Appendix F

Malignancy Assessment

TABLE F-1.

Summary of Dioxin-by-Covariate Interactions for Malignancy Variables

Ranch Hands - Log_2 (Initial Dioxin)

Variable/ (Assumption-- Table Ref.)	Interaction	Stratum	Initial Dioxin	n	Percent Yes	Adj. Relative Risk (95% C.I.)[a]	p-Value
Malignant Skin Neoplasms (Minimal-- 7-4 [c])	Initial-by-Ionizing Radiation	No	Low	86	12.8	1.00 (0.71,1.42)	0.984
			Medium	188	7.4		
			High	104	7.7		
		Yes	Low	28	17.9	0.36 (0.15,0.90)	0.029
			Medium	50	10.0		
			High	20	5.0		
Sun Exposure-Related Malignant Skin Neoplasms All Sites Combined (Minimal-- 7-8 [c1])	Initial-by-Ionizing Radiation	No	Low	86	11.6	1.01 (0.71,1.44)	0.960
			Medium	188	7.4		
			High	104	6.7		
		Yes	Low	28	17.9	0.36 (0.15,0.90)	0.029
			Medium	50	10.0		
			High	20	5.0		

[a]Relative risk for a twofold increase in dioxin.
Note: Minimal--Low: 52-93 ppt; Medium: >93-292 ppt; High: >292 ppt.

TABLE F-2.

Verified Skin Neoplasms for Ranch Hands Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
1736	80903	02617	88	NOV68	DEC69
1735	80903	02450	88	NOV68	DEC69
1733	80903	02121	82	DEC66	DEC67
1734	80903	02300	87	DEC66	DEC67
22801	91200	02545	85	FEB67	FEB68
2325	80703	02450	76	NOV68	DEC69
1730	80903	02150	85	DEC67	JAN69
1735	80903	02450	79	MAY69	JUN70
2165*	87200	02471	54	NOV66	DEC67
1736	80903	02617	85	AUG66	NOV66
1732	80703	02200	85	JUL70	AUG71
1736	80703	02650	85	JUL70	AUG71
1733	80903	02140	73	FEB68	JAN69
1731	80903	02121	77	OCT68	FEB70
2166	87200	02410	82	APR68	JUN69
2167	88320	02830	82	AUG66	NOV66
2167	88320	02830	85	FEB66	FEB67
1735	87203	02450	88	JUL67	JUL68
2165	87200	02450	86	MAR69	MAR70
2167	88320	02810	85	NOV61	MAR62
2224	91410	02545	85	JUL66	SEP67
1735	80903	02450	87	APR64	APR65
1731	80703	02130	85	MAR68	AUG68
2167	88320	02830	85	FEB70	AUG70
2165	80500	02420	85	FEB70	AUG70
2166	88320	02617	82	DEC66	MAY67
2167	88320	02810	82	DEC66	MAY67
2166	88320	02617	82	OCT68	NOV69
1733*	80903	02121	69	NOV69	AUG70
1733	80903	02140	71	NOV69	AUG70
1733	80903	02111	76	NOV69	AUG70
1735	80903	02450	80	NOV69	AUG70
1733	80903	02140	75	JUL67	JUL68
1733	80903	02111	78	JUL67	JUL68
1732	80903	02200	79	JUL67	JUL68
1733	80903	02140	79	JUL67	JUL68
1730	80903	02150	74	NOV67	JAN69
2167	87200	02830	85	JUL68	JUN69

TABLE F-2. (Continued)

Verified Skin Neoplasms for Ranch Hands Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
2165	87200	02450	85	JUL68	JUN69
1733	80903	02121	84	AUG66	AUG67
1733	80903	02140	79	AUG62	JUL63
1733*	80703	02111	66	JUL68	AUG69
1733*	80903	02121	63	MAY67	FEB68
22801	91200	02300	85	NOV68	SEP69
1735	80903	02450	85	JUL69	MAR70
1733	80903	02111	81	AUG69	JUN70
2167	88320	02810	85	NOV68	AUG69
1735	80903	02424	78	AUG68	SEP69
1733*	80903	02104	58	MAR68	MAR69
1724	80703	02300	70	MAR68	MAR69
1733	80903	02120	76	JUL68	AUG69
1733	80903	02120	80	JUL68	AUG69
22801	91200	02102	85	OCT68	AUG69
2165	87200	02450	82	MAR67	FEB68
2167	88320	02810	85	JUL67	AUG68
2221	91410	02545	85	DEC66	JUL67
2165	87200	02471	85	JUL67	AUG68
2165	87200	02450	86	JUL67	AUG68
1723	87203	02140	81	DEC66	JUN67
2163	87240	02155	85	JUL62	NOV62
1733	80903	02121	86	NOV65	MAY66
2167	80320	02810	82	NOV67	MAR69
2167	80320	02810	82	NOV67	MAR69
2165	87200	02450	85	FEB62	OCT62
2167	88320	02830	85	NOV67	NOV68
2167	88320	02830	85	NOV67	JAN69
1735	80903	02400	82	DEC66	MAY67
1732	80903	02140	77	FEB68	MAR69
1725	87203	02450	81	FEB68	MAR69
1730	80903	02150	87	NOV65	OCT66
1733	80903	02121	82	AUG68	APR70
2165	87600	02424	85	SEP69	AUG70
1736	80703	02300	86	JUL67	AUG68
1734	80703	02650	86	JUL67	AUG68
2166	87200	02650	83	APR66	APR67
2167	88320	02830	83	FEB70	AUG70
2167	88320	02836	85	FEB70	AUG70

TABLE F-2. (Continued)

Verified Skin Neoplasms for Ranch Hands Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
1734	80903	02300	82	APR70	JUL70
1732	80903	XX810	78	MAR67	FEB68
22801	91200	02617	85	APR67	JUN68
1733	80903	02104	85	JAN68	FEB69
2165	87200	02450	85	APR70	AUG70
1725	87203	02450	70	NOV68	FEB69
1733	80903	02133	85	NOV69	AUG70
1731	80903	02104	85	NOV69	AUG70
1733	80903	02400	87	DEC69	AUG70
1735	80903	02400	87	DEC69	AUG70
1736	80903	02410	87	DEC69	AUG70
22801	91200	02830	85	AUG68	SEP69
1734	80903	02102	79	AUG69	NOV69
1733	80903	02140	84	DEC66	AUG67
2167	87200	02810	85	AUG69	APR70
2165	87200	02400	85	AUG69	APR70
1733	80903	02140	82	FEB70	JUL70
1733	80903	02121	82	FEB70	JUL70
1736	80903	02617	86	FEB70	AUG70
1733	80903	02104	85	MAR67	APR68
1733	80903	02140	85	MAR67	APR68
1733	80903	02155	87	JAN69	JAN70
2166	88320	02617	85	MAR68	MAY69
2163	87240	02140	85	JUN69	APR70
2163	87500	01520	85	JUL69	JUL70
1733	80903	02121	76	SEP67	APR68
1733	80903	02140	85	SEP67	APR68
1733	80903	02104	85	SEP67	APR68
1733	80903	02104	85	SEP67	APR68
1733	80903	02104	85	SEP67	APR68
1733	80903	02121	88	SEP67	APR68
2167	88320	02830	86	SEP69	SEP70
2166	88320	02617	85	NOV61	MAY62
2164	87200	02300	83	NOV61	MAY62
2166	88320	02617	83	DEC66	FEB67
1734	80903	02300	85	DEC66	FEB67
2166	88320	02617	85	DEC66	DEC67
2166	80001	02600	72	FEB67	JAN68
2163	87200	02120	85	MAR68	APR69

TABLE F-2. (Continued)

Verified Skin Neoplasms for Ranch Hands Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
1733	80903	02140	85	AUG67	SEP68
1733	80903	02121	85	JUL68	FEB69
2167	88320	02810	85	NOV62	FEB63
22801	91200	02300	85	JUL68	JUN69
1739	80103	02111	85	JAN69	JAN70
1733	80903	02121	85	JAN69	AUG69
1730	80703	02150	79	JUL68	JUN69
2167	87200	02830	85	MAY67	MAY68
2167	88320	02836	83	DEC66	NOV68
2166	87600	02617	85	JUN67	JUL68
1732	80903	02200	87	APR69	MAY70
2162	87200	02200	85	SEP69	JUL70
1732	80903	02200	82	JAN71	MAY71
1732	80903	02200	85	JAN71	MAY71
1733	80903	02140	85	NOV61	MAY62
2382	80001	02617	85	AUG68	SEP69
2169	87200	02830	82	JUN68	JUL69
2169	87200	02104	82	JUN68	JUL69
1736	80903	02410	87	JUL68	JUN69
2167	88320	02810	85	AUG69	APR70
2166	88320	02617	85	OCT66	NOV67
1731	80903	XX810	82	AUG69	MAY70
1735	80903	02450	88	AUG69	MAY70
1731	80903	XX810	87	DEC66	OCT67
1733	80903	01520	82	SEP66	JUL67
2161	80500	02130	87	SEP66	JUL67
2166	87200	02650	83	JAN67	JAN68
2163	80000	02121	85	JAN67	JAN68
2167	87200	02810	85	JAN67	JAN68
1734	80903	02102	87	OCT63	MAR64
2167	87200	02617	85	AUG67	SEP68
2167	87200	02810	85	AUG67	SEP68
1735	80903	02450	87	JUN69	AUG70
1736	80903	02410	87	JUN69	AUG70
2165	88320	02450	85	AUG68	DEC72
1736	80903	02617	88	SEP67	DEC67
1736	80903	02410	83	JUL68	MAY69

TABLE F-2. (Continued)

Verified Skin Neoplasms for Ranch Hands Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
1735	80903	02450	87	JUL68	MAY69
1736	80903	02410	83	JUL64	OCT65
2166	87200	02650	86	DEC67	DEC68
22801	91200	02150	85	MAR68	AUG69
2167	87200	02810	85	JUL69	AUG69
1735	80903	02450	85	OCT68	OCT69
2167	88320	02836	82	NOV65	NOV66
1733	80903	02111	85	SEP63	JAN64
1732	80903	02200	85	SEP63	JAN64
1733	80903	02104	83	MAR69	MAR70
1733	80903	02121	79	APR69	JAN70
1732	80903	02200	82	APR69	JAN70
1733	80903	02155	82	NOV61	JUN63
1734	80903	02300	82	NOV61	JUN63
1735	80903	02410	82	NOV61	JUN63
1733	80903	02121	75	AUG68	JUN69
1733	80903	02140	85	SEP67	JUL68
1733	80903	02104	87	SEP67	JUL68
1735	80903	02410	87	JUL67	AUG68
1733	80903	02111	70	MAY67	APR68
1733	80903	02104	85	MAY67	APR68
1736	80903	02617	72	MAR68	JAN69
1734	80903	02300	72	MAR68	JAN69
1732	80903	02200	72	MAR68	JAN69
1735	80903	02410	72	MAR68	JAN69
2167	87200	02810	83	NOV68	DEC69
2165	87200	02400	83	NOV68	DEC69
2166	88320	02617	83	OCT64	OCT65
2165	87200	02450	85	JUL68	JUL69
1735	80903	02424	87	JUL68	JUL69
2165	87230	02450	85	JUN71	NOV71
22801	91200	02450	85	JAN67	APR67
22801	91200	02424	85	JAN67	APR67
1732	80903	02200	87	JAN62	MAR62
1733	80903	02104	88	AUG68	AUG69
1730	80903	02150	87	APR69	JAN70

TABLE F-2. (Continued)

Verified Skin Neoplasms for Ranch Hands Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
1733	80903	02140	83	JAN66	DEC66
1735	80903	02450	83	JUN69	JUL70
1730	80903	02150	87	JUL68	APR69
2165	87200	02424	85	JUN66	JUL67

*The condition was diagnosed pre-SEA.
Note: Informtion given is for participants with an assayed dioxin value.

TABLE F-3.

Verified Skin Neoplasms for Comparisons Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
1731	80903	XX812	79	JUN64	JAN66
1733	80903	02150	85	FEB67	MAY68
1733	80903	02121	85	JUL69	MAY73
1733	80903	02104	76	NOV69	DEC71
2224	91410	79400	85	JUN63	JAN65
2167	87200	02810	85	APR68	DEC69
2169	87200	02400	85	JAN67	AUG68
2166	88320	02620	85	JAN68	AUG69
1734	80703	02110	71	JUN67	JUN68
1735	80903	02450	79	NOV65	JUN68
1732	80903	02200	84	NOV65	JUN68
2166	87200	02410	82	FEB66	APR67
1733	80903	02121	87	OCT66	JUN68
1733	80903	02104	82	AUG67	SEP68
1732	80903	02200	88	JAN66	DEC66
1735	80903	02450	85	DEC69	MAR71
22801	91200	02109	85	JAN68	FEB69
1733	80903	02104	82	JUL68	JUL70
1734	80903	02300	82	JUL68	JUL70
2165	87200	Y7000	82	APR64	DEC66
2165	87200	02400	85	DEC69	MAR71
1732	80703	02200	81	JUN62	JAN65
1734	80903	02300	85	MAY63	SEP63
2165	95400	02471	85	JUL66	OCT68
1734	80903	02110	85	JUN64	JUL66
1733	80903	02140	82	JUN67	AUG68
1735	80903	02410	82	MAR66	JUL68
1735	80903	02410	82	MAR66	JUL68
1733*	80903	02121	67	MAY70	AUG71
2167	87200	02810	85	FEB68	MAR69
1733	80903	02104	85	SEP66	JUN67
1734	80903	02300	79	JUN60	JAN63
2165	95400	02471	82	OCT68	FEB70
2165	95400	02471	85	OCT68	FEB70
1733	80903	02142	82	JUN62	AUG66
2167	87800	02810	85	JUN63	JUN65
1735	80903	02400	86	JUN66	SEP69
2165	87200	02450	86	JUN66	SEP69
1733	80903	02104	74	APR69	DEC69

TABLE F-3. (Continued)

Verified Skin Neoplasms for Comparisons Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
1735	80903	02410	81	APR69	DEC69
1735	80903	02410	81	APR69	DEC69
1736	80903	02617	85	APR69	DEC69
1733	80903	02140	88	FEB69	MAY70
1733	80903	02104	85	MAY67	DEC68
2165	87200	02424	85	FEB66	MAR67
2164	87200	02102	73	AUG66	JAN68
2161	80000	02130	85	FEB68	NOV68
2165	88320	02450	85	JAN68	FEB69
2165	88320	02450	85	JAN68	FEB69
1733	80903	02140	85	AUG70	JUN71
2167	88320	02823	82	APR64	AUG68
1735	80903	02450	85	APR64	AUG68
2323	87422	02140	83	DEC64	DEC66
2167	88320	02821	85	OCT63	OCT66
2169	87200	00001	85	AUG68	JUN71
22801	91210	02840	85	MAY67	MAY68
2165	87200	02471	85	DEC68	MAY70
1735	80903	02450	87	SEP69	DEC70
1734	80903	02300	82	DEC69	APR71
1736	80903	02650	70	JAN67	JUL69
2165	87600	02617	85	JAN68	MAR69
2165	87600	02400	85	JAN68	MAR69
2165	87600	02424	85	JAN68	MAR69
1736	80903	02617	81	JUN63	JUL65
1733	80903	02104	82	JUN63	JUL65
2224	91410	02545	85	OCT67	APR69
2167	88320	02830	85	JUL68	OCT69
1725	87203	02450	83	FEB69	SEP70
2167	88320	02830	85	FEB66	MAR67
1732	80903	02200	87	DEC65	NOV66
1733	80903	02140	85	MAY70	JAN72
1733	80903	02121	82	JAN66	DEC66
1733	80903	02104	88	JUN69	SEP69
22801	91200	02300	85	OCT68	MAR70
2163	87200	02400	85	FEB70	AUG70
1739	80003	02150	68	JUN63	JUN65
1733	80903	02104	83	JUL67	DEC67
1733	80903	02140	82	APR68	MAY70

TABLE F-3. (Continued)

Verified Skin Neoplasms for Comparisons Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
22801	91370	02471	86	DEC65	JUL68
2162	87400	02200	85	DEC65	MAR66
1733	80903	02111	85	AUG68	MAR70
2164	87200	02110	85	AUG68	MAR70
1735	80903	02450	74	JUL67	JAN69
2167	88500	02820	85	DEC66	JAN68
2167	88320	02830	85	APR69	MAR70
2165	87800	02400	86	FEB70	DEC72
1733	80903	02111	87	AUG67	OCT68
1733	80903	02104	68	APR62	OCT63
2167	87200	02910	83	APR67	OCT68
22801	91200	02413	85	APR67	OCT68
1733	80903	02140	86	JAN67	FEB68
2165	87200	02400	85	JAN65	JUL67
1733	80903	02111	85	FEB61	AUG63
1733	80903	02121	88	FEB61	AUG63
2166	87200	02617	85	APR70	AUG71
2322	80102	02200	85	JUN66	AUG70
1732	80903	02200	86	NOV68	FEB70
1733	80903	02140	87	AUG67	OCT68
1725	87203	02424	82	FEB66	SEP67
1736	80903	02610	87	FEB66	SEP67
1733	80903	02120	79	JUL67	SEP68
2166	88320	02617	82	DEC66	JAN68
2165	87200	02400	82	DEC66	JAN68
1725	87203	02450	83	MAR68	FEB70
1731	80903	02130	85	MAR66	SEP67
1733	80903	02121	87	MAR66	SEP67
2382*	80001	02300	56	JAN67	AUG68
1736	80903	02410	88	MAR70	JUN71
22801	91200	02450	85	FEB65	AUG67
1733	80903	02121	88	MAR69	DEC69
1733	80903	02121	75	FEB69	AUG70
2163	87200	02121	86	FEB68	AUG69
2165	80000	02450	78	MAR68	MAR70
1735	80903	02424	82	MAY60	JAN61
2165	87230	02400	85	DEC65	JUN66
2165	88320	02471	83	JUL65	JAN67
22801	91200	02810	86	NOV69	MAY71

TABLE F-3. (Continued)

Verified Skin Neoplasms for Comparisons Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
2165	87200	02450	85	DEC66	JAN68
2165	87200	02400	85	DEC66	JAN68
2166	87200	02617	86	NOV64	APR68
2167	88320	02850	85	SEP70	FEB73
2167	88320	02830	85	AUG70	OCT71
2167	87200	02870	85	JUN68	MAY71

*The condition was diagnosed pre-SEA.
Note: Information given is for participants with an assayed dioxin value.

TABLE F-4.

