14.9 (2/134)	27.8 (2/72)	0.071
		>18.6	25.0 (1/40)	37.0 (4/108)	21.5 (2/93)	
b) D>5 ppt (n=1748)	Pre-SEA	≤18.6	12.7 (2/157)	25.6 (8/313)	0.0 (0/66)	0.071
		>18.6	0.0 (0/150)	3.7 (1/270)	29.4 (3/102)	
	Post-SEA	≤18.6	11.1 (1/90)	23.0 (4/174)	18.2 (2/110)	
		>18.6	0.0 (0/63)	51.5 (7/136)	17.1 (2/117)	

Digestive System Anomalies (All Children)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-48), there is no significant variation in the overall association between digestive system anomalies and categorized current dioxin with time of conception ($p=0.523$). The association between time of conception and digestive system anomalies among children of Ranch Hands in the High ($p=0.285$), Low ($p=0.394$) and Unknown ($p=0.828$) categories are not significantly different from that among children of Comparisons in the Background category.

Table 5-48

Pre-post SEA Counts and Rates of Digestive System Anomalies

Variable: Digestive System Anomalies
Restrictions: All Children of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1459	15	10.3	981	24	24.5	2.41	All Exp Categ	0.523
Unknown	582	6	10.3	282	6	21.3	2.09	Unk vs Bkgd	0.828
Low	290	2	6.9	174	6	34.5	5.14	Low vs Bkgd	0.394
High	168	3	17.9	227	4	17.6	0.99	High vs Bkgd	0.285
Total	2499			1664					

Digestive System Anomalies (Full Siblings)

Model 1: Children of Ranch Hands - $\text{Log}_2(\text{Initial Dioxin})$

Without adjustment for covariates (Table 5-49 [a] and [b]), there is no significant variation in the association between digestive system anomalies and initial dioxin with time of conception among full sibling children of Ranch Hands having more than 10 ppt (p=0.890) or more than 5 ppt (p=0.926) current dioxin.

Table 5-49

Pre-post SEA Counts and Rates of Digestive System Anomalies

Variable: Digestive System Anomalies
Restrictions: Full Siblings of Ranch Hands
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 1: $\text{Log}_2(\text{Initial Dioxin})$

Ranch Hands - $\text{Log}_2(\text{Initial Dioxin})$ - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1030)	Low	231	7	30.3	78	1	12.8	0.890
	Medium	276	3	10.9	206	6	29.1	
	High	103	2	19.4	136	3	22.1	
b) D>5 ppt (n=1489)	Low	252	3	11.9	114	2	17.5	0.926
	Medium	545	8	14.7	245	6	24.5	
	High	135	3	22.2	198	4	20.2	

Digestive System Anomalies (Full Siblings)

Model 2: Children of Ranch Hands - $\text{Log}_2(\text{Current Dioxin})$ and Time

Without adjustment for covariates (Table 5-50 [a]), there is significant variation in the association between digestive system anomalies and current dioxin with time since duty in SEA and time of conception among full siblings of Ranch Hands having more than 10 ppt (p=0.030).

Without adjustment for covariates (Table 5-50 [b]), there is borderline significant variation in the association between digestive system anomalies and current dioxin with time of conception among full siblings of Ranch Hands having more than 5 ppt current dioxin ($p=0.057$).

Both the significant variation in Table 5-50 [a] and the borderline significant variation in Table 5-50 [b] are caused by high post-SEA rates of digestive anomalies in children of Ranch Hands with late tours and high dioxin levels and in children of Ranch Hands with early tours and intermediate dioxin levels, relative to the corresponding pre-SEA rates.

Table 5-50

Pre-post SEA Counts and Rates of
Digestive System Anomalies

Variable: Digestive System Anomalies
Restrictions: Full Siblings of Ranch Hands
Categories: Time of Conception Relative to the
Father's Duty in SEA
Model 2: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Medium	High	
a) D>10 ppt (n=1032)	Pre-SEA	≤18.6	40.3 (5/124)	19.4 (3/155)	0.0 (0/35)	0.030
		>18.6	11.8 (1/85)	7.0 (1/143)	29.0 (2/69)	
	Post-SEA	≤18.6	21.3 (1/47)	17.4 (2/115)	31.3 (2/64)	
		>18.6	0.0 (0/28)	43.5 (4/92)	13.3 (1/75)	

Table 5-50 (Continued)