Verified Systemic Neoplasms for Ranch Hands Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
2102	85610	55100	80	DEC66	DEC67
2141	88500	02420	85	MAY63	NOV63
2141	88500	02610	85	MAR69	MAR70
2141	88500	02830	86	APR68	MAR69
1649	80003	08220	85	FEB69	DEC69
1629	80003	28000	85	FEB69	DEC69
2141	88500	02300	71	APR69	MAY70
1869	90613	78000	77	OCT68	NOV69
2141	88500	02810	85	JUL68	NOV69
2141	88500	02450	85	JUL68	NOV69
2298	90840	02850	85	JAN69	FEB70
2392	80031	17050	75	NOV65	OCT66
2148	88500	Y7000	85	AUG69	JUL70
2123	80000	28000	77	DEC65	FEB66
2141	88500	02450	85	JUN66	JUN67
2041	98233	05500	85	DEC66	MAY67
20288	95903	08000	85	DEC66	MAY67
2389	80001	02450	85	JUL68	JUN69
2141	88500	02450	81	FEB65	MAY66
1623	80703	28200	79	JUL68	AUG69
2100	88100	02150	76	AUG66	NOV66
2154	88100	1X000	79	AUG66	NOV66
2141	88500	02400	79	JUL67	AUG68
2141	88500	02412	85	APR69	AUG69
2141	88500	02471	85	JUN69	MAR70
2141	88500	02450	82	NOV67	JAN69
2020	95913	08810	86	NOV61	MAY62
2141	88500	02450	85	SEP69	APR70
1886*	81203	74320	67	FEB68	FEB69
2150	88130	02140	85	NOV67	DEC68
2149	88500	02810	85	JUL67	OCT67
2148	88500	02400	85	JUL67	OCT67
1890	80103	71000	83	OCT68	SEP69
1886	81303	74320	85	AUG67	SEP68
2141*	88500	02400	60	NOV67	MAR69
1869	80103	78000	87	FEB68	MAR69
2149	88500	02487	83	APR66	APR67
2135*	92200	02670	59	SEP69	NOV69
2148	88500	02830	83	FEB70	AUG70

TABLE F-4. (Continued)

Verified Systemic Neoplasms for Ranch Hands Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
22800	91200	02617	83	APR67	JUN68
2298	90840	02840	85	JUN65	FEB66
2141	88500	02830	85	JUN65	FEB66
2141	88500	02617	85	MAY69	JAN70
2149	88500	02650	85	FEB67	SEP67
2384	99501		85	SEP66	DEC66
1869*	80003	78000	56	SEP67	APR68
2141	88500	02810	82	DEC66	DEC67
2254	95400	X7410	84	JAN70	JAN71
22800	91200	02620	83	SEP69	SEP70
22800	91200	02300	83	NOV61	MAY62
2141	88500	02300	85	NOV61	MAY62
1883	81203	74000	80	JUL68	JUL69
1889*	81203	74000	63	OCT66	SEP67
2141	88500	02424	82	OCT66	SEP67
1890	83123	71000	85	OCT67	JUL68
2141	88500	02450	85	NOV61	AUG62
2392*	80001	11310	56	APR66	MAR67
2141	88500	02450	85	SEP66	MAR67
2141	88500	02400	85	SEP66	MAR67
2141	88500	02424	85	SEP66	MAR67
1889	81303	74000	82	AUG66	NOV66
1889	81303	74000	82	AUG66	NOV66
1889	81303	74000	82	AUG66	NOV66
1869	90703	78000	75	JUL66	NOV66
2141	88500	00020	85	MAY69	MAR70
2141	88500	Y8500	82	JUN68	JUL69
2141	88500	Y4100	82	JUN68	JUL69
2141	88500	02850	85	DEC66	DEC67
1869*	90813	78000	52	FEB68	MAR68
2141	88500	02400	70	DEC64	DEC65
2141	88500	02617	83	SEP66	JUL67
2141	88500	02450	84	SEP66	JUL67
22800	91299	02650	83	JAN67	JAN68
2149	88500	02617	83	JAN67	JAN68
2158	88100	51030	85	FEB68	DEC68
2141	88500	02121	81	APR68	APR69
2298*	80000	02870	42	DEC66	JUL67
2141	88500	02400	86	OCT66	NOV66

TABLE F-4. (Continued)

Verified Systemic Neoplasms for Ranch Hands Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
2348	80102	02810	85	JUN68	JUL69
2141	88500	02300	82	NOV61	MAR62
2141	88500	02650	82	DEC67	DEC68
2141	88500	02450	86	NOV67	DEC68
185	81403	77100	79	OCT65	NOV66
2149	88500	02617	85	JUL68	SEP69
2141	88500	02617	83	FEB69	MAR70
1623	80703	28000	85	AUG68	JUN69
185	80003	77100	84	FEB68	APR68
2141	88500	02300	83	OCT64	OCT65
2141	88500	02400	83	OCT64	OCT65
2141	88500	02450	85	MAR69	APR70
2398*	80001	Y9400	41	SEP66	SEP67
226*	81400	96000	63	APR64	APR65
226	81400	96000	78	APR64	APR65

*The condition was diagnosed pre-SEA.
Note: Information given is for participants with an assayed dioxin value.

TABLE F-5.

Verified Systemic Neoplasms for Comparisons Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
2157	88100	02150	85	FEB67	MAY68
2141	88500	02450	85	MAY69	JUN70
2141	84500	02410	73	JUL67	JUN71
2141	88500	02410	73	JUL67	JUN71
2141	88500	02410	73	JUL67	JUN71
2141	88500	02300	85	JAN66	MAR66
2148	88500	Y8501	85	JAN67	AUG68
2141	88500	02617	85	SEP66	OCT68
2141	88500	02400	85	SEP66	OCT68
22800	91200	02424	85	SEP67	MAR69
2141	88500	Y2150	81	JUN66	JUL69
2352	82611	67000	85	JUN66	JUL69
185	80103	77100	83	OCT68	APR70
2141	88500	02424	86	MAR70	MAR72
2228	80000	79300	82	FEB66	APR67
2392	80001	XX110	85	JUL68	JAN71
2141	88500	02471	85	JAN63	JUN66
2141	88500	02617	82	MAY70	AUG71
2141	88500	02617	82	MAY70	AUG71
2149	88500	02400	85	AUG66	SEP67
2141	88500	02300	71	AUG67	SEP68
2141	88500	02810	82	JUN66	DEC68
2141	88500	02617	82	JUN66	DEC68
2141	88500	02424	82	JUN66	DEC68
2141	88500	02104	75	DEC61	JUN64
2140	88500	02450	81	DEC61	JUN64
1533	81403	67700	82	AUG68	FEB71
2156	87500	02471	85	JUL66	OCT68
185	81403	77100	86	DEC67	JUN69
2113	82100	67000	79	MAR68	JUN69
2113	82100	67000	79	MAR68	JUN69
2113	82100	67000	79	MAR68	JUN69
2120	80000	22100	70	DEC65	DEC66
2101	80500	53000	80	JUL68	DEC69
2141	88500	02121	85	NOV67	JAN69
2141	88500	00001	85	JUN62	JUL66
2141	88500	02400	87	SEP68	NOV69
2253	95600	X7410	79	APR67	JUN67
2253	95600	X7410	79	APR67	JUN67

TABLE F-5. (Continued)

Verified Systemic Neoplasms for Comparisons Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
2253	95600	X7410	79	APR67	JUN67
217	80000	04000	87	MAY64	JUN66
2141	88500	02450	85	APR69	FEB70
2141	88500	02810	85	APR68	OCT69
2141	88500	02400	85	OCT66	DEC67
1882	80003	74064	79	JAN68	APR71
1882	80003	74060	80	JAN68	APR71
1882	80003	74060	81	JAN68	APR71
2020	96903	08200	83	NOV66	JAN68
2233	80000	74000	81	APR69	SEP70
2141	88500	02420	65	DEC63	JAN68
1882	81203	74000	81	FEB66	JUN67
1882	81203	74000	87	FEB66	JUN67
2141	88500	02617	83	JAN68	SEP69
2141	88500	02450	85	JAN68	SEP69
2149	88500	02805	83	JUN66	JUL67
2141	88500	02805	85	JUN66	JUL67
2392	80001	32060	85	OCT67	APR69
2141	88500	02400	85	JUL68	JAN70
2149	88500	02617	83	JUL68	OCT69
2149	88500	02830	83	JUL68	OCT69
1710	88103	02102	75	SEP66	MAY68
2141	88500	02450	80	DEC66	JAN68
1535	80103	66000	72	DEC67	JUN69
2149	88500	Y8100	83	FEB66	JUL67
2141	88500	02480	85	FEB66	JUL67
1610	80003	24400	80	APR65	AUG67
2141	88500	02810	83	JUN68	NOV69
2141	88500	02400	83	JUN68	NOV69
2141	88500	02830	83	JUN68	NOV69
2141	88500	02400	85	JUN68	NOV69
185	81403	77100	86	AUG63	AUG66
2141	88500	02400	85	OCT66	MAY68
2120	80500	21310	85	FEB66	AUG67
2395	80001	70000	83	JAN65	DEC68
2014	96503	08810	78	DEC63	JUN64
2133	92200	10350	73	OCT69	JAN72
2398*	80001	Y8000	63	JUL70	JAN71
22800	91200	00001	83	FEB61	AUG63

TABLE F-5. (Continued)

Verified Systemic Neoplasms for Comparisons Fully Compliant at the 1987 Examination

ICD-9-CM Code	Morphology Code	Site Code	Year of Diagnosis	Start of First Qualifying Tour	End of First Qualifying Tour
185	80103	77100	87	JUL67	OCT69
2148	88500	51200	67	NOV61	AUG62
2141	88500	02545	85	MAY68	JUL69
2391	80001	28000	86	DEC65	MAR67
2141	88500	02810	85	JAN66	MAR67
2335	80812	02530	82	MAY67	APR68
226	80000	96000	82	JUL66	JUL68
2141	88500	02450	85	AUG65	JUN70
2124	90500	28000	72	AUG69	AUG71
2393	80001	04000	83	AUG68	JUL73
217*	80000	04000	47	JUN59	APR62
2149	88500	02810	86	NOV64	APR68

*The condition was diagnosed pre-SEA.
Note: Information given is for participants with an assayed dioxin value.

APPENDIX F-1.

Data Displays for the Malignancy Assessment

The following figures graphically display relationships between the dependent variables and measures of dioxin for the malignancy assessment. The panels are arranged as follows:

Panel	Group	Assumption	Dioxin Measure
a	Ranch Hand	Minimal	Initial
b	Ranch Hand	Maximal	Initial
c	Comparison	--	Current
d	Ranch Hand	--	Current

Dioxin measures are presented in original units, but spacing of intervals is based on the logarithm (base 2) scale, similar to the statistical analysis. The percent of participants that exhibited a specified neoplasm is displayed on the vertical axis for given intervals of dioxin. Sample sizes within a specified dioxin interval are presented below for several different sets of participants. The different sets of sample sizes reflect the various exclusions applied (e.g., Black participants not included in analyses of skin neoplasms) or the different types of constraints applied for the graphs in the malignancy assessment (e.g., investigating particular skin neoplasms for each occupation). Centered above each table of sample sizes is a descriptor that identifies the particular group of participants used for a specified graphic display. Applicable figures for these sample sizes are listed parenthetically below each centered descriptor. The figures in this Appendix, which follow the tables, are based on verified neoplasms only. That is, graphs were not produced on individual analyses presented in the main body of the report for participants with verified and suspected neoplasms. In particular, the following figures were based on participants with verified neoplasms only, although an analysis also was presented for participants with verified and suspected neoplasms: Figures F-1-1, F-1-2, F-1-4, F-1-31, F-1-32, F-1-33, F-1-36, F-1-44. Also, the figure for benign skin neoplasms (F-1-3) was based on non-Black participants only; a figure was not produced for Black and non-Black participants combined.

Non-Black Participants
(Figures F-1-1 to F-1-18; Note: NOS refers to not otherwise specified in Figure F-1-9)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	36	8
>0.5-2.0	1	0	0	25	8
>2.0-8.0	4	0	0	645	240
>8.0-32.0	16	0	23	48	381
>32.0-128.0	64	203	395	1	150
>128.0-512.0	256	219	219	0	33
>512.0-2,048.0	1024	64	64	0	2
>2,048.0	4096	3	3	0	0

Non-Black Officers Only
Neoplasm on Ear, Face, Head, and Neck or No Neoplasm
(Figures F-1-19; F-1-25)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	13	3
>0.5-2.0	1	0	0	3	5
>2.0-8.0	4	0	0	246	152
>8.0-32.0	16	0	14	20	154
>32.0-128.0	64	88	206	0	2
>128.0-512.0	256	17	17	0	0
>512.0-2,048.0	1024	0	0	0	0
>2,048.0	4096	0	0	0	0

Non-Black Officers Only
Neoplasm on Other Sites or No Neoplasm
(Figures F-1-20; F-1-26)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	11	3
>0.5-2.0	1	0	0	3	5
>2.0-8.0	4	0	0	234	146
>8.0-32.0	16	0	14	20	133
>32.0-128.0	64	81	196	0	2
>128.0-512.0	256	16	16	0	0
>512.0-2,048.0	1024	0	0	0	0
>2,048.0	4096	0	0	0	0

Non-Black Enlisted Flyers Only
Neoplasm on Ear, Face, Head, and Neck or No Neoplasm
(Figures F-1-21; F-1-27)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	2	2
>0.5-2.0	1	0	0	4	1
>2.0-8.0	4	0	0	103	27
>8.0-32.0	16	0	2	7	77
>32.0-128.0	64	38	60	0	29
>128.0-512.0	256	53	53	0	1
>512.0-2,048.0	1024	7	7	0	0
>2,048.0	4096	0	0	0	0

Non-Black Enlisted Flyers Only
Neoplasm on Other Sites or No Neoplasm
(Figures F-1-22; F-1-28)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	2	2
>0.5-2.0	1	0	0	4	1
>2.0-8.0	4	0	0	96	24
>8.0-32.0	16	0	1	7	75
>32.0-128.0	64	36	57	0	32
>128.0-512.0	256	55	55	0	1
>512.0-2,048.0	1024	8	8	0	0
>2,048.0	4096	0	0	0	0

Non-Black Enlisted Groundcrew Only
Neoplasm on Ear, Face, Head, and Neck or No Neoplasm
(Figures F-1-23; F-1-29)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	19	3
>0.5-2.0	1	0	0	17	2
>2.0-8.0	4	0	0	288	54
>8.0-32.0	16	0	7	21	150
>32.0-128.0	64	73	119	1	113
>128.0-512.0	256	141	141	0	32
>512.0-2,048.0	1024	55	55	0	2
>2,048.0	4096	3	3	0	0

Non-Black Enlisted Groundcrew Only
Neoplasm on Other Sites or No Neoplasm
(Figures F-1-24; F-1-30)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	21	2
>0.5-2.0	1	0	0	18	2
>2.0-8.0	4	0	0	278	51
>8.0-32.0	16	0	6	21	145
>32.0-128.0	64	68	114	1	114
>128.0-512.0	256	142	142	0	32
>512.0-2,048.0	1024	55	55	0	2
>2,048.0	4096	3	3	0	0

Non-Black Participants
One Basal Cell Carcinoma or No Basal Cell Carcinoma
(Figure F-1-31)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	36	8
>0.5-2.0	1	0	0	25	8
>2.0-8.0	4	0	0	638	232
>8.0-32.0	16	0	22	48	370
>32.0-128.0	64	196	385	1	149
>128.0-512.0	256	215	215	0	33
>512.0-2,048.0	1024	64	64	0	2
>2,048.0	4096	3	3	0	0

Non-Black Participants
Multiple Basal Cell Carcinoma or No Basal Cell Carcinoma
(Figure F-1-32)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	33	7
>0.5-2.0	1	0	0	24	8
>2.0-8.0	4	0	0	607	224
>8.0-32.0	16	0	22	48	357
>32.0-128.0	64	189	369	1	143
>128.0-512.0	256	209	209	0	33
>512.0-2,048.0	1024	61	61	0	2
>2,048.0	4096	3	3	0	0

All Participants
(Figures F-1-33 to F-1-44)

Dioxin Interval	Dioxin Scale Midpoint	Panel a	Panel b	Panel c	Panel d
		Sample Size			
0.0-0.5	0.25	0	0	42	8
>0.5-2.0	1	0	0	28	8
>2.0-8.0	4	0	0	681	249
>8.0-32.0	16	0	23	52	408
>32.0-128.0	64	219	417	1	158
>128.0-512.0	256	234	234	0	33
>512.0-2,048.0	1024	65	65	0	2
>2,048.0	4096	3	3	0	0

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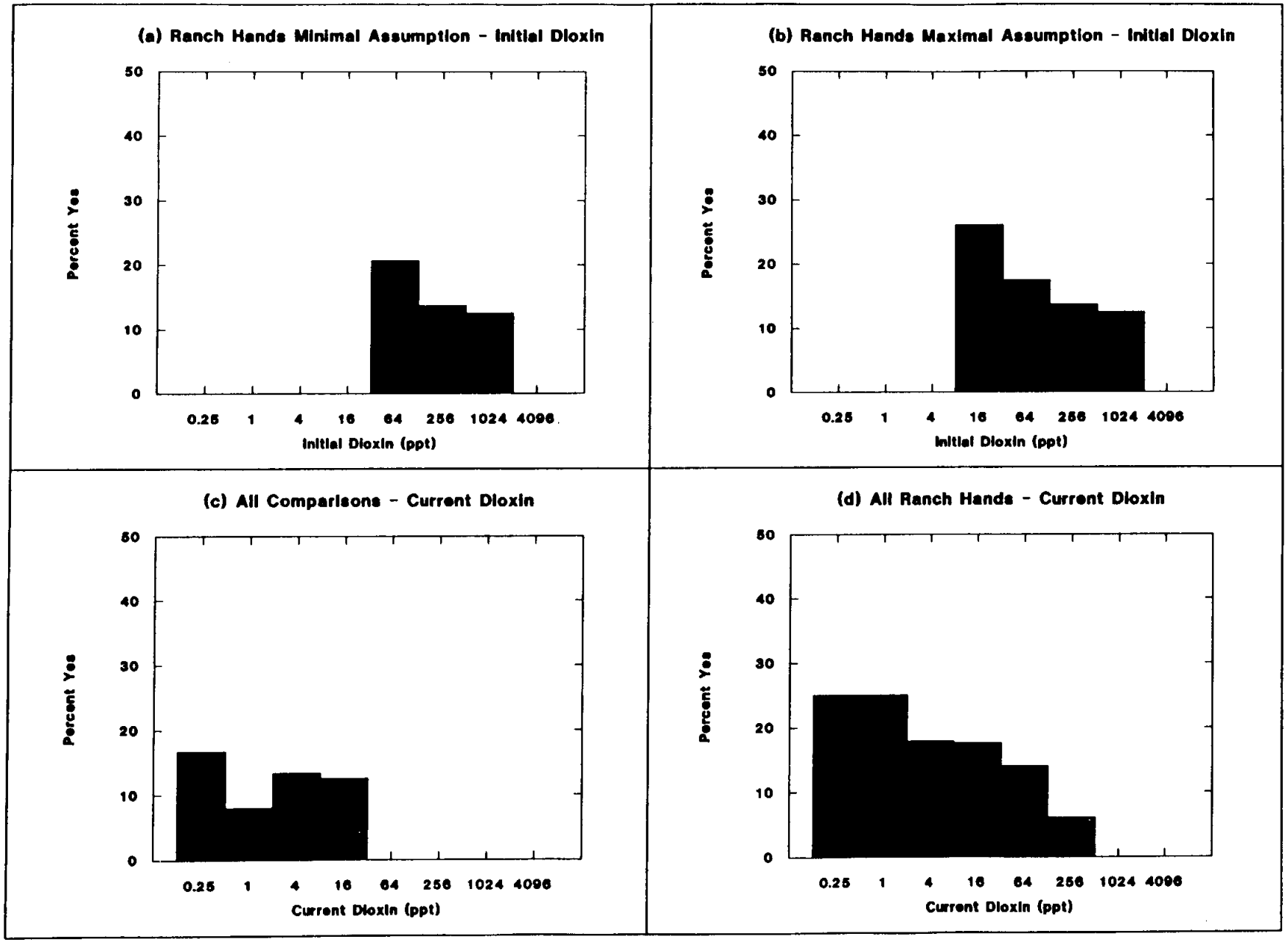