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Medium	High	
b) D>5 ppt (n=1489)	Pre-SEA	≤18.6	15.9 (2/126)	29.0 (8/276)	0.0 (0/60)	0.057
		>18.6	0.0 (0/145)	4.2 (1/237)	34.1 (3/88)	
	Post-SEA	≤18.6	0.0 (0/59)	27.8 (4/144)	20.4 (2/98)	
		>18.6	0.0 (0/53)	47.2 (5/106)	10.3 (1/97)	

Digestive System Anomalies (Full Siblings)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-51), there is no significant variation in the overall association between digestive system anomalies and categorized current dioxin with the time of conception among full siblings ($p=0.397$). Additionally, the association between digestive system anomalies and time of conception among children of Ranch Hands in the Unknown ($p=0.863$), Low ($p=0.242$) and High ($p=0.344$) categories does not differ significantly from the corresponding association among children of Comparisons in the Background category.

Table 5-51

Pre-post SEA Counts and Rates of
Digestive System Anomalies

Variable: Digestive System Anomalies
 Restrictions: Full Siblings of Ranch Hands and Comparisons
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative
to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1250	14	11.2	812	16	19.7	1.77	All Exp Categ	0.397
Unknown	514	6	11.7	221	4	18.1	1.56	Unk vs Bkgd	0.863
Low	244	2	8.2	148	6	40.5	5.11	Low vs Bkgd	0.242
High	148	3	20.3	195	3	15.4	0.76	High vs Bkgd	0.344
Total	2156			1376					

Genital Anomalies (All Children)

Model 1: Children of Ranch Hands - Log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-52 [a] and [b]), there is no significant variation in the association between genital anomalies and initial dioxin with time of conception among children of Ranch Hands having more than 10 ppt (p=0.445) or more than 5 ppt (p=0.906) current dioxin.

Table 5-52

Pre-post SEA Counts and Rates of Genital Anomalies

Variable: Genital Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 1: $\log_2(\text{Initial Dioxin})$

Ranch Hands - $\log_2(\text{Initial Dioxin})$ - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1208)	Low	249	1	4.0	106	1	9.4	0.445
	Medium	338	8	23.7	245	10	40.8	
	High	113	0	0.0	157	2	12.7	
b) D>5 ppt (n=1748)	Low	286	4	14.0	155	2	12.9	0.906
	Medium	616	8	13.0	308	11	35.7	
	High	156	3	19.2	227	2	8.8	

Genital Anomalies (All Children)

Model 2: Children of Ranch Hands - $\log_2(\text{Current Dioxin})$ and Time

Without adjustment for covariates (Table 5-53 [a] and [b]), there is no significant variation in the association between genital anomalies and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands having more than 10 ppt ($p=0.690$) or more than 5 ppt ($p=0.312$) current dioxin.

Table 5-53

Pre-post SEA Counts and Rates of Genital Anomalies

Variable: Genital Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 2: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Current Dioxin Medium	High	
a) D>10 ppt (n=1210)	Pre-SEA	≤18.6	0.0 (0/137)	32.8 (6/183)	0.0 (0/37)	0.690
		>18.6	0.0 (0/95)	17.5 (3/171)	0.0 (0/78)	
	Post-SEA	≤18.6	16.1 (1/62)	59.7 (8/134)	13.9 (1/72)	
		>18.6	0.0 (0/40)	27.8 (3/108)	10.8 (1/93)	
b) D>5 ppt (n=1748)	Pre-SEA	≤18.6	6.4 (1/157)	19.2 (6/313)	15.2 (1/66)	0.312
		>18.6	20.0 (3/150)	14.8 (4/270)	0.0 (0/102)	
	Post-SEA	≤18.6	11.1 (1/90)	46.0 (8/174)	18.2 (2/110)	
		>18.6	0.0 (0/63)	22.1 (3/136)	8.5 (1/117)	

Genital Anomalies (All Children)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-54), there is no significant variation in the overall association between genital anomalies and categorized current dioxin with time of conception ($p=0.370$). The association between time of conception and genital anomalies among children of Ranch Hands in the High ($p=0.857$), Low ($p=0.913$) and Unknown ($p=0.144$) categories are not significantly different from the corresponding association among children of Comparisons in the Background category.

Table 5-54

Pre-post SEA Counts and Rates of Genital Anomalies

Variable: Genital Anomalies
Restrictions: All Children of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1459	15	10.3	981	18	18.3	1.80	All Exp Categ	0.370
Unknown	582	6	10.3	282	1	3.5	0.34	Unk vs Bkgd	0.144
Low	290	8	27.6	174	9	51.7	1.92	Low vs Bkgd	0.913
High	168	1	6.0	227	3	13.2	2.24	High vs Bkgd	0.857
Total	2499			1664					

Genital Anomalies (Full Siblings)

Model 1: Children of Ranch Hands - Log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-55 [a] and [b]), there is no significant variation in the association between genital anomalies and initial dioxin with time of conception among full sibling children of Ranch Hands having more than 10 ppt ($p=0.670$) or more than 5 ppt ($p=0.581$) current dioxin.