FIGURE F-1-1. All Skin Neoplasms versus Dioxin

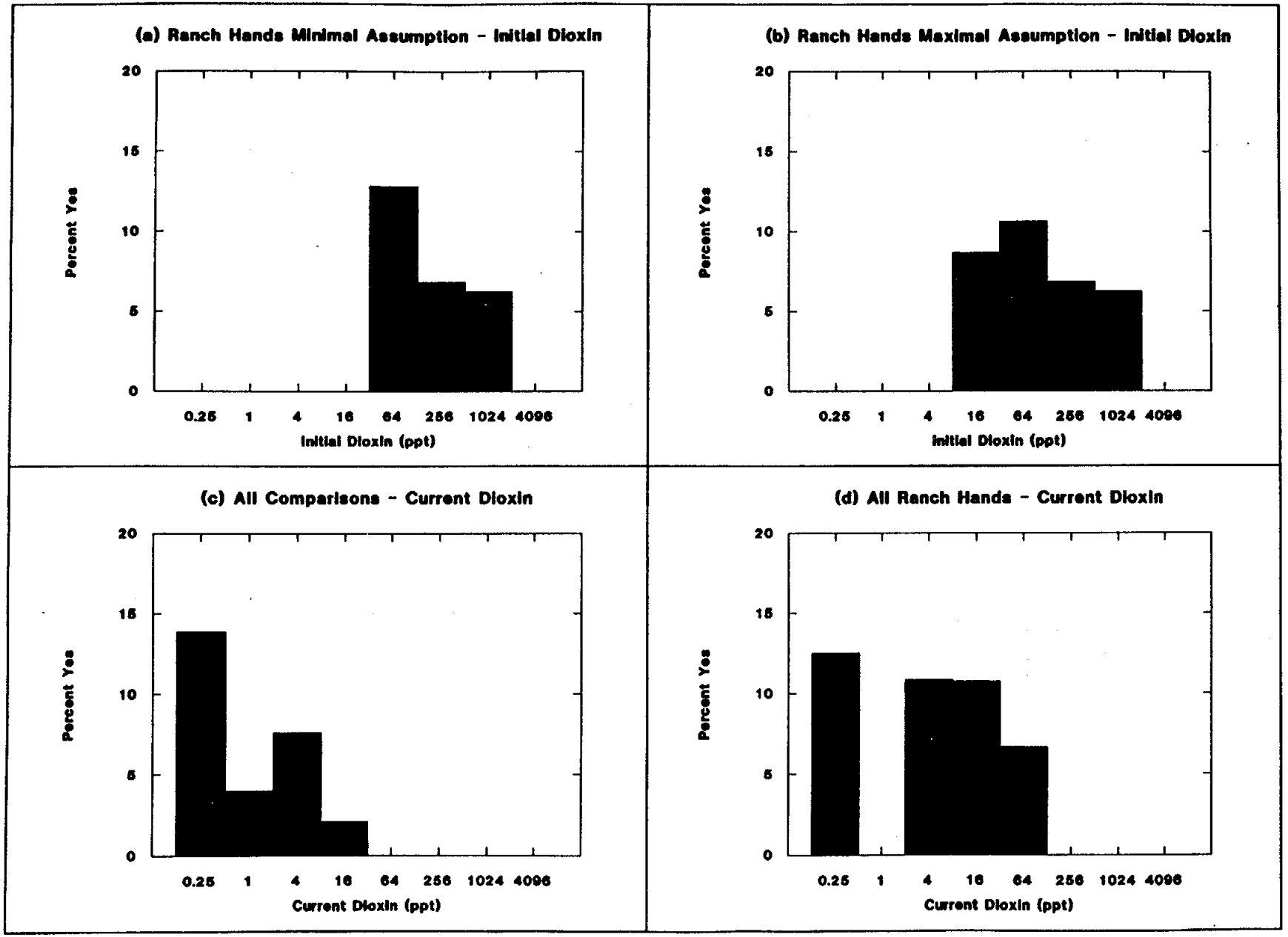

FIGURE F-1-2. Malignant Skin Neoplasms versus Dioxin

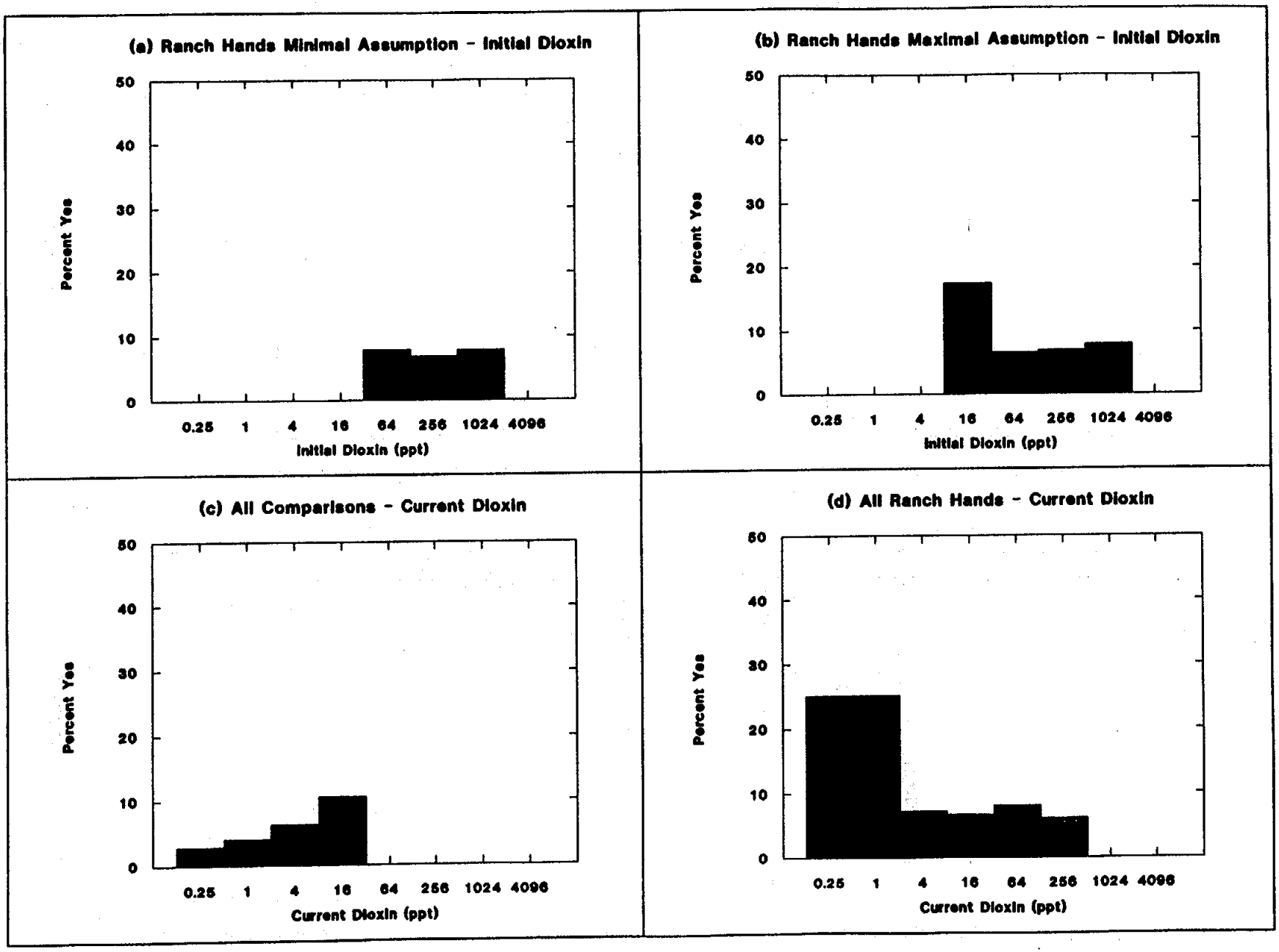

FIGURE F-1-3. Benign Skin Neoplasms versus Dioxin

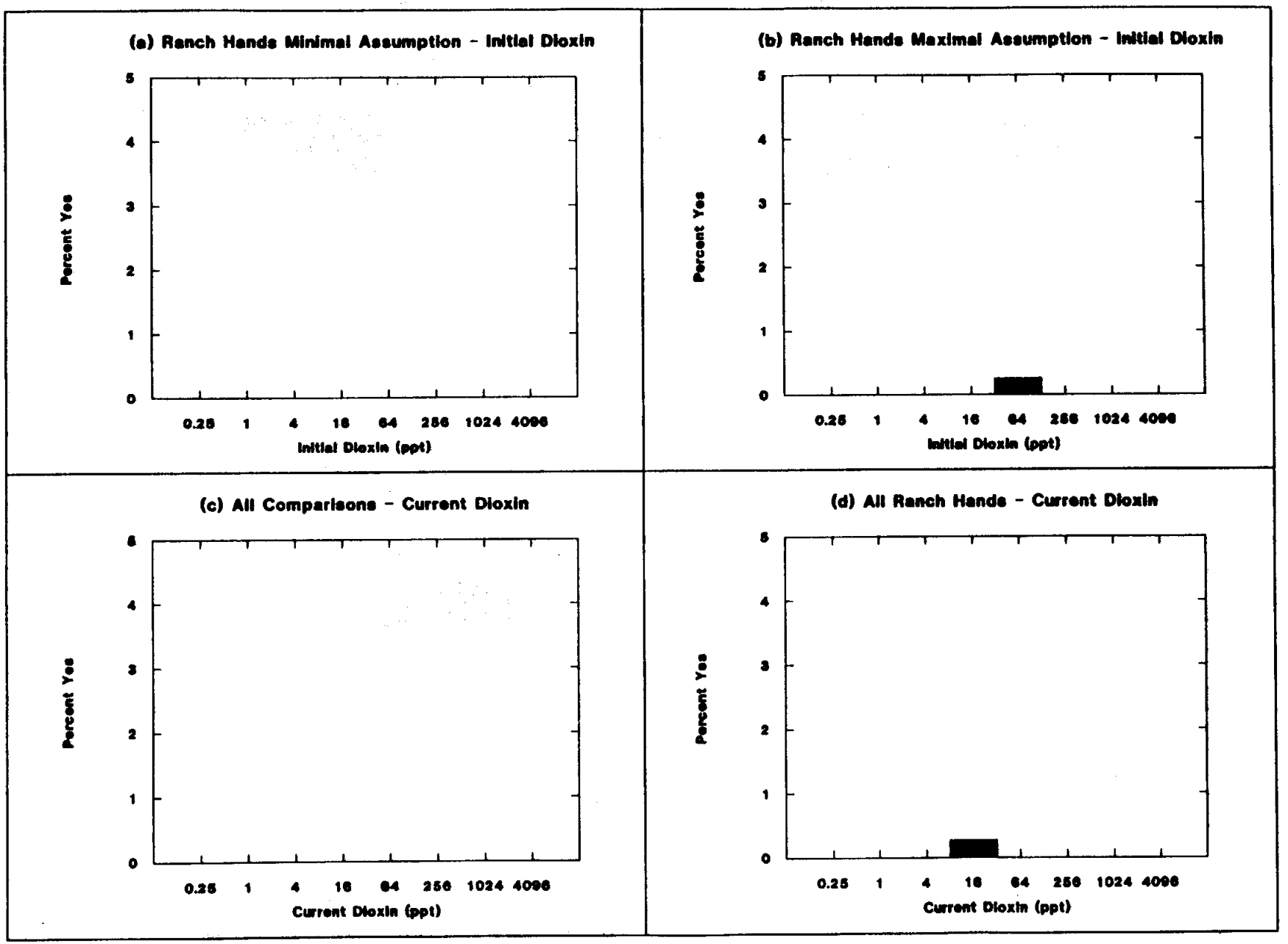

FIGURE F-1-4. Skin Neoplasms of Uncertain Behavior or Unspecified Nature versus Dioxin