Table 5-55

Pre-post SEA Counts and Rates of Genital Anomalies

Variable: Genital Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 1: $\text{Log}_2(\text{Initial Dioxin})$

Ranch Hands - $\text{Log}_2(\text{Initial Dioxin})$ - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1030)	Low	231	1	4.3	78	1	12.8	0.670
	Medium	276	4	14.5	206	6	29.1	
	High	103	0	0.0	136	2	14.7	
b) D>5 ppt (n=1489)	Low	252	4	15.9	114	2	17.5	0.581
	Medium	545	6	11.0	245	7	28.6	
	High	135	1	7.4	198	2	10.1	

Genital Anomalies (Full Siblings)

Model 2: Children of Ranch Hands - $\text{Log}_2(\text{Current Dioxin})$ and Time

Without adjustment for covariates (Table 5-56 [a] and [b]), there is no significant variation in the association between genital anomalies and categorized current dioxin with time of conception among full sibling children of Ranch Hands having more than 10 ppt ($p=0.536$) or more than 5 ppt current dioxin ($p=0.303$).

Table 5-56

Pre-post SEA Counts and Rates of Genital Anomalies

Variable: Genital Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Current Dioxin Low	Medium	High	
a) D>10 ppt (n=1032)	Pre-SEA	≤18.6	0.0 (0/124)	19.4 (3/155)	0.0 (0/35)	0.536
		>18.6	0.0 (0/85)	14.0 (2/143)	0.0 (0/69)	
	Post-SEA	≤18.6	21.3 (1/47)	52.2 (6/115)	15.6 (1/64)	
		>18.6	0.0 (0/28)	10.9 (1/92)	13.3 (1/75)	
b) D>5 ppt (n=1489)	Pre-SEA	≤18.6	7.9 (1/126)	14.5 (4/276)	0.0 (0/60)	0.303
		>18.6	20.7 (3/145)	12.7 (3/237)	0.0 (0/88)	
	Post-SEA	≤18.6	16.9 (1/59)	48.6 (7/144)	10.2 (1/98)	
		>18.6	0.0 (0/53)	9.4 (1/106)	10.3 (1/97)	

Genital Anomalies (Full Siblings)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-57), there is no overall variation in the association between genital anomalies and categorized current dioxin with time of conception among full siblings ($p=0.219$). The associations between time of conception and genital anomalies among children of Ranch Hands in the High ($p=0.545$), Low ($p=0.760$) and Unknown ($p=0.162$) categories are not significantly different from the corresponding association among children of Comparisons in the Background category.

Table 5-57

Pre-post SEA Counts and Rates of Genital Anomalies

Variable: Genital Anomalies
Restrictions: Full Siblings of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1250	13	10.4	812	16	19.7	1.91	All Exp Categ	0.219
Unknown	514	6	11.7	221	1	4.5	0.38	Unk vs Bkgd	0.162
Low	244	5	20.5	148	7	47.3	2.37	Low vs Bkgd	0.760
High	148	0	0.0	195	2	10.3	----	High vs Bkgd	0.545
Total	2156			1376					

Urinary System Anomalies (All Children)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-58 [a] and [b]), there is no significant variation in the association between urinary system anomalies and initial dioxin with time of conception among children of Ranch Hands having more than 10 ppt ($p=0.446$) or more than 5 ppt ($p=0.979$) current dioxin.

Table 5-58

Pre-post SEA Counts and Rates of
Urinary System Anomalies

Variable: Urinary System Anomalies
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 1: $\text{Log}_2(\text{Initial Dioxin})$

Ranch Hands - $\text{Log}_2(\text{Initial Dioxin})$ - UnadjustedTime of Conception Relative
to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1208)	Low	249	2	8.0	106	3	28.3	0.446
	Medium	338	5	14.8	245	6	24.5	
	High	113	2	17.7	157	4	25.5	
b) D>5 ppt (n=1748)	Low	286	4	14.0	155	2	12.9	0.979
	Medium	616	7	11.4	308	7	22.7	
	High	156	3	19.2	227	6	26.4	

Urinary System Anomalies (All Children)

Model 2: Children of Ranch Hands - $\text{Log}_2(\text{Current Dioxin})$ and Time

Without adjustment for covariates (Table 5-59 [a] and [b]), there is no significant variation in the association between urinary system anomalies and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands having more than 10 ppt (p=0.895) or more than 5 ppt (p=0.637) current dioxin.

Table 5-59
Pre-post SEA Counts and Rates of
Urinary System Anomalies

Variable: Urinary System Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 2: \log_2 (Current Dioxin), Time

Ranch Hands - \log_2 (Current Dioxin), Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Current Dioxin Low	Medium	High	
a) D>10 ppt (n=1210)	Pre-SEA	≤18.6	0.0 (0/137)	16.4 (3/183)	27.0 (1/37)	0.895
		>18.6	21.1 (2/95)	5.8 (1/171)	25.6 (2/78)	
	Post-SEA	≤18.6	16.1 (1/62)	22.4 (3/134)	13.9 (1/72)	
		>18.6	25.0 (1/40)	37.0 (4/108)	32.3 (3/93)	
b) D>5 ppt (n=1748)	Pre-SEA	≤18.6	12.7 (2/157)	9.6 (3/313)	15.2 (1/66)	0.637
		>18.6	13.3 (2/150)	14.8 (4/270)	19.6 (2/102)	
	Post-SEA	≤18.6	22.2 (2/90)	17.2 (3/174)	18.2 (2/110)	
		>18.6	0.0 (0/63)	36.8 (5/136)	25.6 (3/117)	

Urinary System Anomalies (All Children)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-60), there is no significant variation in the overall association between urinary system anomalies and categorized current dioxin with time of conception ($p=0.504$). The associations between time of conception and urinary system anomalies among children of Ranch Hands in the High ($p=0.645$), Low ($p=0.142$) and Unknown ($p=0.913$) categories are not significantly different from the corresponding association among children of Comparisons in the Background category.

Table 5-60

Pre-post SEA Counts and Rates of Urinary System Anomalies

Variable: Urinary System Anomalies
Restrictions: All Children of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category		Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate				
Background	1459	21	14.4	981	12	12.2	0.85	All Exp Categ	0.504	
Unknown	582	9	15.5	282	4	14.2	0.92	Unk vs. Bkgd	0.913	
Low	290	4	13.8	174	6	34.5	2.55	Low vs Bkgd	0.142	
High	168	3	17.9	227	5	22.0	1.24	High vs Bkgd	0.645	
Total	2499			1664						

Urinary System Anomalies (Full Siblings)

Model 1: Children of Ranch Hands - Log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-61 [a] and [b]), there is no significant variation in the association between urinary system anomalies and initial dioxin with time of conception among full sibling children of Ranch Hands having more than 10 ppt ($p=0.256$) or more than 5 ppt ($p=0.822$) current dioxin.

Table 5-61

Pre-post SEA Counts and Rates of Urinary System Anomalies

Variable: Urinary System Anomalies
Restrictions: Full Siblings of Ranch Hands
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 1: Log_2 (Initial Dioxin)

Ranch Hands - Log_2 (Initial Dioxin) - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n= 1030)	Low	231	1	4.3	78	2	25.6	0.256
	Medium	276	4	14.5	206	6	29.1	
	High	103	2	19.4	136	3	22.1	
b) D>5 ppt (n=1489)	Low	252	4	15.9	114	2	17.5	0.822
	Medium	545	5	9.2	245	6	24.5	
	High	135	3	22.2	198	5	25.3	

Urinary System Anomalies (Full Siblings)

Model 2: Children of Ranch Hands - Log_2 (Current Dioxin) and Time

Without adjustment for covariates (Table 5-62 [a] and [b]), there is no significant variation in the association between urinary system anomalies and current dioxin with time since duty in SEA and time of conception among full sibling children of Ranch Hands having more than 10 ppt ($p=0.973$) or more than 5 ppt ($p=0.928$) current dioxin.