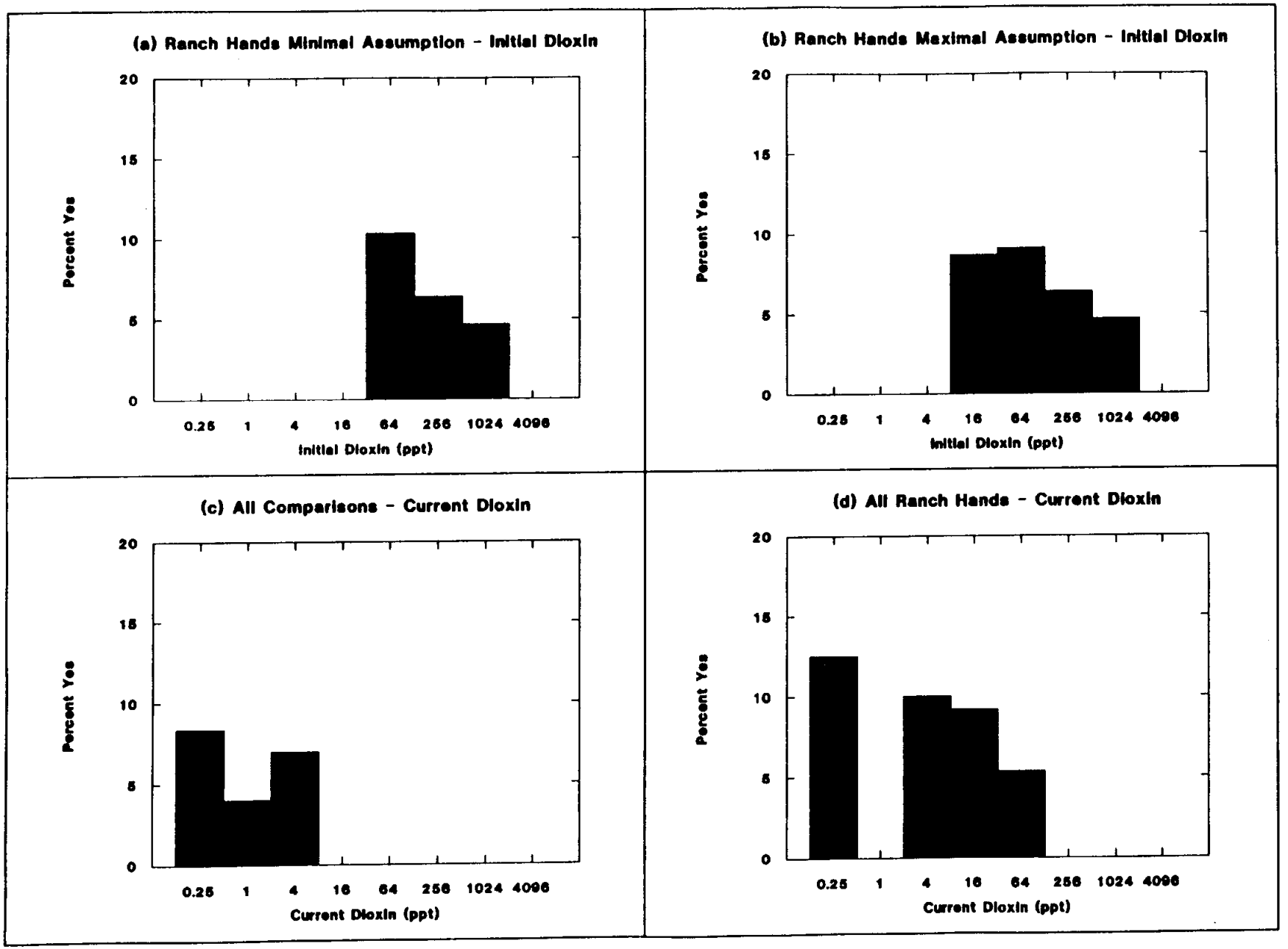

FIGURE F-1-5. Basal Cell Carcinoma (All Sites Combined) versus Dioxin

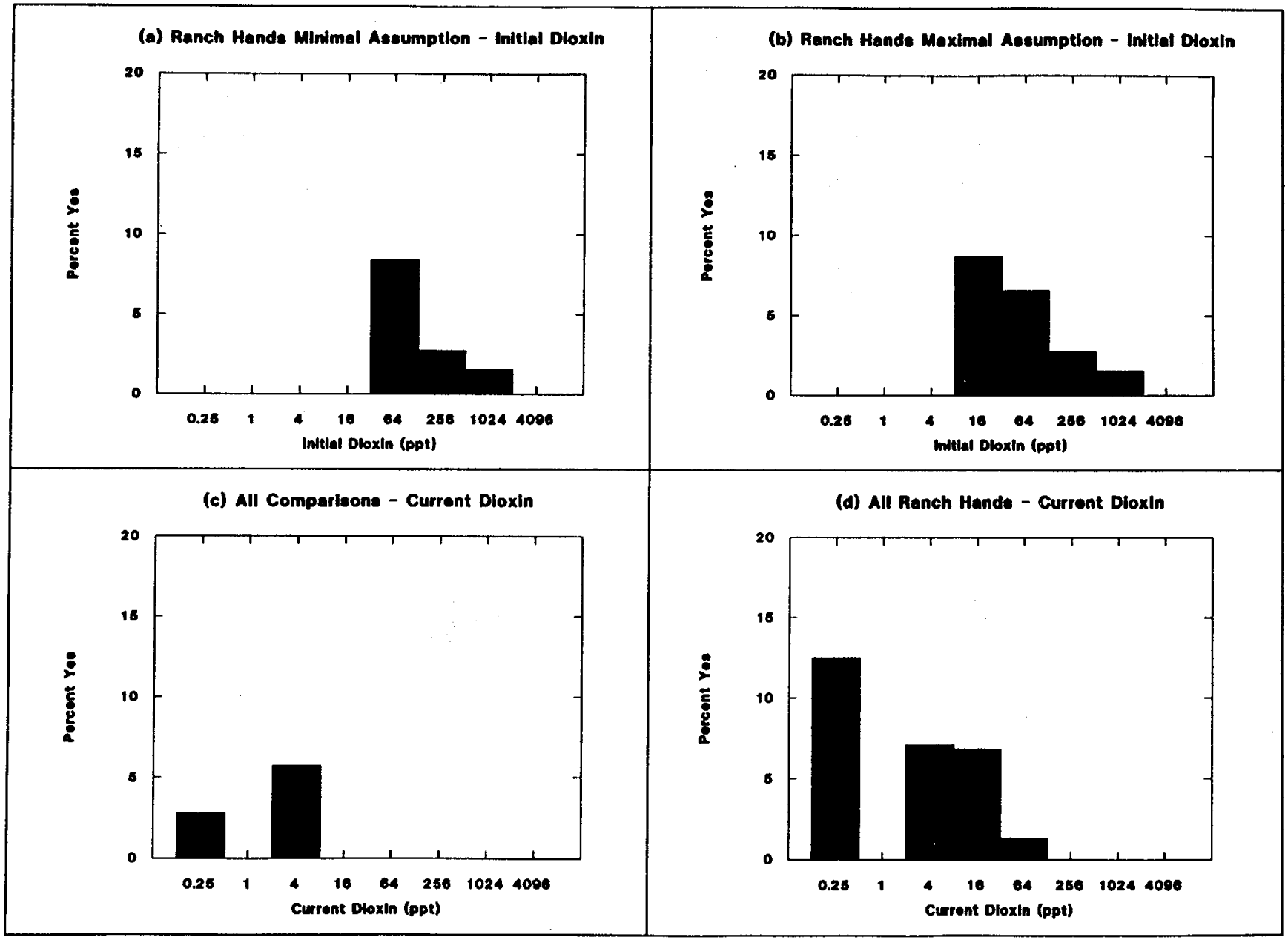

FIGURE F-1-6. Basal Cell Carcinoma (Ear, Face, Head, and Neck) versus Dioxin

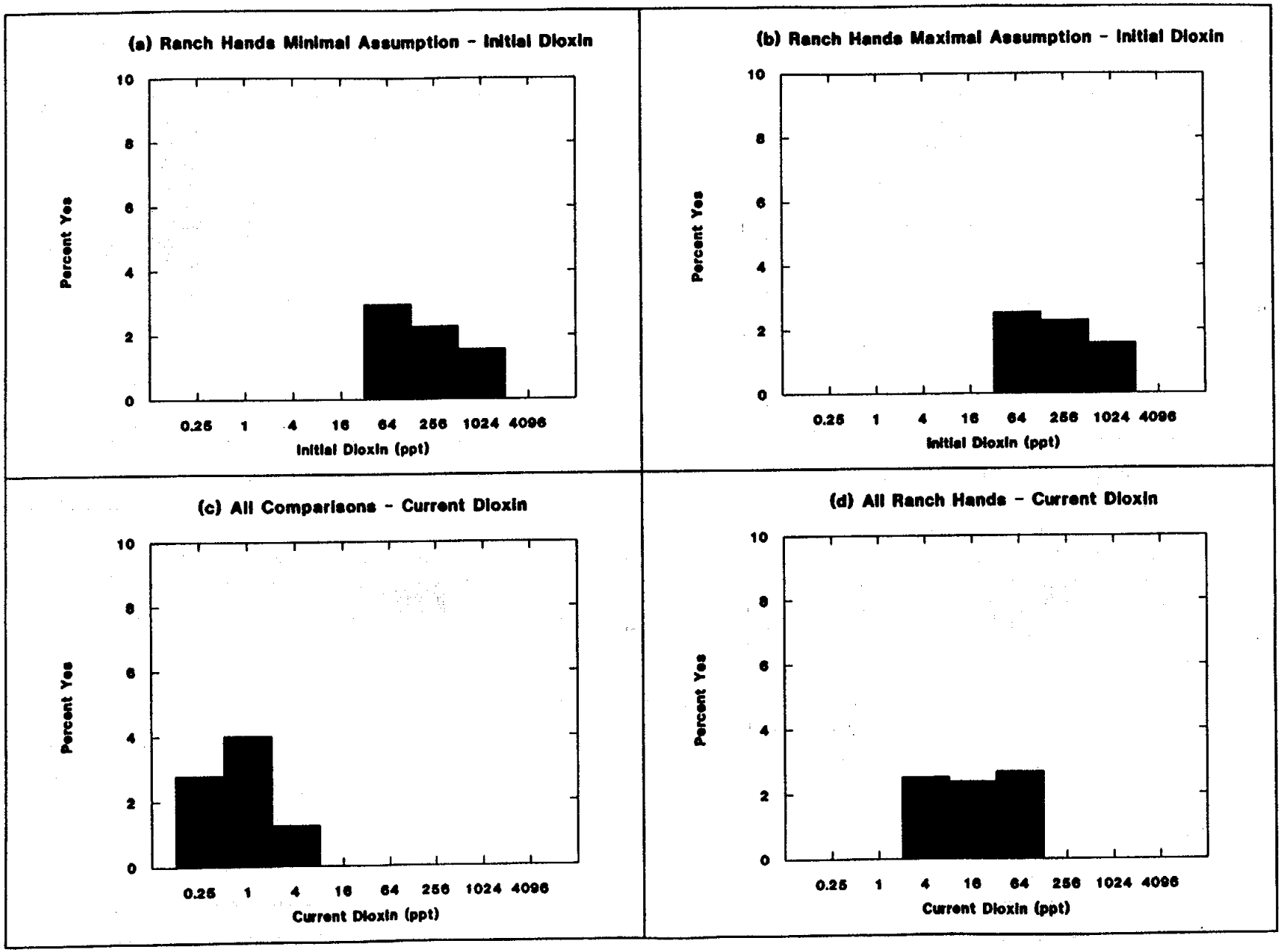

FIGURE F-1-7. Basal Cell Carcinoma (Trunk) versus Dioxin

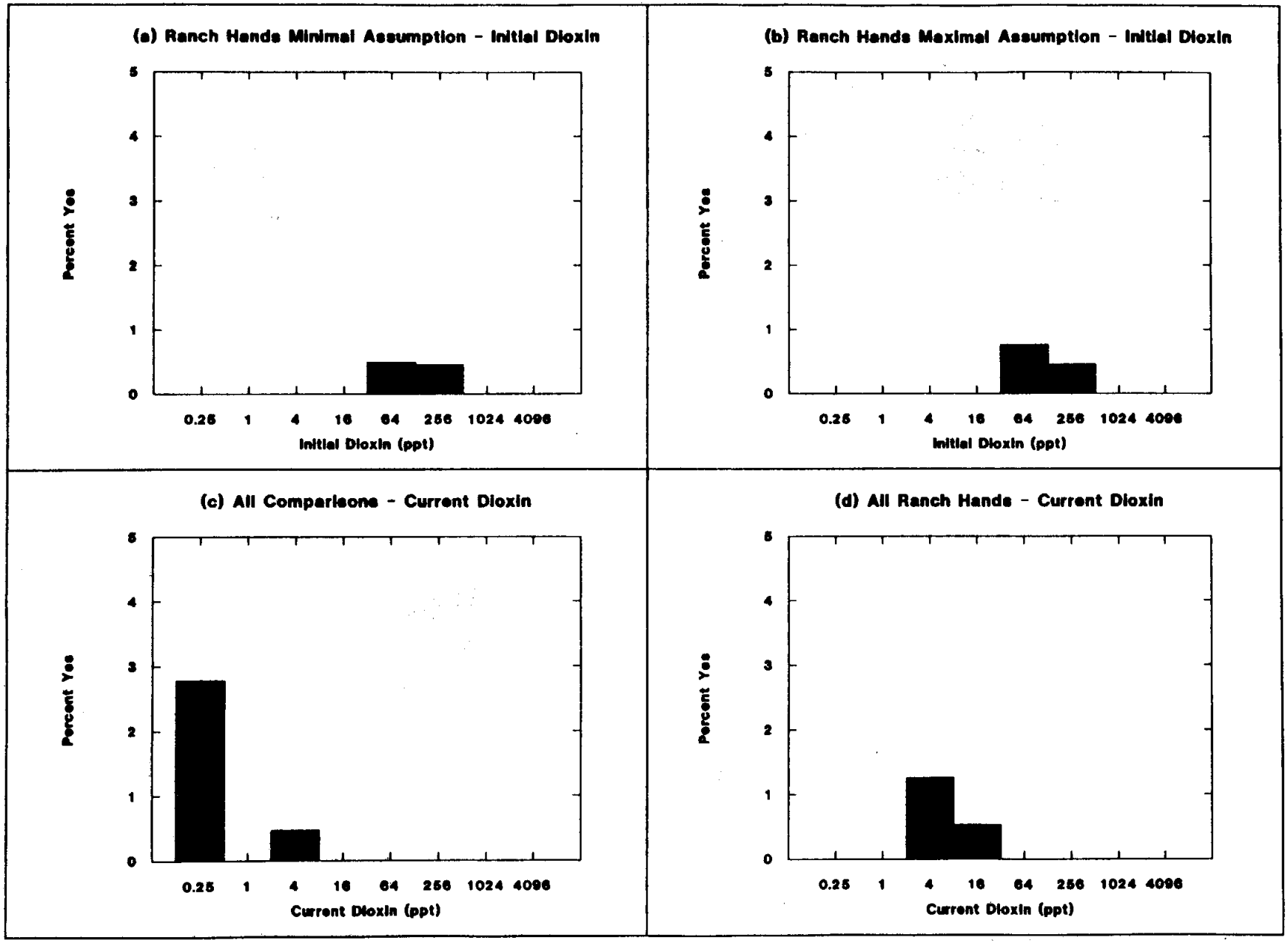

FIGURE F-1-8. Basal Cell Carcinoma (Upper Extremities) versus Dioxin

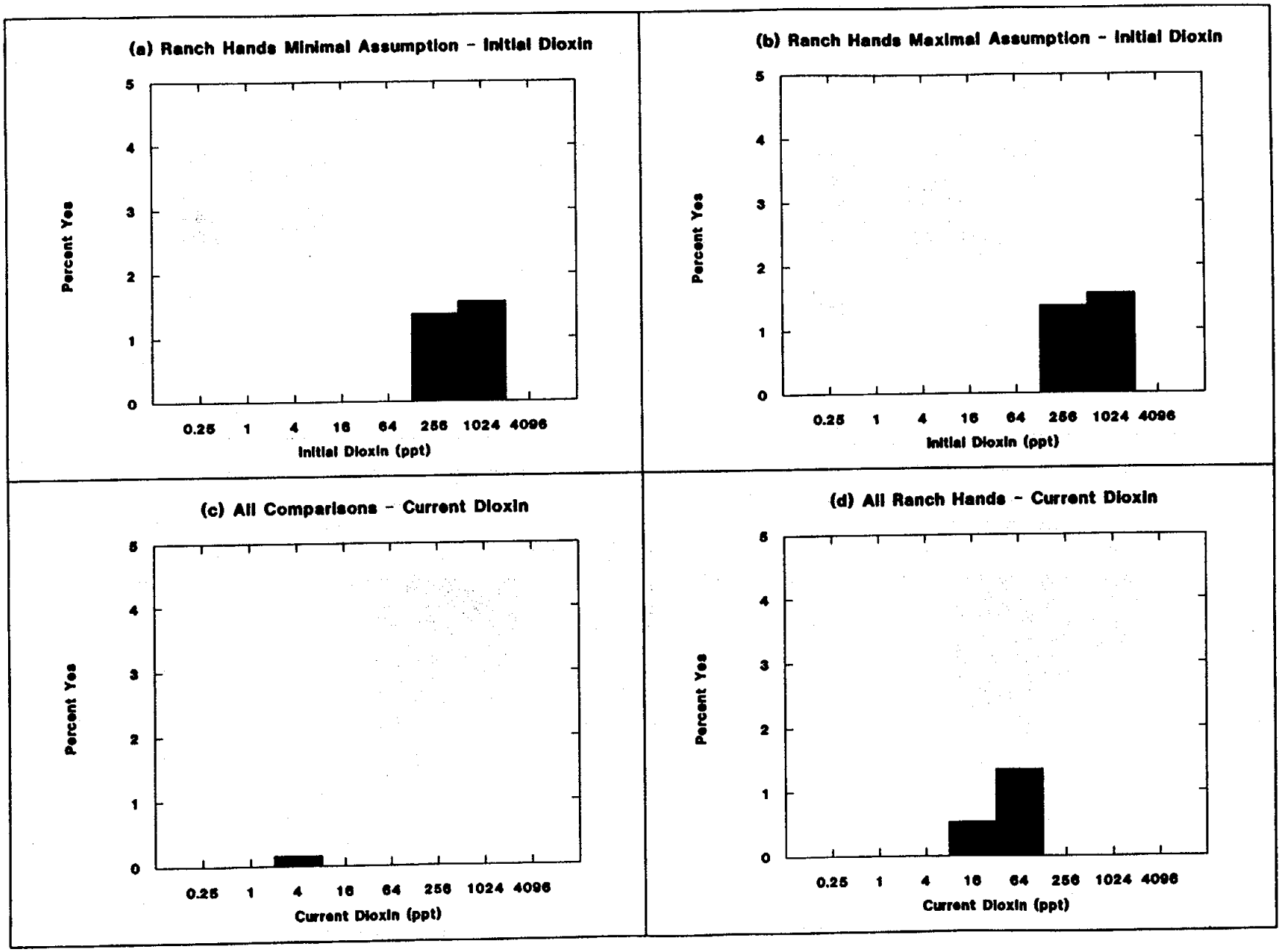

FIGURE F-1-9. Basal Cell Carcinoma (Other Sites and NOS) versus Dioxin

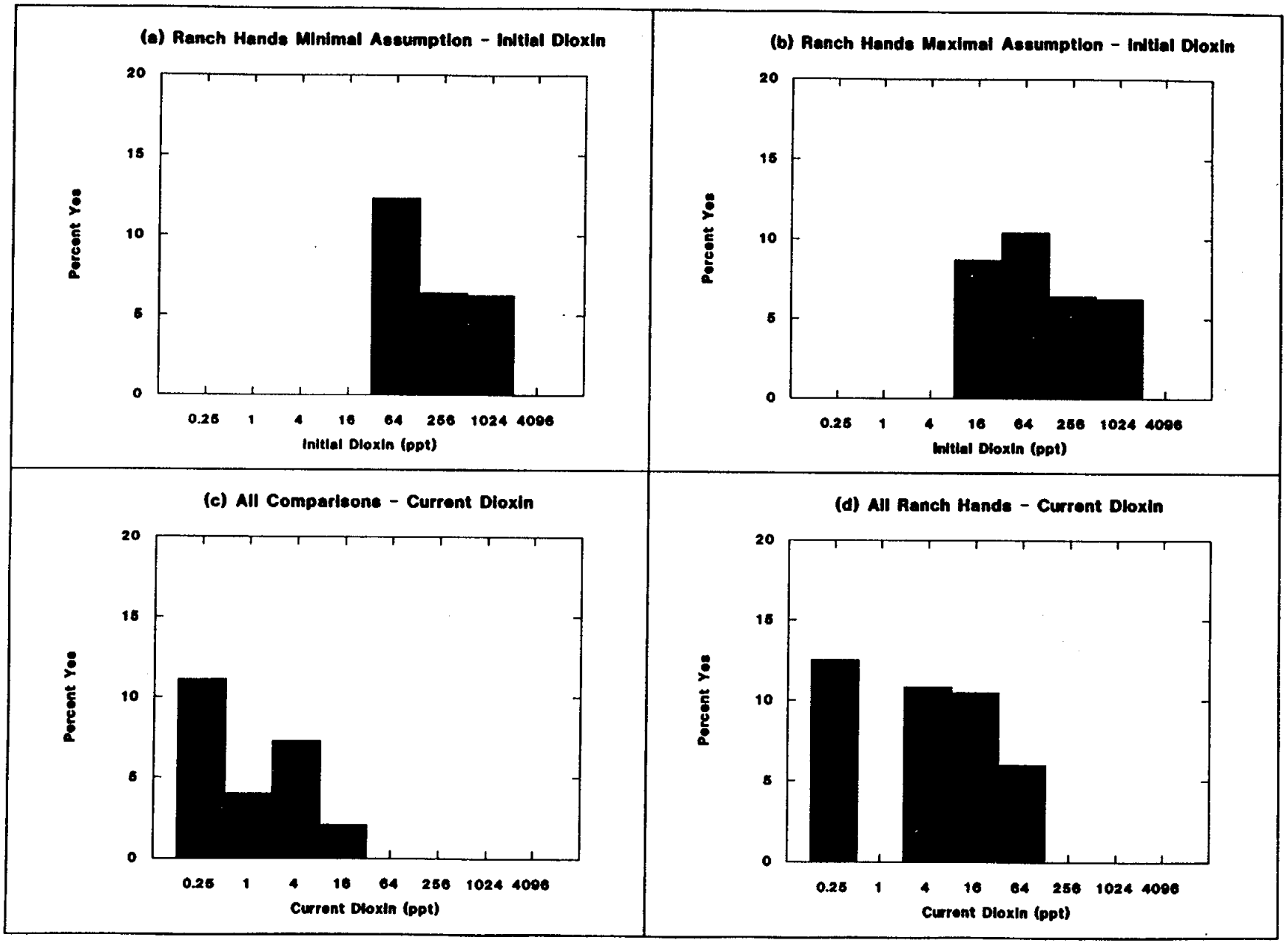

FIGURE F-1-10. Sun Exposure-Related Malignant Skin Neoplasms (All Sites Combined) versus Dioxin

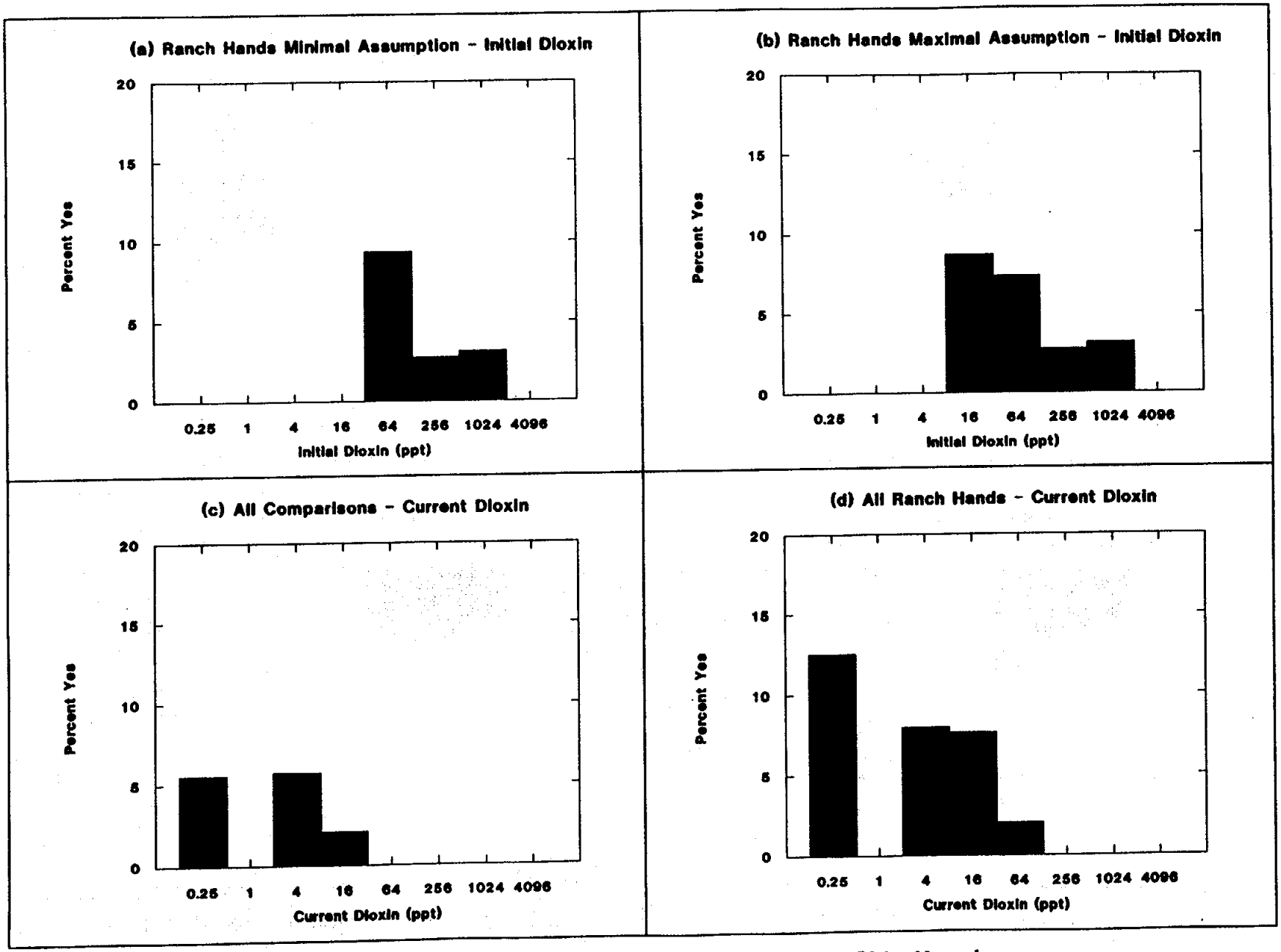

FIGURE F-1-11. Sun Exposure-Related Malignant Skin Neoplasms (Ear, Face, Head, and Neck) versus Dioxin

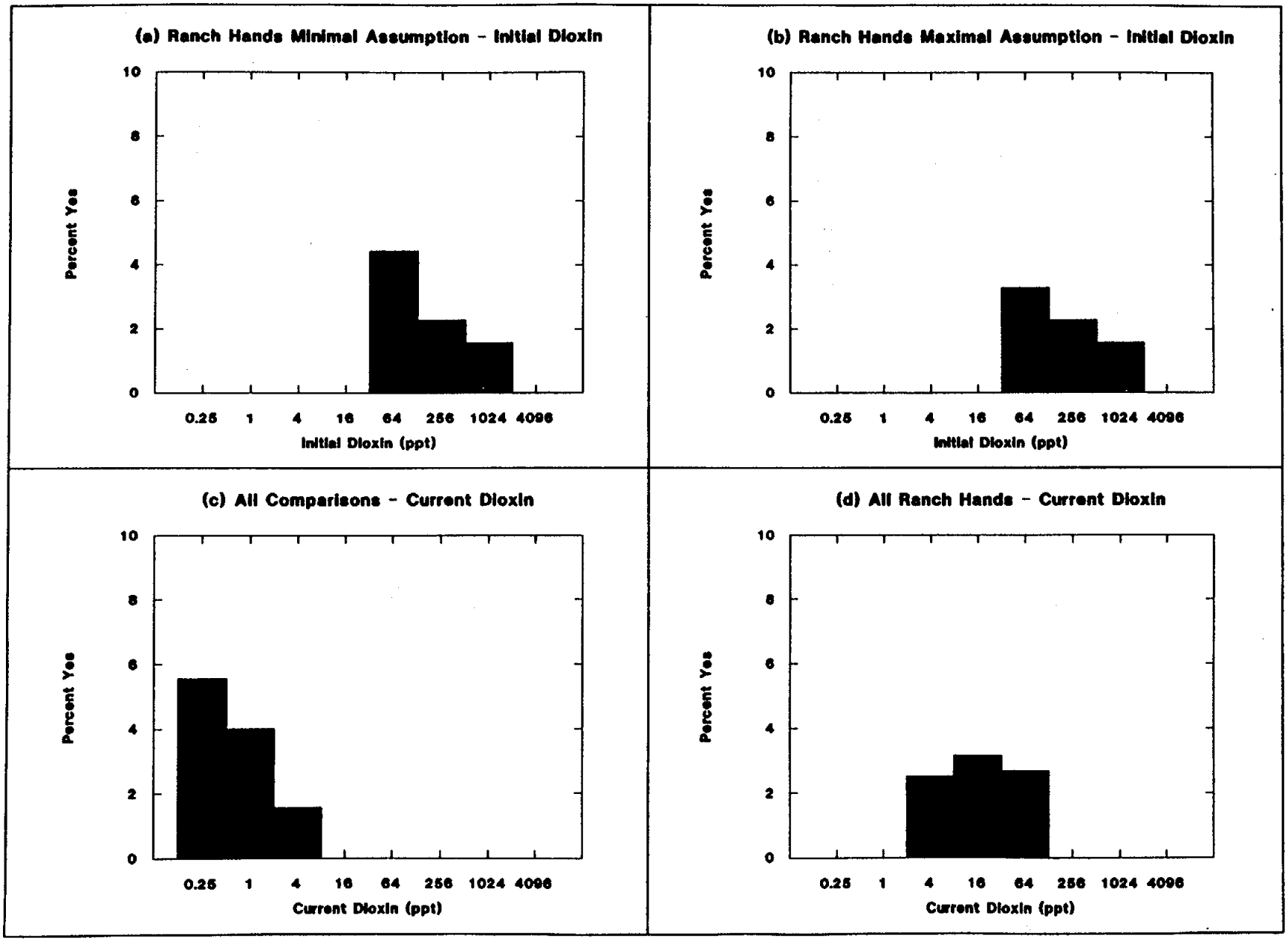

FIGURE F-1-12. Sun Exposure-Related Malignant Skin Neoplasms (Trunk) versus Dioxin

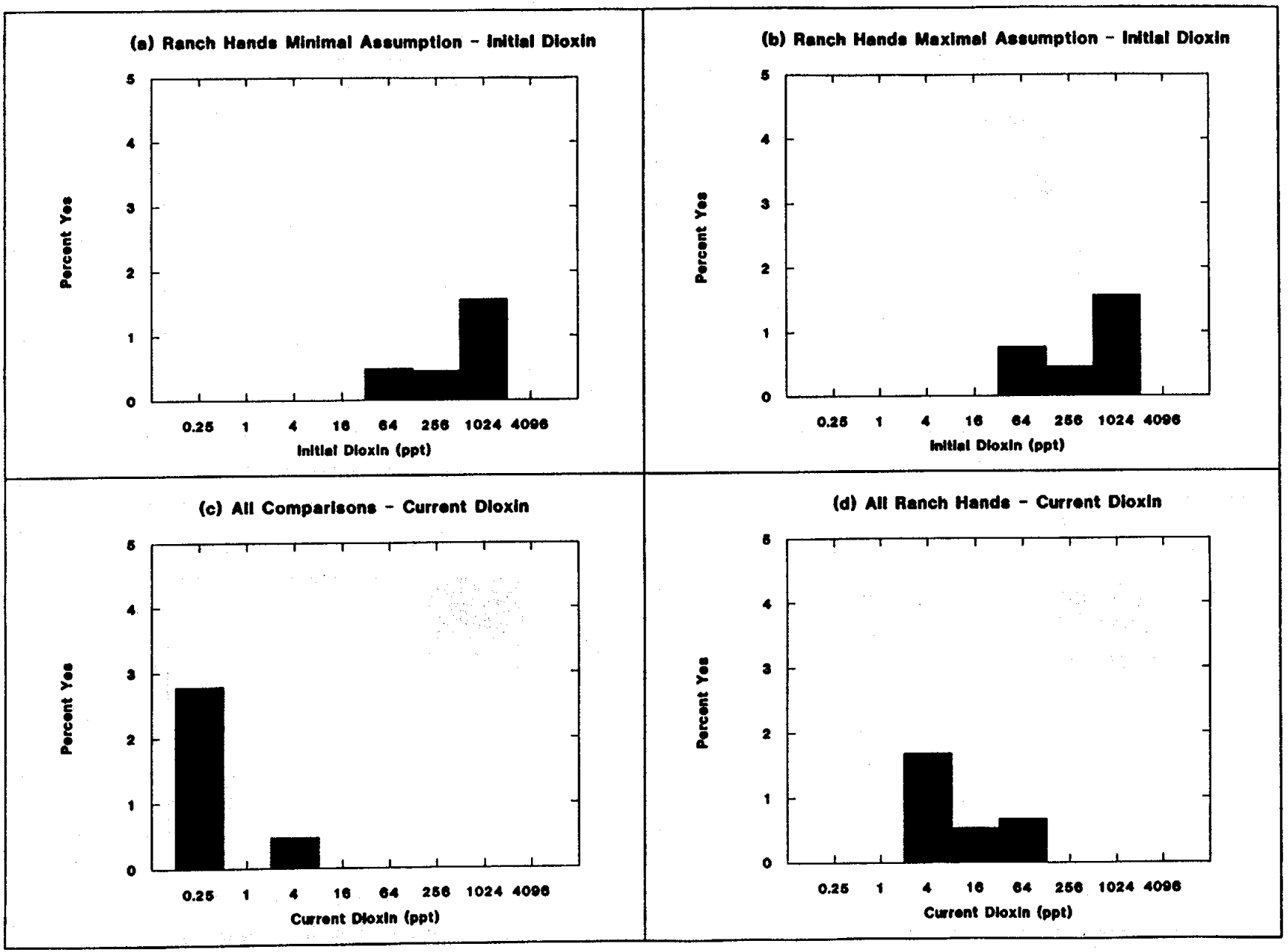

FIGURE F-1-13. Sun Exposure-Related Malignant Skin Neoplasms (Upper Extremities) versus Dioxin

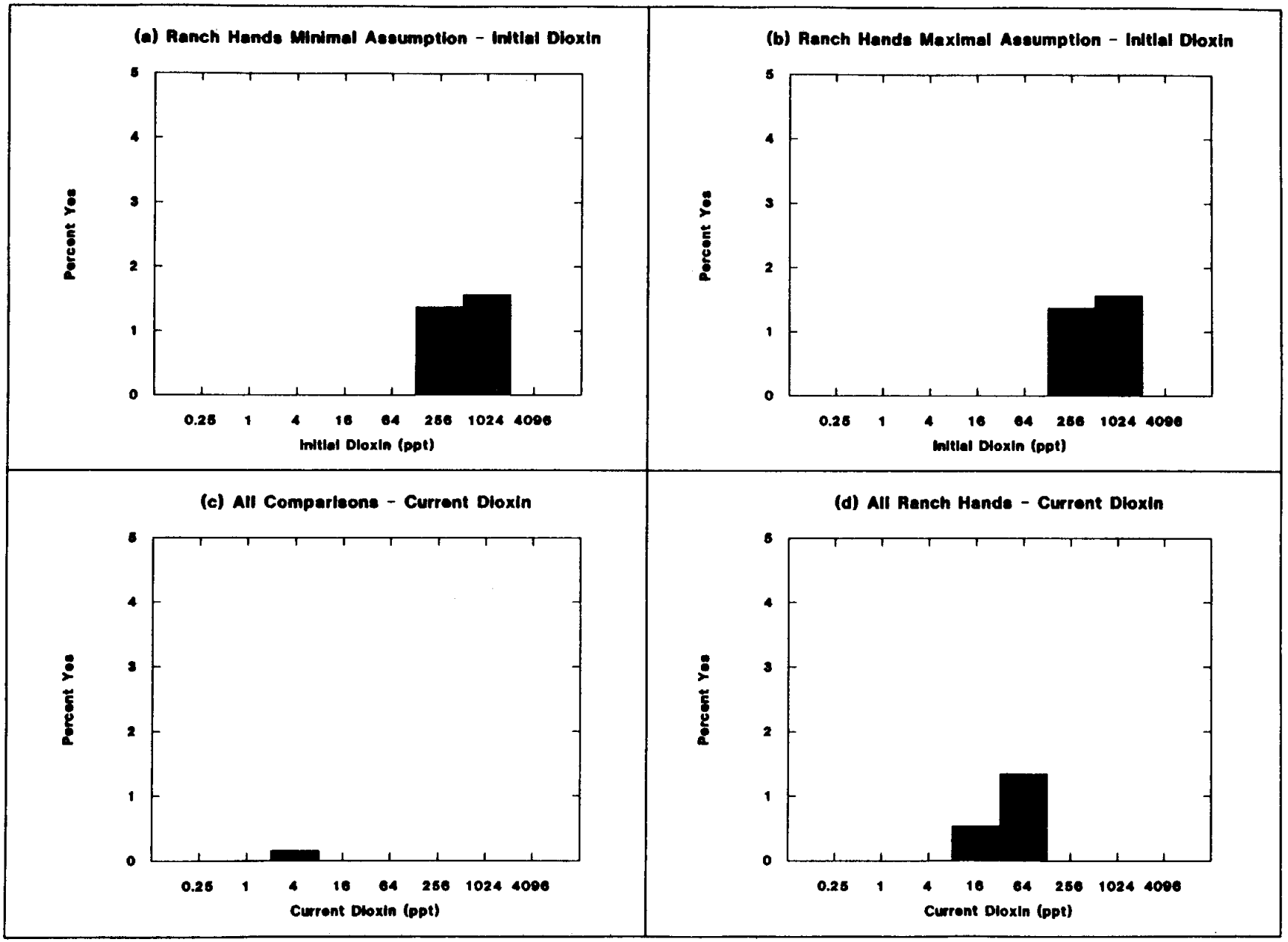

FIGURE F-1-14. Sun Exposure-Related Malignant Skin Neoplasms (Other Sites and NOS) versus Dioxin