Table 5-62

Pre-post SEA Counts and Rates of Urinary System Anomalies

Variable: Urinary System Anomalies
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 2: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Medium	High	
a) D>10 ppt (n=1032)	Pre-SEA	≤18.6	0.0 (0/124)	6.5 (1/155)	28.6 (1/35)	0.973
		>18.6	23.5 (2/85)	7.0 (1/143)	29.0 (2/69)	
	Post-SEA	≤18.6	21.3 (1/47)	17.4 (2/115)	15.6 (1/64)	
		>18.6	35.7 (1/28)	43.5 (4/92)	26.7 (2/75)	
b) D>5 ppt (n=1489)	Pre-SEA	≤18.6	15.9 (2/126)	3.6 (2/276)	16.7 (1/60)	0.928
		>18.6	13.8 (2/145)	16.9 (4/237)	22.7 (2/88)	
	Post-SEA	≤18.6	33.9 (2/59)	13.9 (2/144)	20.4 (2/98)	
		>18.6	0.0 (0/53)	47.2 (5/106)	20.6 (2/97)	

Urinary System Anomalies (Full Siblings)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-63), there is no significant variation in the overall association between urinary system anomalies and categorized current dioxin with time since duty in SEA among full sibling children ($p=0.360$). However, the association between urinary system anomalies and time of conception among children of Ranch Hands in the Low current dioxin category, OR=4.23, is borderline significantly increased relative to the association among children of Comparisons in the Background category, OR=0.89, ($p=0.093$). The association between time of conception and urinary system anomalies among children of Ranch Hands in the High ($p=0.881$) and Unknown ($p=0.834$) categories are not significantly different from the corresponding association among children of Comparisons in the Background category.

Table 5-63

Pre-post SEA Counts and Rates of Urinary System Anomalies

Variable: Urinary System Anomalies
Restrictions: Full Siblings of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1250	19	15.2	812	11	13.5	0.89	All Exp Categ	0.360
Unknown	514	9	17.5	221	4	18.1	1.03	Unk vs Bkgd	0.834
Low	244	2	8.2	148	5	33.8	4.23	Low vs Bkgd	0.093
High	148	3	20.3	195	4	20.5	1.01	High vs Bkgd	0.881
Total	2156			1376					

Musculoskeletal Deformities (All Children)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-64 [a] and [b]), there is no significant variation in the association between musculoskeletal deformities and initial dioxin with time of conception among children of Ranch Hands having more than 10 ppt ($p=0.518$) or more than 5 ppt ($p=0.442$) current dioxin.

Table 5-64

Pre-post SEA Counts and Rates of Musculoskeletal Deformities

Variable: Musculoskeletal Deformities
Restrictions: All Children of Ranch Hands
Categories: Time of Conception relative to the Father's Duty in SEA
Model 1: \log_2 (Initial Dioxin)

Ranch Hands - \log_2 (Initial Dioxin) - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1208)	Low	249	19	76.3	106	11	103.8	0.518
	Medium	338	13	38.5	245	40	163.3	
	High	113	9	79.6	157	14	89.2	
b) D>5 ppt (n=1748)	Low	286	16	55.9	155	20	129.0	0.442
	Medium	616	32	51.9	308	39	126.6	
	High	156	10	64.1	227	29	127.8	

Musculoskeletal Deformities (All Children)

Model 2: Children of Ranch Hands - \log_2 (Current Dioxin) and Time

Without adjustment for covariates (Table 5-65 [a]), there is significant variation in the association between musculoskeletal deformities and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands having more than 10 ppt current dioxin ($p=0.017$). This significance is due to a decreasing trend in musculoskeletal deformity rates with current dioxin among post-SEA children of Ranch Hands with early tours and generally increasing trends elsewhere.

Without adjustment for covariates (Table 5-65 [b]), there is no significant variation in the association between musculoskeletal deformities and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands having more than 5 ppt current dioxin ($p=0.587$).

Table 5-65

Pre-post SEA Counts and Rates of
Musculoskeletal Deformities

Variable: Musculoskeletal Deformities
Restrictions: All Children of Ranch Hands
Categories: Time of Conception Relative to the
Father's Duty in SEA
Model 2: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Medium	High	
a) D>10 ppt (n=1210)	Pre-SEA	≤18.6	94.9 (13/137)	76.5 (14/183)	108.1 (4/37)	0.017
		>18.6	31.6 (3/95)	17.5 (3/171)	64.1 (5/78)	
	Post-SEA	≤18.6	129.0 (8/62)	104.5 (14/134)	180.6 (13/72)	
		>18.6	175.0 (7/40)	157.4 (17/108)	64.5 (6/93)	
b) D>5 ppt (n=1748)	Pre-SEA	≤18.6	44.6 (7/157)	92.7 (29/313)	60.6 (4/66)	0.587
		>18.6	33.3 (5/150)	29.6 (8/270)	49.0 (5/102)	
	Post-SEA	≤18.6	155.6 (14/90)	126.4 (22/174)	145.5 (16/110)	
		>18.6	79.4 (5/63)	169.1 (23/136)	68.4 (8/117)	

Musculoskeletal Deformities (All Children)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-66), there is no significant variation in the overall association between musculoskeletal deformities and categorized current dioxin with time of conception ($p=0.913$). The associations between time of conception and musculoskeletal deformities among children of Ranch Hands in the High ($p=0.584$), Low ($p=0.821$) and Unknown ($p=0.739$) categories are not significantly different from the corresponding association among children of Comparisons in the Background category.

Table 5-66

Pre-post SEA Counts and Rates of Musculoskeletal Deformities

Variable: Musculoskeletal Deformities
Restrictions: All Children of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1459	81	55.5	981	132	134.6	2.65	All Exp Categ	0.913
Unknown	582	26	44.7	282	34	120.6	2.93	Unk vs Bkgd	0.739
Low	290	16	55.2	174	25	143.7	2.87	Low vs Bkgd	0.821
High	168	9	53.6	227	24	105.7	2.09	High vs Bkgd	0.584
Total	2499			1664					

Musculoskeletal Deformities (Full Siblings)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-67 [a] and [b]), there is no significant variation in the association between musculoskeletal deformities and initial dioxin with time of conception among full sibling children of Ranch Hands having more than 10 ppt ($p=0.329$) or more than 5 ppt ($p=0.727$).

Table 5-67

Pre-post SEA Counts and Rates of
Musculoskeletal Deformities

Variable: Musculoskeletal Deformities
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 1: $\log_2(\text{Initial Dioxin})$

Ranch Hands - $\log_2(\text{Initial Dioxin})$ - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1030)	Low	231	18	77.9	78	10	128.2	0.329
	Medium	276	10	36.2	206	32	155.3	
	High	103	9	87.4	136	13	95.6	
b) D>5 ppt (n=1489)	Low	252	15	59.5	114	10	87.7	0.727
	Medium	545	29	53.2	245	30	122.4	
	High	135	10	74.1	198	27	136.4	

Musculoskeletal Deformities (Full Siblings)

Model 2: Children of Ranch Hands - $\log_2(\text{Current Dioxin})$ and Time

Without adjustment for covariates (Table 5-68 [a]), there is significant variation in the association between musculoskeletal deformities and current dioxin with time since duty in SEA and time of conception among full sibling children of Ranch Hands having more than 10 ppt current dioxin ($p=0.019$). There is a decreasing trend in musculoskeletal deformity rates with current dioxin among post-SEA children of Ranch Hands with early tours and generally increasing trends elsewhere.

Without adjustment for covariates (Table 5-68 [b]), there is no significant variation in the association between musculoskeletal deformities and current dioxin with time since duty in SEA and time of conception among full sibling children of Ranch Hands having more than 5 ppt current dioxin ($p=0.386$).

Table 5-68

Pre-post SEA Counts and Rates of
Musculoskeletal Deformities

Variable: Musculoskeletal Deformities
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the
 Father's Duty in SEA
 Model 2: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Current Dioxin Low	Medium	High	
a) D>10 ppt (n=1032)	Pre-SEA	≤18.6	96.8 (12/124)	77.4 (12/155)	114.3 (4/35)	0.019
		>18.6	35.3 (3/85)	14.0 (2/143)	72.5 (5/69)	
	Post-SEA	≤18.6	170.2 (8/47)	95.7 (11/115)	203.1 (13/64)	
		>18.6	178.6 (5/28)	152.2 (14/92)	53.3 (4/75)	
b) D>5 ppt (n=1489)	Pre-SEA	≤18.6	55.6 (7/126)	94.2 (26/276)	66.7 (4/60)	0.386
		>18.6	34.5 (5/145)	29.5 (7/237)	56.8 (5/88)	
	Post-SEA	≤18.6	101.7 (6/59)	138.9 (20/144)	153.1 (15/98)	
		>18.6	56.6 (3/53)	160.4 (17/106)	61.9 (6/97)	

Musculoskeletal Deformities (Full Siblings)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-69), there is no significant variation in the overall association between musculoskeletal deformities and categorized current dioxin with time of conception among full siblings ($p=0.875$). The association between time of conception and musculoskeletal deformities among children of Ranch Hands in the High ($p=0.519$), Low ($p=0.672$) and Unknown ($p=0.893$) categories are not significantly different from the corresponding association among children of Comparisons in the Background category.