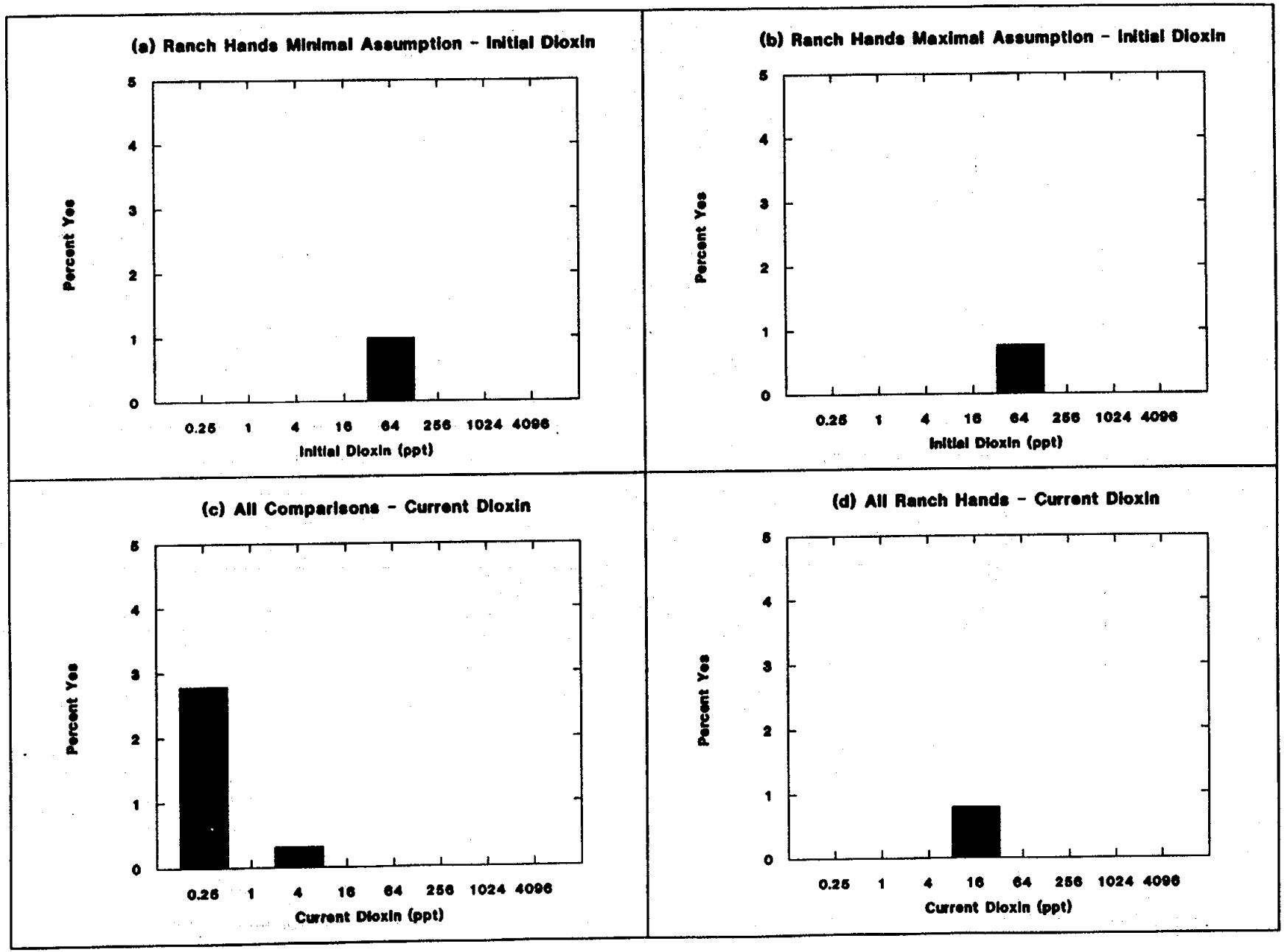

FIGURE F-1-15. Melanoma (All Sites Combined) versus Dioxin

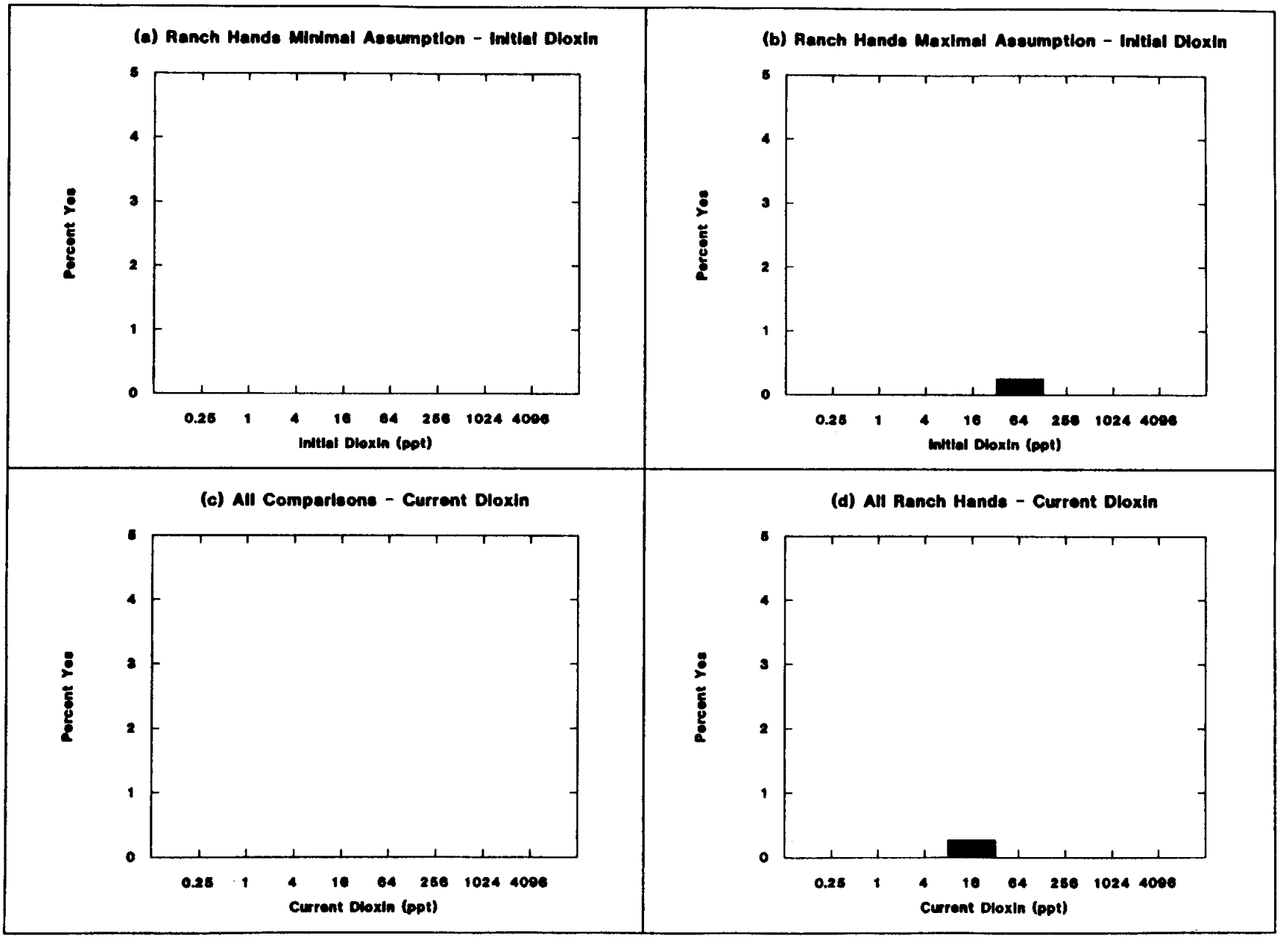

FIGURE F-1-16. Melanoma (Ear, Face, Head, and Neck) versus Dioxin

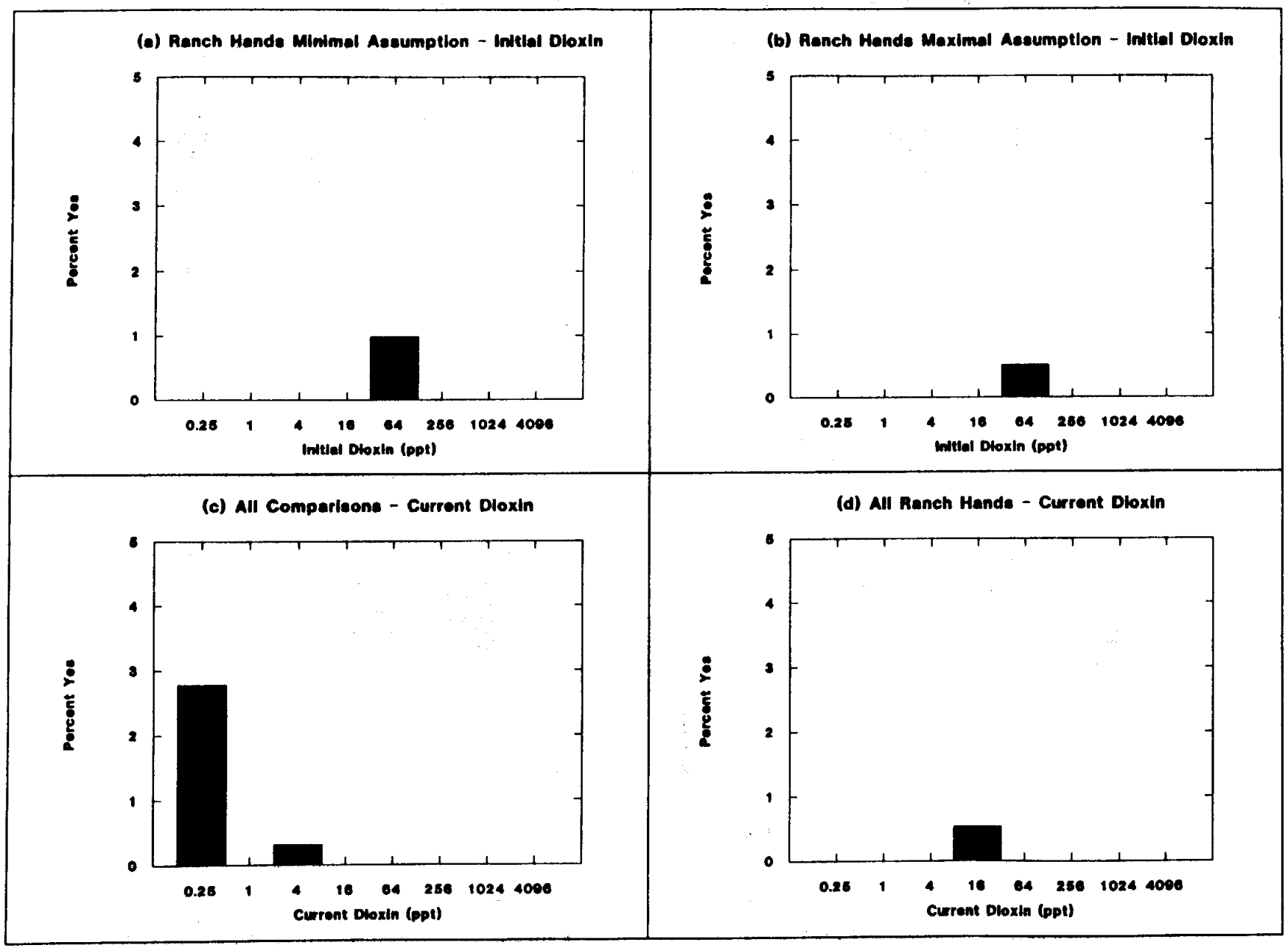

FIGURE F-1-17. Melanoma (Trunk) versus Dioxin

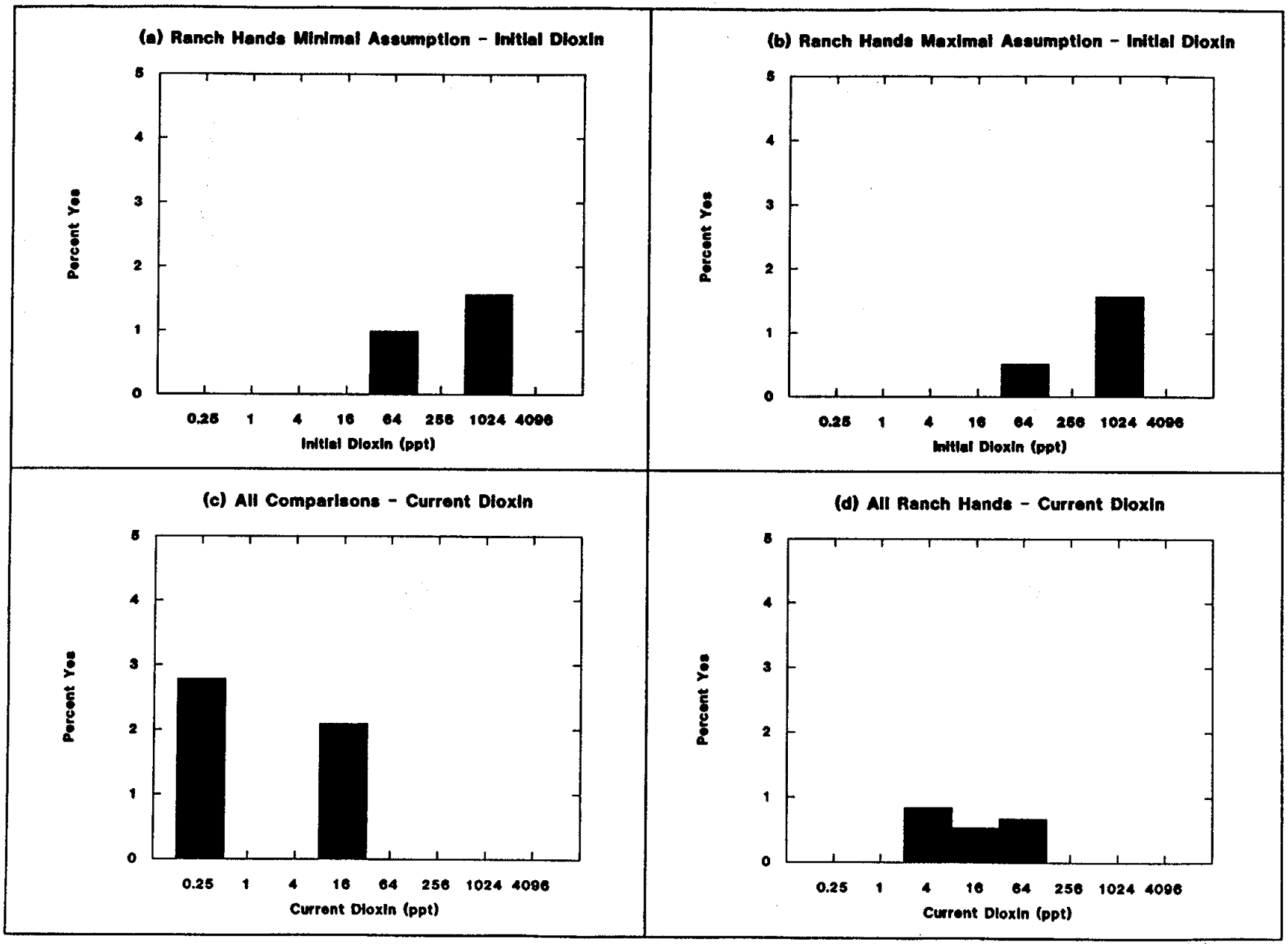

FIGURE F-1-18. Squamous Cell Carcinoma (All Sites Combined) versus Dioxin

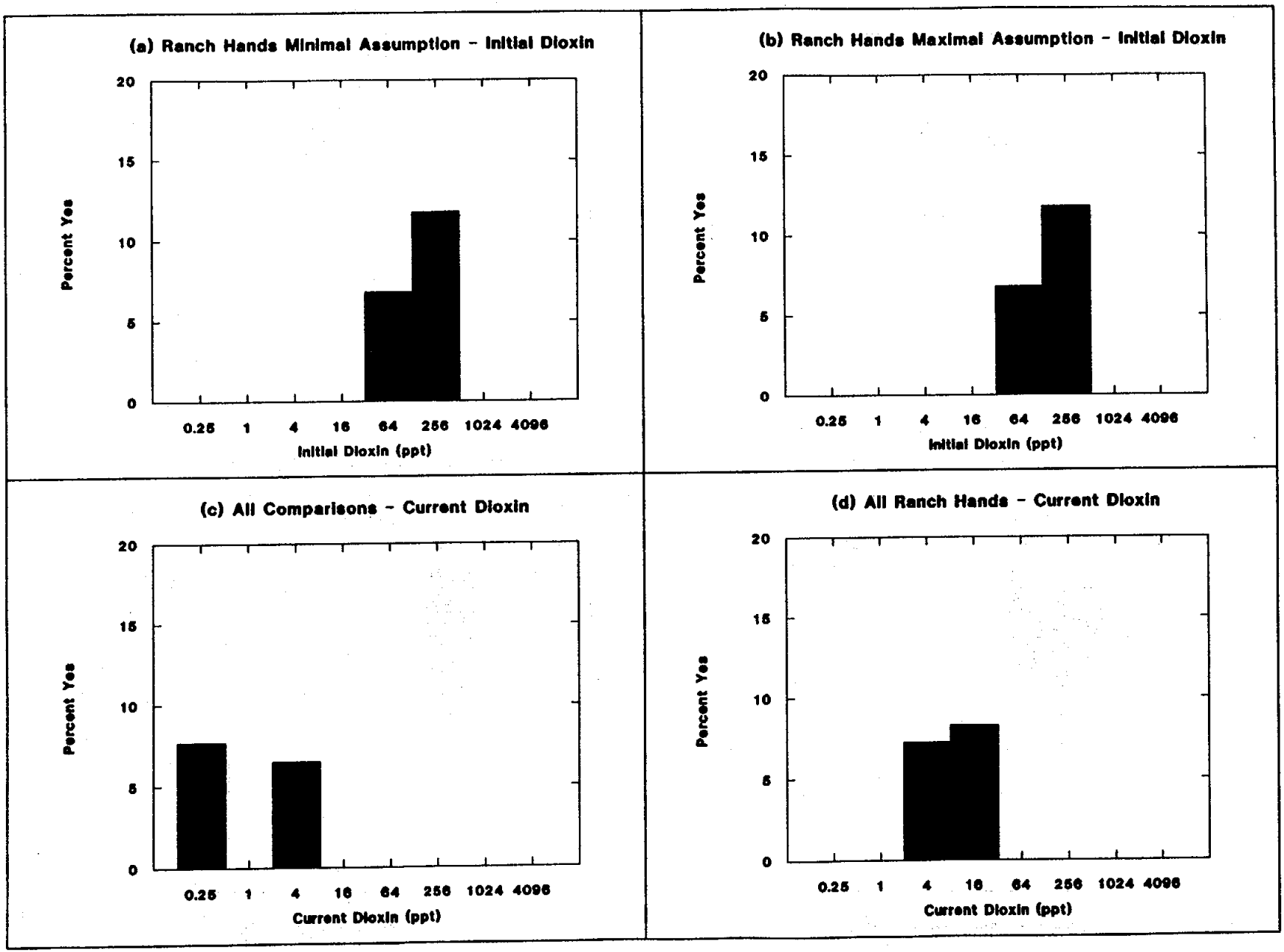

FIGURE F-1-19. Basal Cell Carcinoma (Ear, Face, Head, and Neck) versus Dioxin, Officers Only

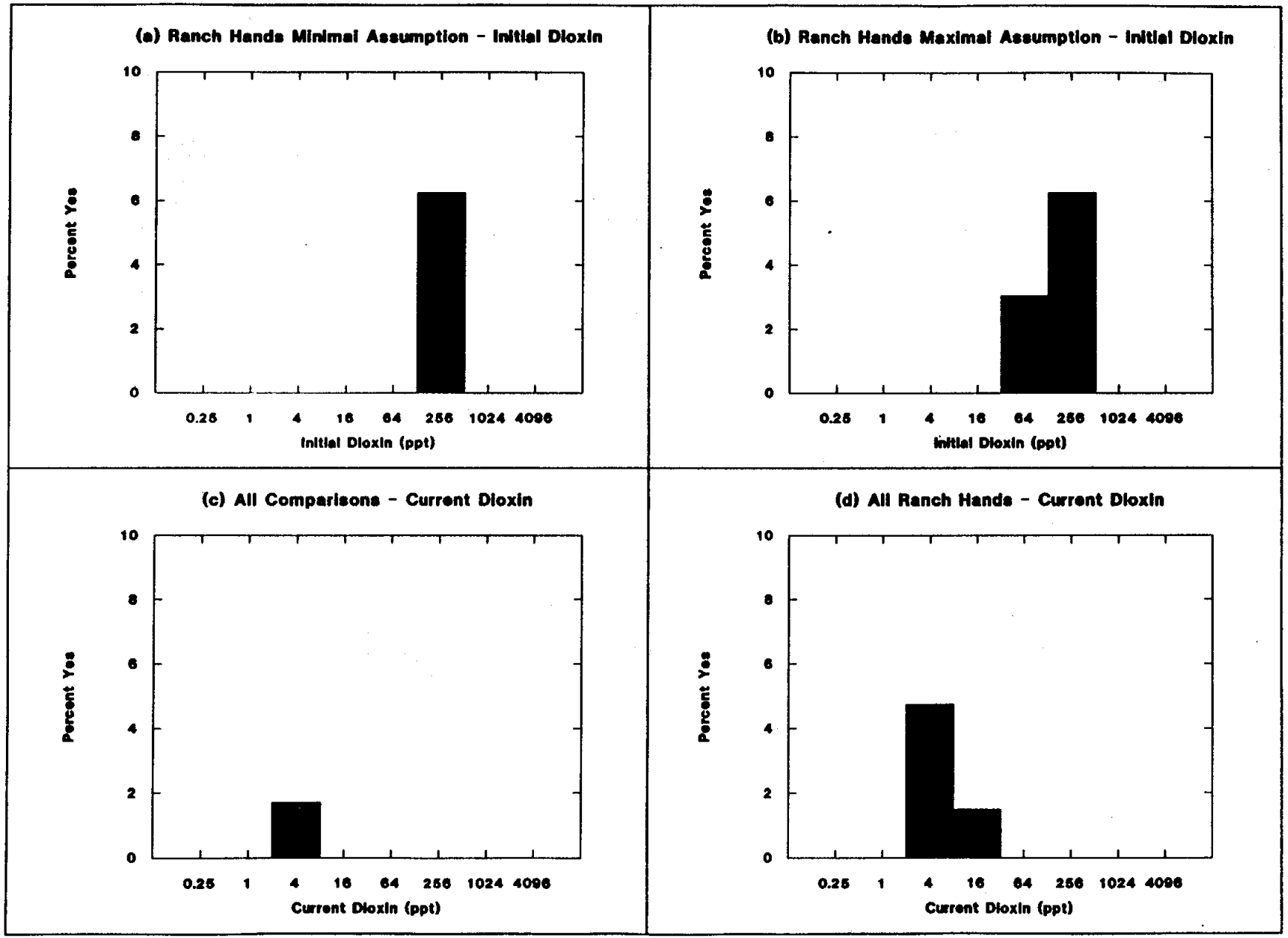

FIGURE F-1-20. Basal Cell Carcinoma (Other Sites) versus Dioxin, Officers Only

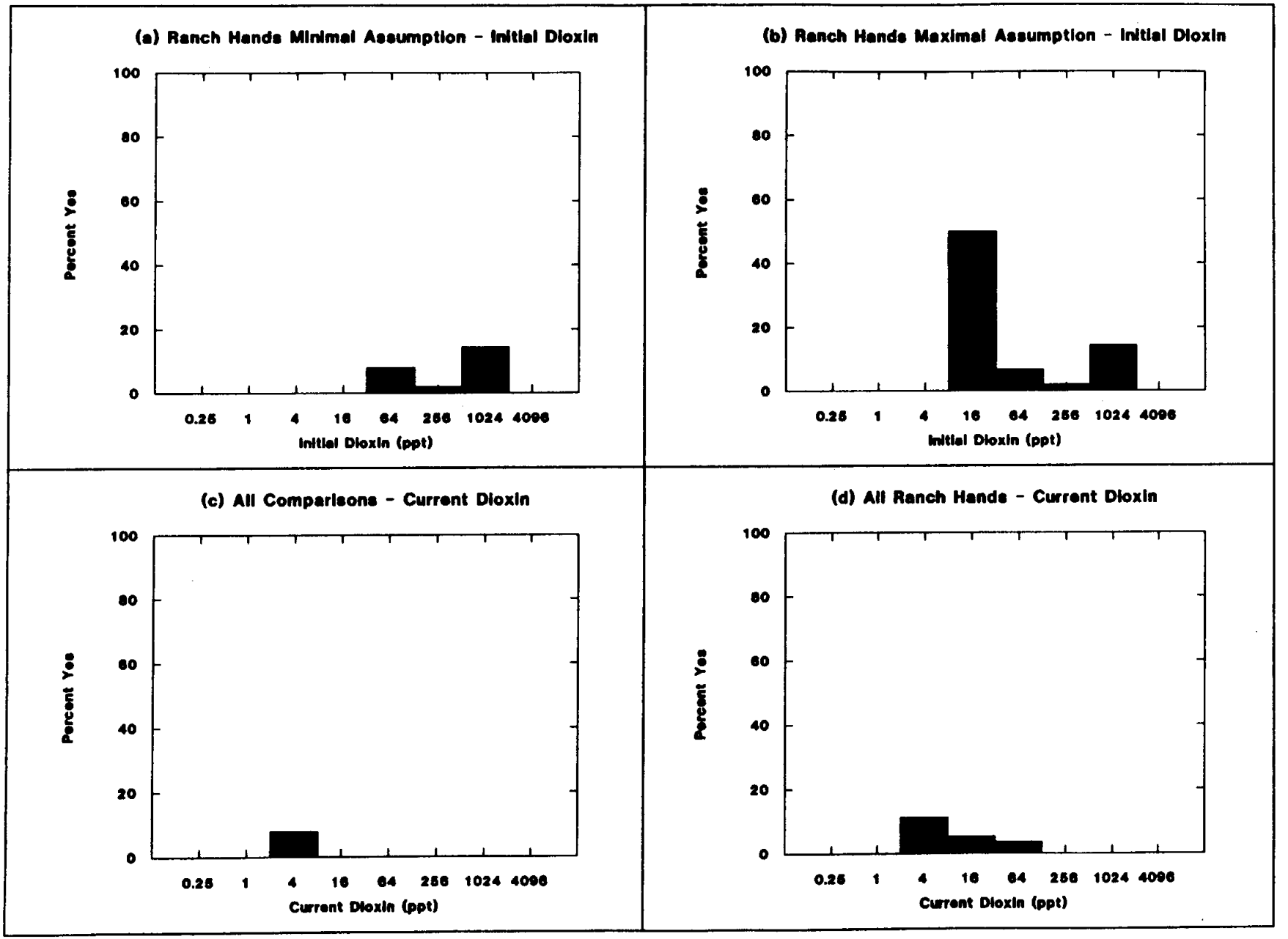

FIGURE F-1-21. Basal Cell Carcinoma (Ear, Face, Head, and Neck) versus Dioxin, Enlisted Flyers Only

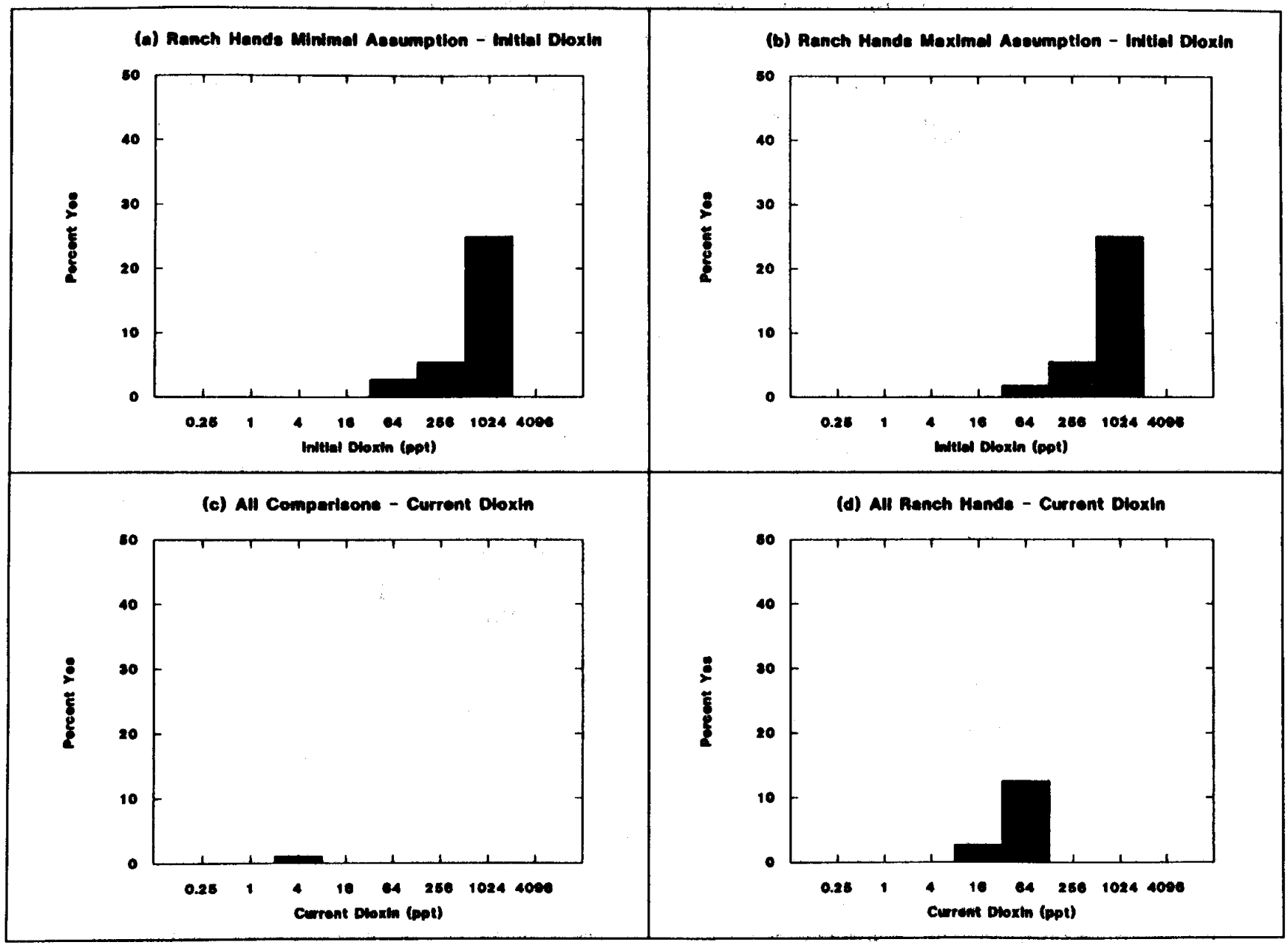

FIGURE F-1-22. Basal Cell Carcinoma (Other Sites) versus Dioxin, Enlisted Flyers Only

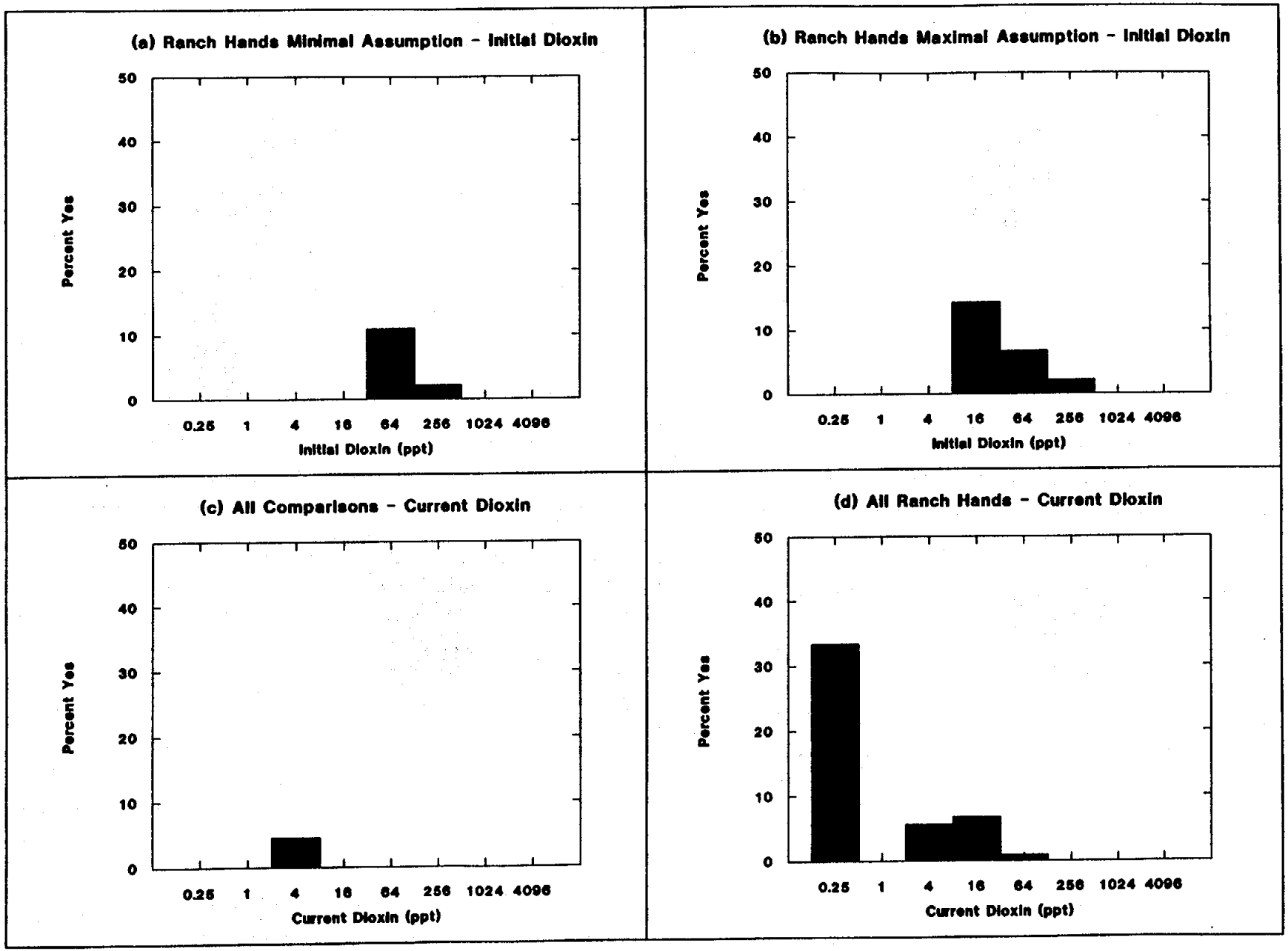

FIGURE F-1-23. Basal Cell Carcinoma (Ear, Face, Head, and Neck) versus Dioxin, Enlisted Groundcrew Only