Table 5-69

Pre-post SEA Counts and Rates of Musculoskeletal Deformities

Variable: Musculoskeletal Deformities
Restrictions: Full Siblings of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	n	Pre-SEA		Post-SEA		Odds Ratio	Category Contrast	p-Value
		Abn	Rate	n	Abn	Rate		
Background	1250	78	62.4	812	115	141.6	2.48	All Exp Categ 0.875
Unknown	514	22	42.8	221	23	104.1	2.60	Unk vs Bkgd 0.893
Low	244	13	53.3	148	21	141.9	2.94	Low vs Bkgd 0.672
High	148	9	60.8	195	21	107.7	1.86	High vs Bkgd 0.519
Total	2156			1376				

Anomalies of the Skin (All Children)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-70 [a] and [b]), there is no significant variation in the association between anomalies of the skin and initial dioxin with time of conception among children of Ranch Hands having more than 10 ppt ($p=0.913$) or more than 5 ppt ($p=0.916$) current dioxin.

Table 5-70

Pre-post SEA Counts and Rates of Anomalies of the Skin

Variable: Anomalies of the Skin
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 1: $\text{Log}_2(\text{Initial Dioxin})$

Ranch Hands - $\text{Log}_2(\text{Initial Dioxin})$ - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1208)	Low	249	1	4.0	106	2	18.9	0.913
	Medium	338	7	20.7	245	6	24.5	
	High	113	0	0.0	157	2	12.7	
b) D>5 ppt (n=1748)	Low	286	2	7.0	155	2	12.9	0.916
	Medium	616	9	14.6	308	8	26.0	
	High	156	0	0.0	227	2	8.8	

Anomalies of the Skin (All Children)

Model 2: Children of Ranch Hands - $\text{Log}_2(\text{Current Dioxin})$ and Time

Without adjustment for covariates (Table 5-71 [a]), there is no significant variation in the association between anomalies of the skin and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands having more than 10 ppt current dioxin ($p=0.624$).

Without adjustment for covariates (Table 5-71 [b]), there is no significant variation in the association between anomalies of the skin and current dioxin with time since duty in SEA and time of conception among children of Ranch Hands having more than 5 ppt current dioxin ($p=0.119$).

Table 5-71

Pre-post SEA Counts and Rates of Anomalies of the Skin

Variable: Anomalies of the Skin
 Restrictions: All Children of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 2: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Medium	High	
a) D>10 ppt (n=1210)	Pre-SEA	≤18.6	7.3 (1/137)	32.8 (6/183)	0.0 (0/37)	0.624
		>18.6	0.0 (0/95)	5.8 (1/171)	0.0 (0/78)	
	Post-SEA	≤18.6	16.1 (1/62)	29.9 (4/134)	13.9 (1/72)	
		>18.6	0.0 (0/40)	27.8 (3/108)	10.8 (1/93)	
b) D>5 ppt (n=1748)	Pre-SEA	≤18.6	6.4 (1/157)	19.2 (6/313)	15.2 (1/66)	0.119
		>18.6	6.7 (1/150)	7.4 (2/270)	0.0 (0/102)	
	Post-SEA	≤18.6	22.2 (2/90)	28.7 (5/174)	9.1 (1/110)	
		>18.6	0.0 (0/63)	22.1 (3/136)	8.5 (1/117)	

Anomalies of the Skin (All Children)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-72), there is no significant variation in the overall association between anomalies of the skin and categorized current dioxin with time of conception ($p=0.854$). The corresponding contrasts of children of Ranch Hand fathers in the High ($p=0.606$), Low ($p=0.444$) and Unknown ($p=0.661$) categories versus children of Comparisons in the Background category are not significant.

Table 5-72

Pre-post SEA Counts and Rates of Anomalies of the Skin

Variable: Anomalies of the Skin
Restrictions: All Children of Ranch Hands and Comparisons
Categories: Time of Conception Relative to the Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	n	Pre-SEA		Post-SEA		Odds Ratio	Category Contrast	p-Value
Background	1459	11	7.5	981	21	21.4	2.88	All Exp Categ
Unknown	582	5	8.6	282	5	17.7	2.08	Unk vs Bkgd
Low	290	6	20.7	174	6	34.5	1.69	Low vs Bkgd
High	168	1	6.0	227	2	8.8	1.48	High vs Bkgd
Total	2499			1664				

Anomalies of the Skin (Full Siblings)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

Without adjustment for covariates (Table 5-73 [a] and [b]), there is no significant variation in the association between anomalies of the skin and initial dioxin with time of conception among full sibling children of Ranch Hands having more than 10 ppt ($p=0.403$) or more than 5 ppt ($p=0.759$) current dioxin.

Table 5-73

Pre-post SEA Counts and Rates of Anomalies of the Skin

Variable: Anomalies of the Skin
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 1: \log_2 (Initial Dioxin)

Ranch Hands - \log_2 (Initial Dioxin) - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Restriction	Initial Dioxin	Pre-SEA			Post-SEA			p-Value
		n	Abn	Rate	n	Abn	Rate	
a) D>10 ppt (n=1030)	Low	231	1	4.3	78	2	25.6	0.403
	Medium	276	3	10.9	206	5	24.3	
	High	103	0	0.0	136	1	7.4	
b) D>5 ppt (n=1489)	Low	252	2	7.9	114	1	8.8	0.759
	Medium	545	5	9.2	245	7	28.6	
	High	135	0	0.0	198	1	5.1	

Anomalies of the Skin (Full Siblings)

Model 2: Children of Ranch Hands - \log_2 (Current Dioxin) and Time

Without adjustment for covariates (Table 5-74 [a]), there is no significant variation in the association between anomalies of the skin and current dioxin with time since duty in SEA and time of conception among full sibling children of Ranch Hands having more than 10 ppt current dioxin (p=0.964).

Without adjustment for covariates (Table 5-74 [b]), there is no significant variation in the association between anomalies of the skin and current dioxin with time since duty in SEA and time of conception among full sibling children of Ranch Hands having more than 5 ppt current dioxin (p=0.541).

Table 5-74

Pre-post SEA Counts and Rates of Anomalies of the Skin

Variable: Anomalies of the Skin
 Restrictions: Full Siblings of Ranch Hands
 Categories: Time of Conception Relative to the Father's Duty in SEA
 Model 2: $\log_2(\text{Current Dioxin})$, Time

Ranch Hands - $\log_2(\text{Current Dioxin})$, Time - Unadjusted

Exposure Restriction	Time of Conception	Time Since SEA (years)	Anomaly Rate (No./n)			p-Value
			Low	Medium	High	
a) D>10 ppt (n=1032)	Pre-SEA	≤18.6	8.1 (1/124)	12.9 (2/155)	0.0 (0/35)	0.964
		>18.6	0.0 (0/85)	7.0 (1/143)	0.0 (0/69)	
	Post-SEA	≤18.6	21.3 (1/47)	34.8 (4/115)	15.6 (1/64)	0.541
		>18.6	0.0 (0/28)	21.7 (2/92)	0.0 (0/75)	
b) D>5 ppt (n=1489)	Pre-SEA	≤18.6	7.9 (1/126)	7.2 (2/276)	16.7 (1/60)	0.541
		>18.6	6.9 (1/145)	8.4 (2/237)	0.0 (0/88)	
	Post-SEA	≤18.6	16.9 (1/59)	34.7 (5/144)	10.2 (1/98)	0.541
		>18.6	0.0 (0/53)	18.9 (2/106)	0.0 (0/97)	

Anomalies of the Skin (Full Siblings)

Model 3: Children of Ranch Hands and Comparisons - Categorized Current Dioxin

Without adjustment for covariates (Table 5-75), there is no significant variation in the overall association between anomalies of the skin and categorized current dioxin with time of conception among full siblings ($p=0.705$). The association between time of conception and anomalies of the skin among children of Ranch Hands in the High ($p=0.363$), Low ($p=0.697$) and Unknown ($p=0.565$) categories are not significantly different from the corresponding association among children of Comparisons in the Background category.

Table 5-75

Pre-post SEA Counts and Rates of Anomalies of the Skin

Variable: Anomalies of the Skin
Restrictions: Full Siblings of Ranch Hands and Comparisons
Categories: Time of Conception Relative to Father's Duty in SEA
Model 3: Categorized Current Dioxin

Categorized Current Dioxin - Unadjusted

Time of Conception Relative to the Father's Duty in SEA

Exposure Category	Pre-SEA			Post-SEA			Odds Ratio	Category Contrast	p-Value
	n	Abn	Rate	n	Abn	Rate			
Background	1250	8	6.4	812	15	18.5	2.92	All Exp Categ	0.705
Unknown	514	4	7.8	221	3	13.6	1.75	Unk vs Bkgd	0.565
Low	244	2	8.2	148	5	33.8	4.23	Low vs Bkgd	0.697
High	148	1	6.8	195	1	5.1	0.76	High vs Bkgd	0.363
Total	2156			1376					

Chromosomal Anomalies (All Children)

Model 1: Children of Ranch Hands - \log_2 (Initial Dioxin)

There is insufficient data (Table 5-76) to assess the significance of variation in the association between chromosomal anomalies and initial dioxin with time of conception among children of Ranch Hands.