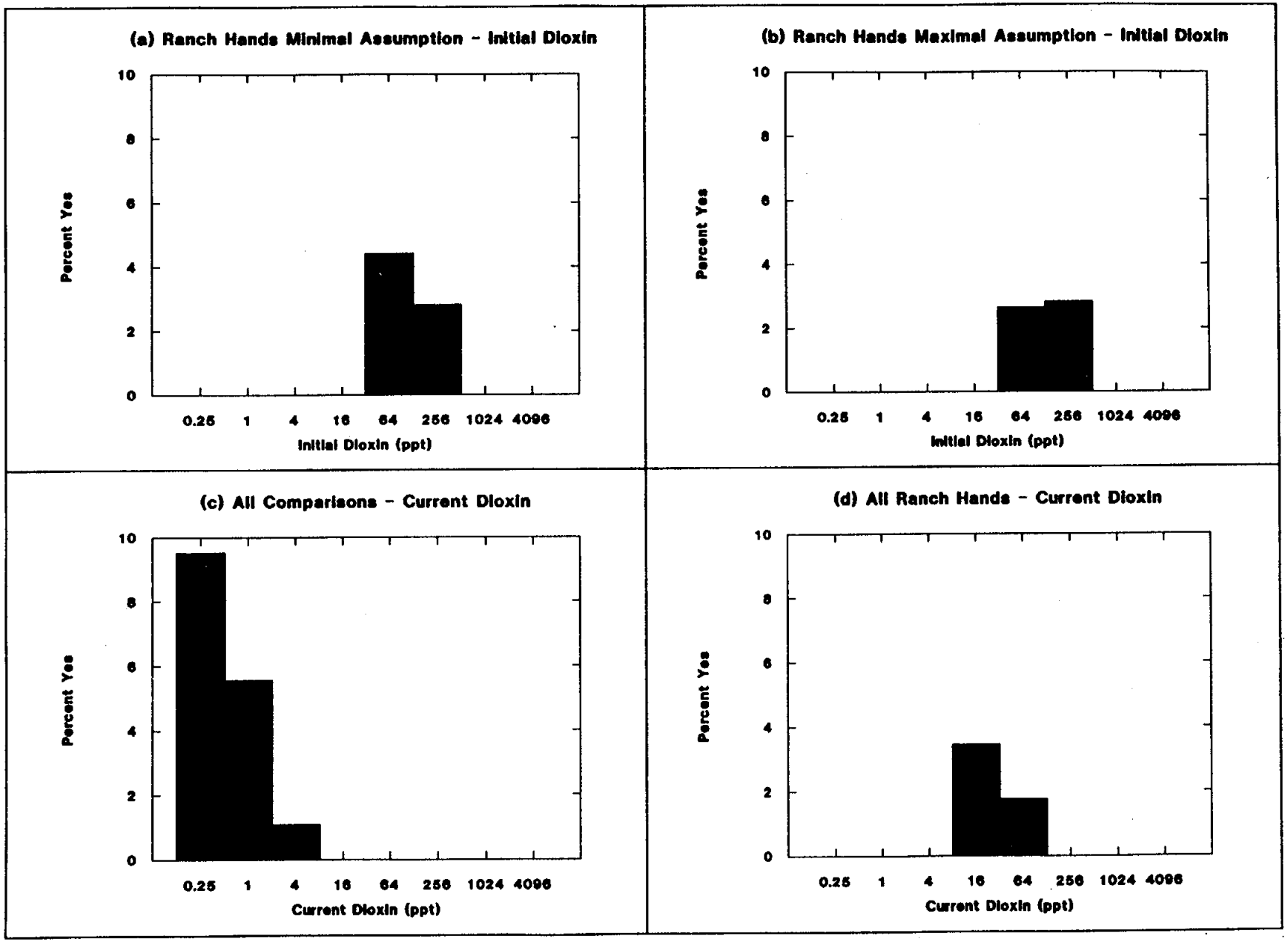

FIGURE F-1-24. Basal Cell Carcinoma (Other Sites) versus Dioxin, Enlisted Groundcrew Only

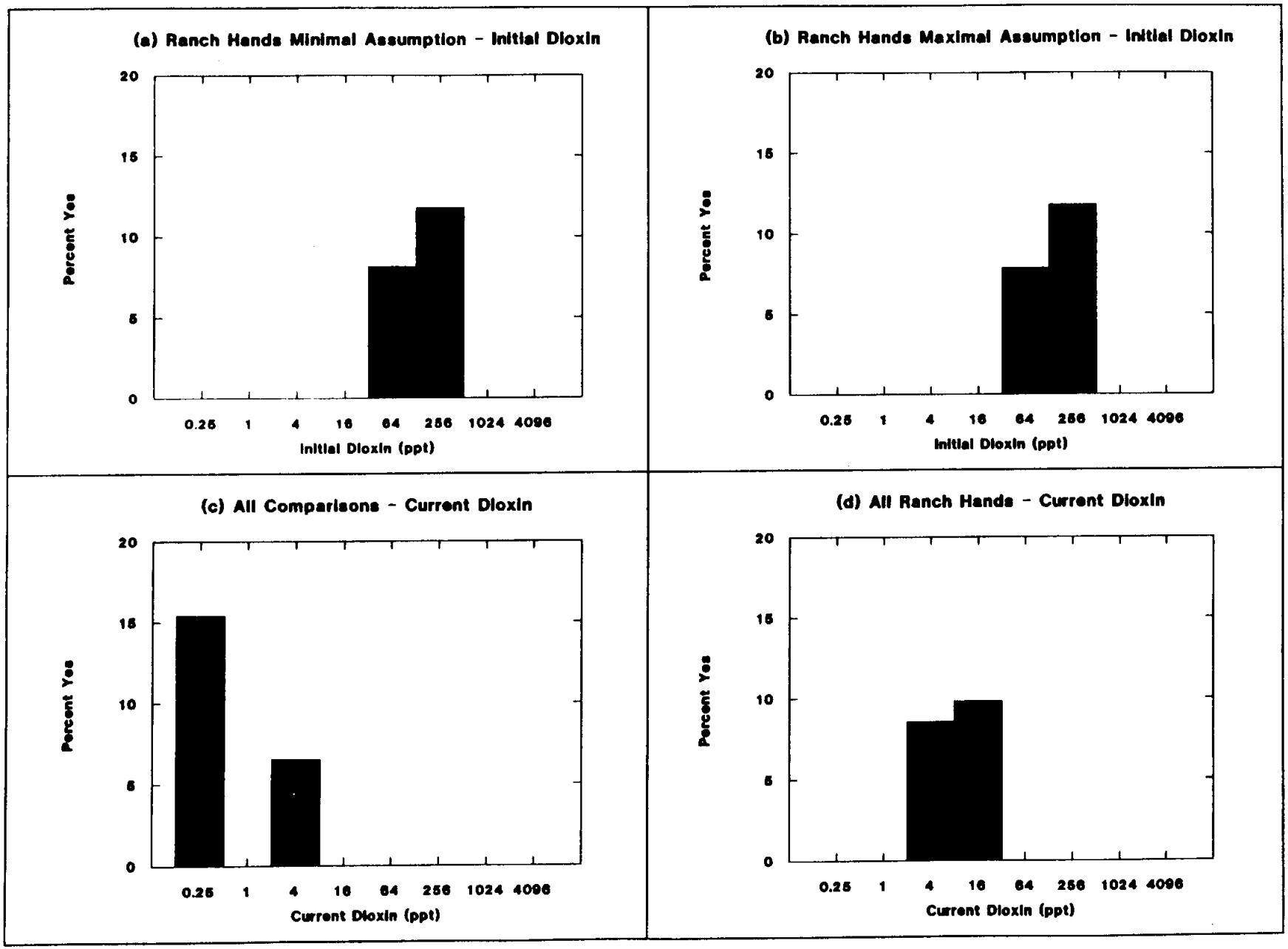

FIGURE F-1-25. Sun Exposure-Related Malignant Skin Neoplasms (Ear, Face, Head, and Neck) versus Dioxin, Officers Only

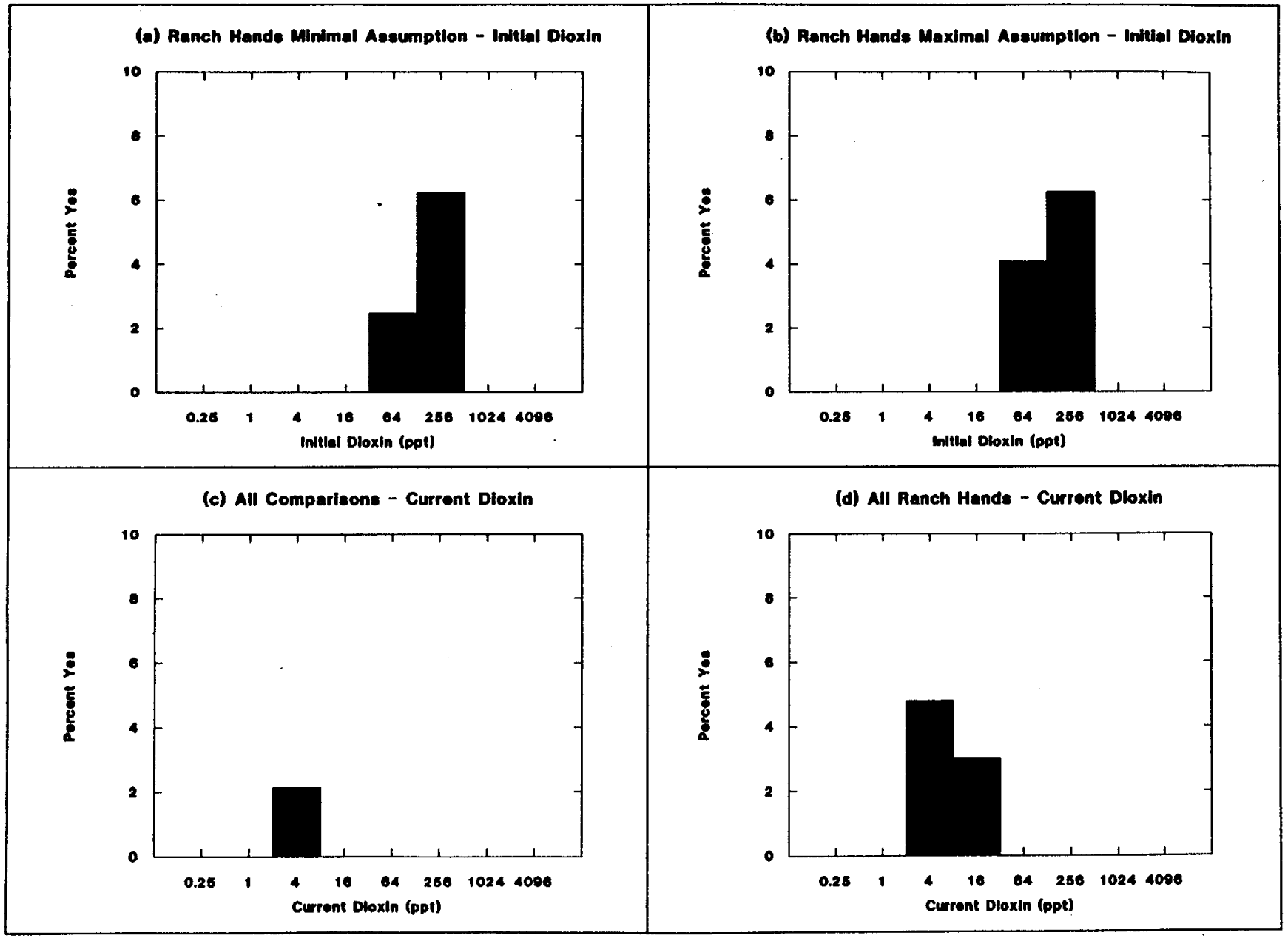

FIGURE F-1-26. Sun Exposure-Related Malignant Skin Neoplasms (Other Sites) versus Dioxin, Officers Only

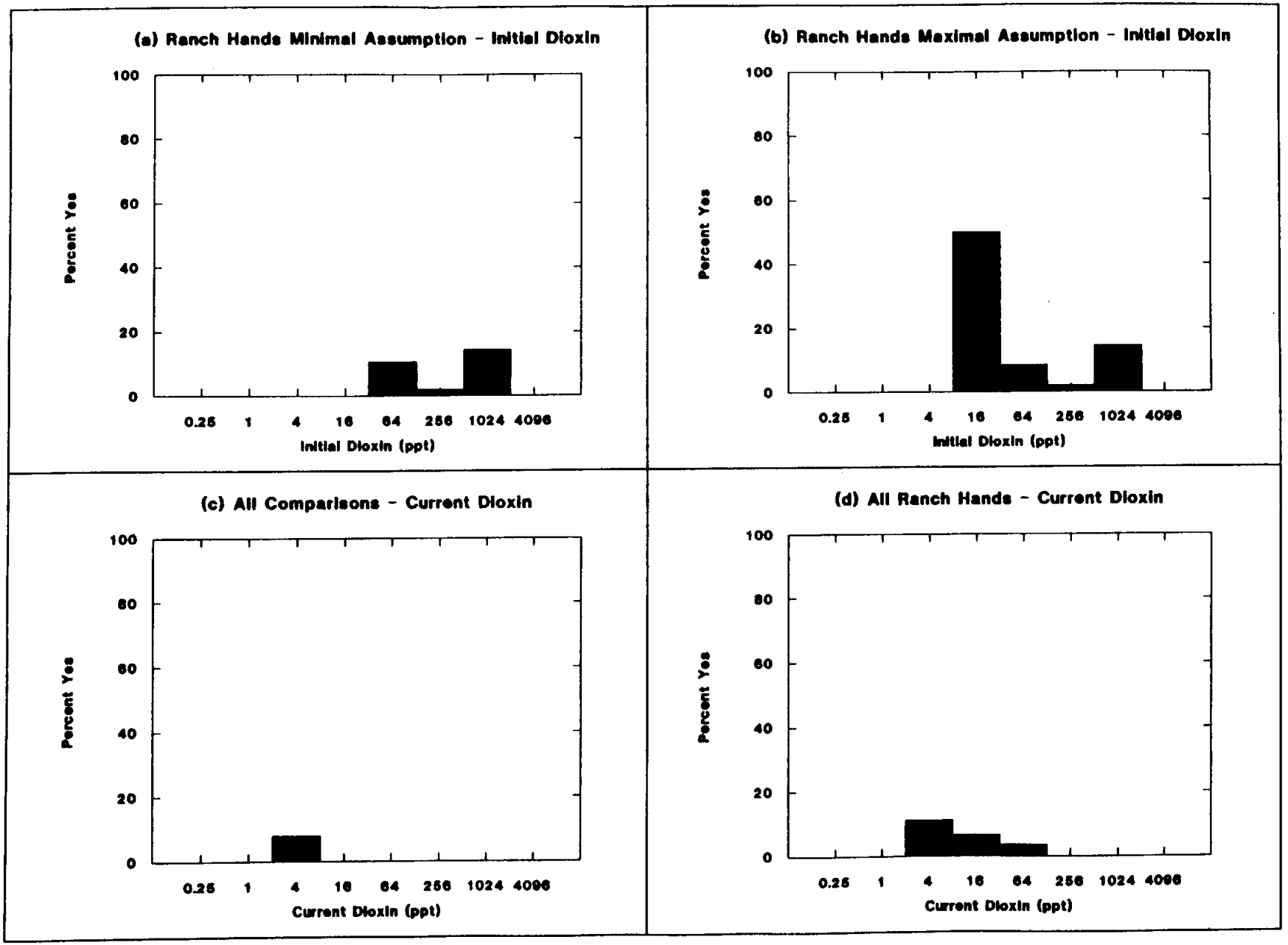

FIGURE F-1-27. Sun Exposure-Related Malignant Skin Neoplasms (Ear, Face, Head, and Neck) versus Dioxin, Enlisted Flyers Only

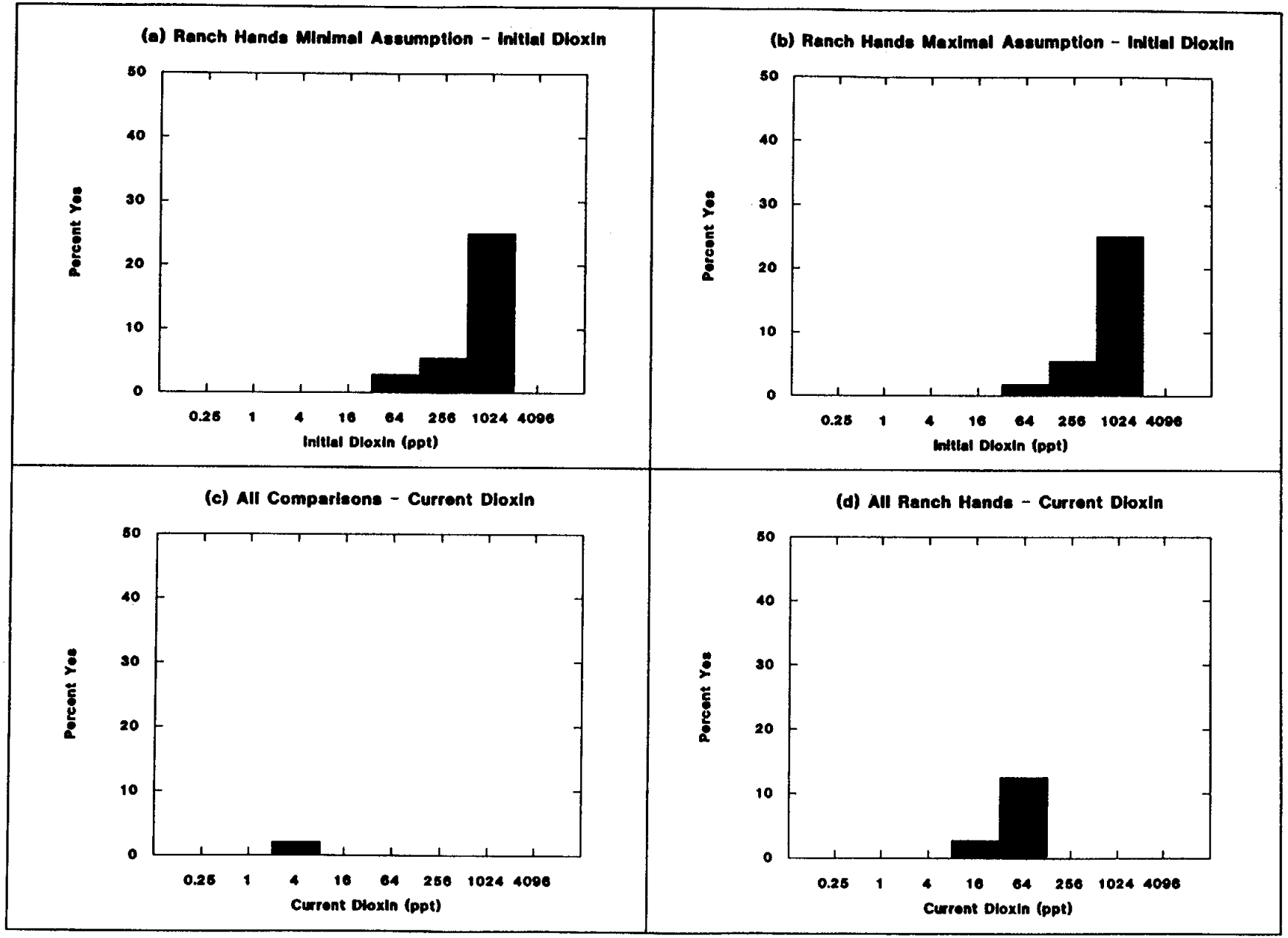

FIGURE F-1-28. Sun Exposure-Related Malignant Skin Neoplasms (Other Sites) versus Dioxin, Enlisted Flyers Only

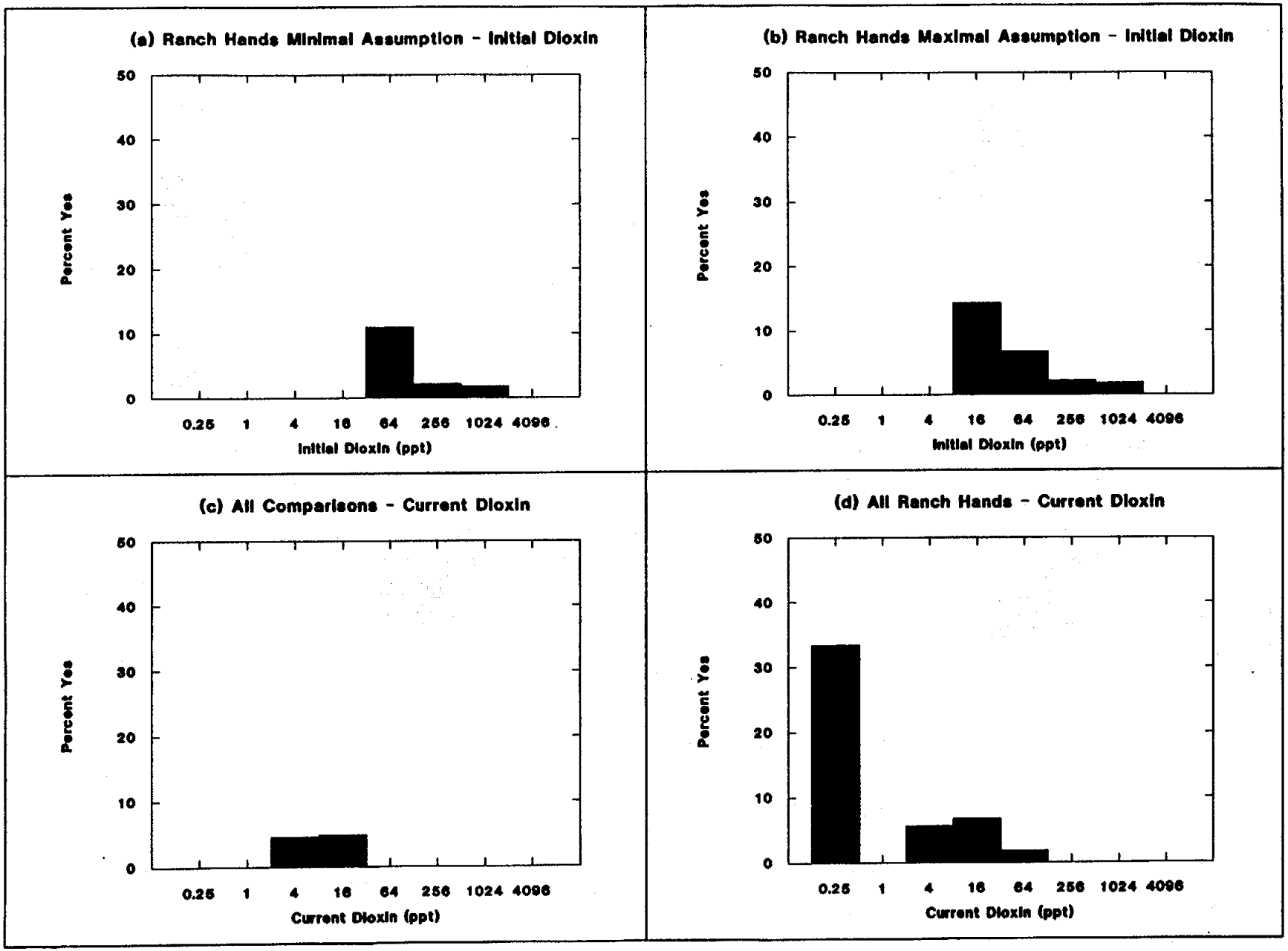

FIGURE F-1-29. Sun Exposure-Related Malignant Skin Neoplasms (Ear, Face, Head, and Neck) versus Dioxin, Enlisted Groundcrew Only

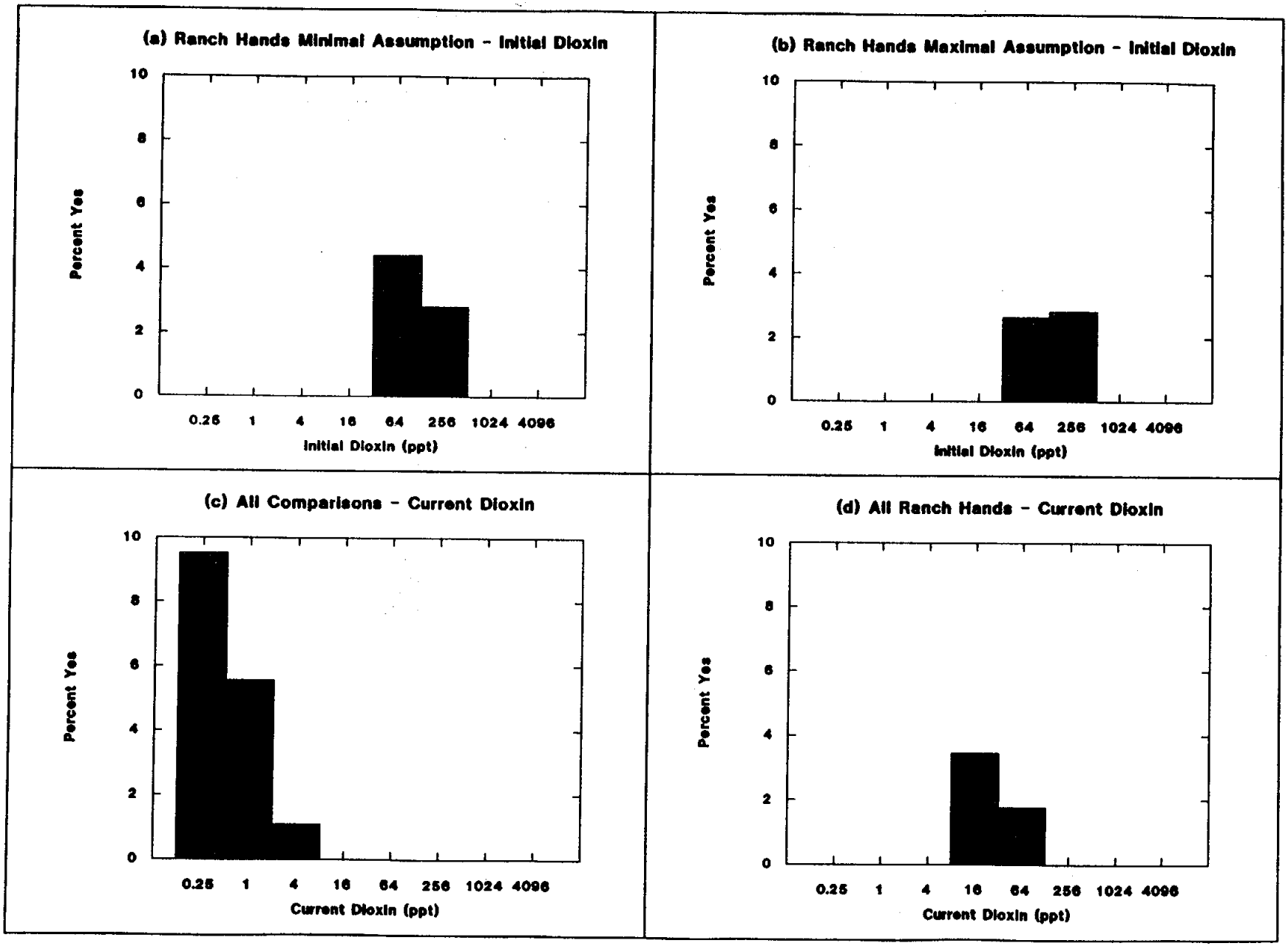

FIGURE F-1-30. Sun Exposure-Related Malignant Skin Neoplasms (Other Sites) versus Dioxin, Enlisted Groundcrew Only

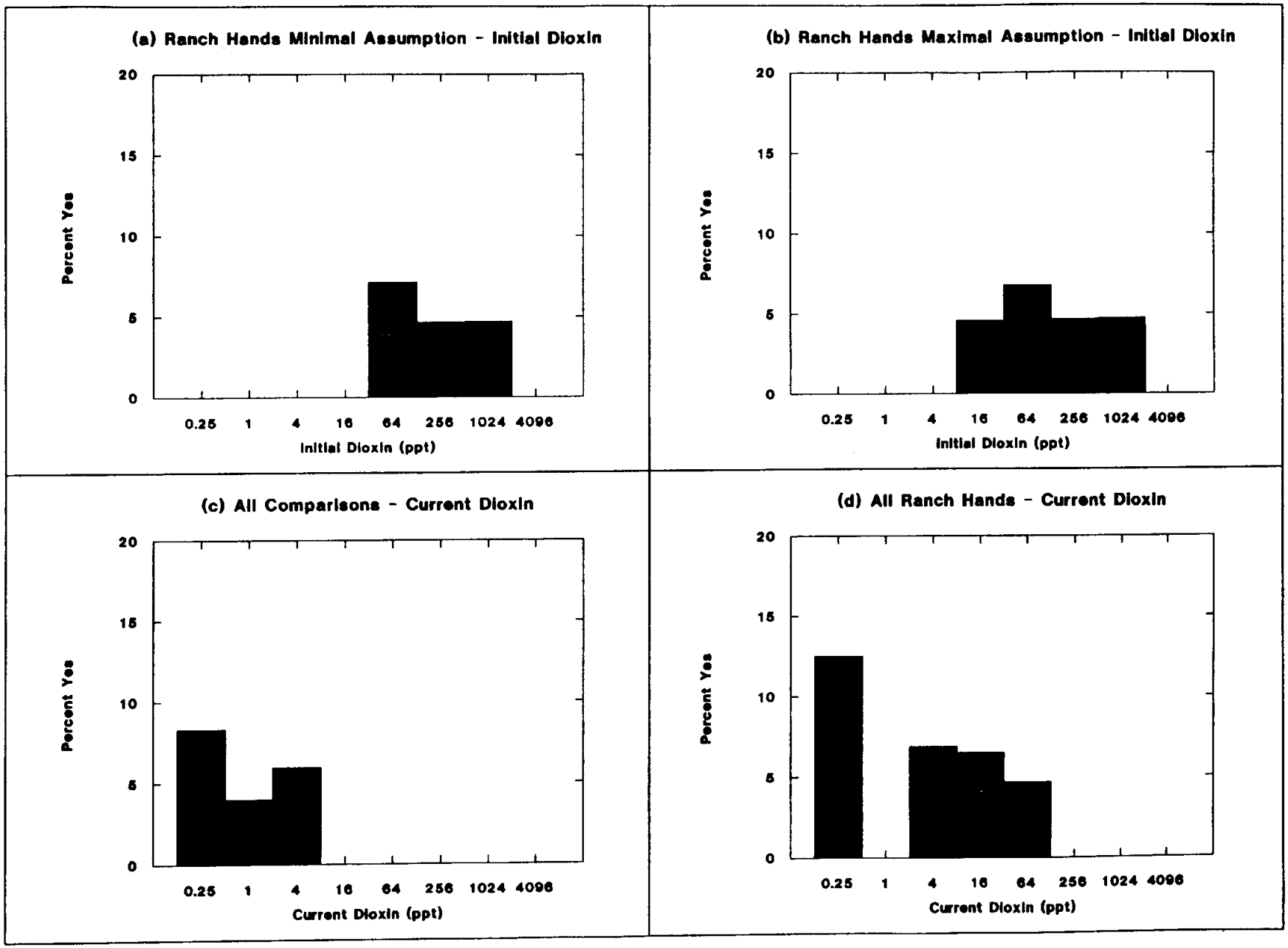

FIGURE F-1-31. Basal Cell Carcinoma (One) versus Dioxin

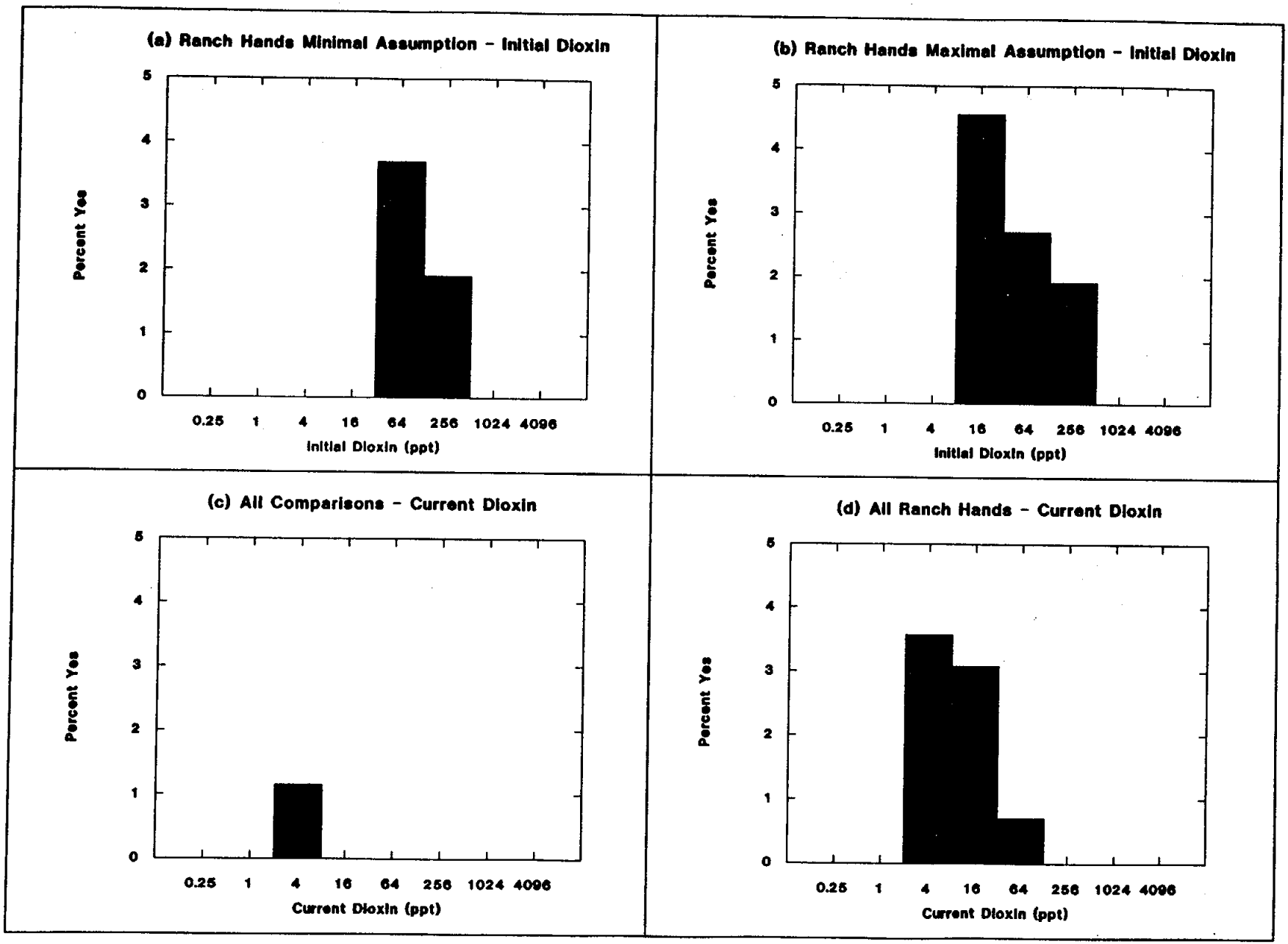

FIGURE F-1-32. Basal Cell Carcinoma (Multiple) versus Dioxin

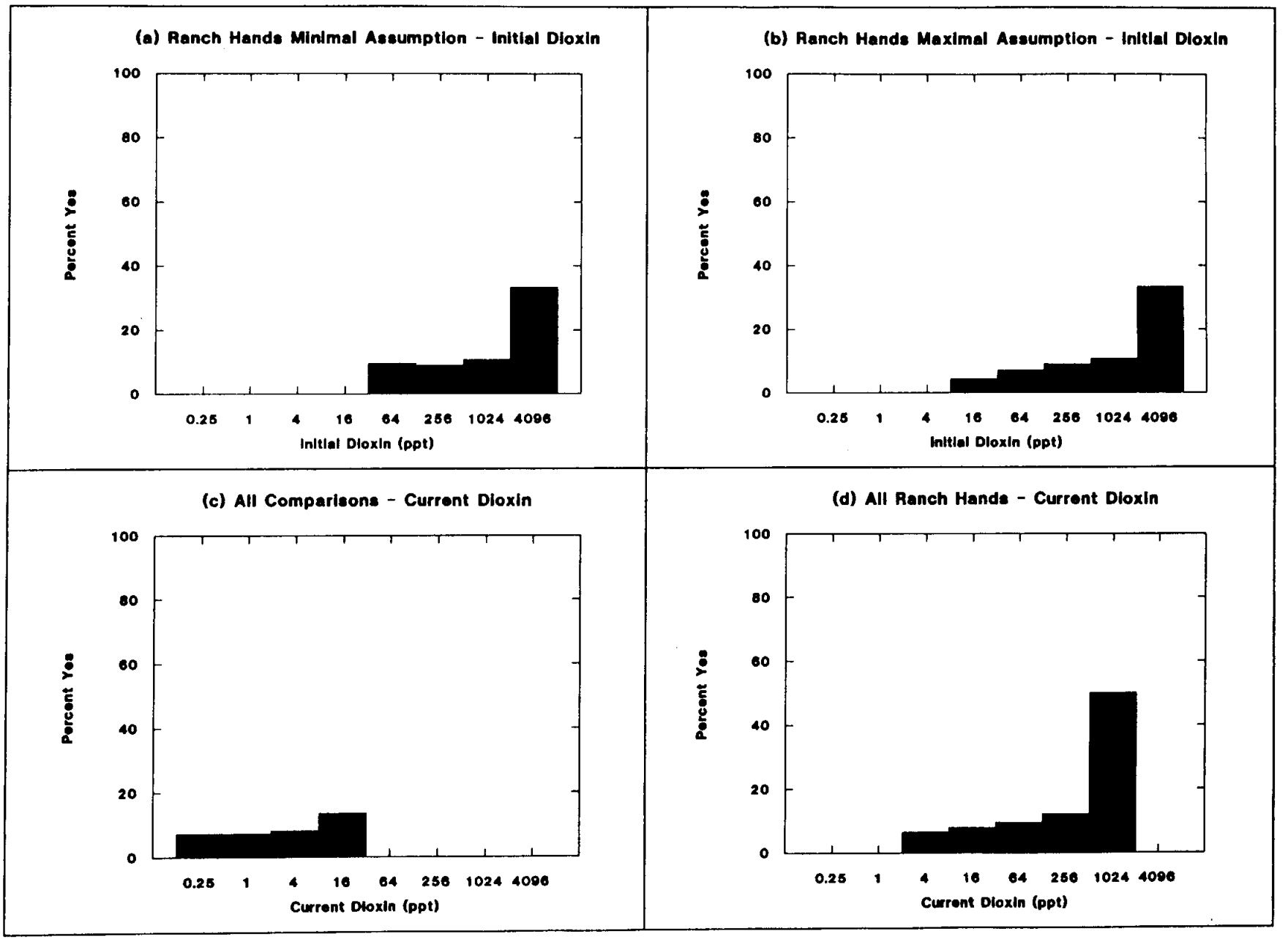

FIGURE F-1-33. All Systemic Neoplasms versus Dioxin

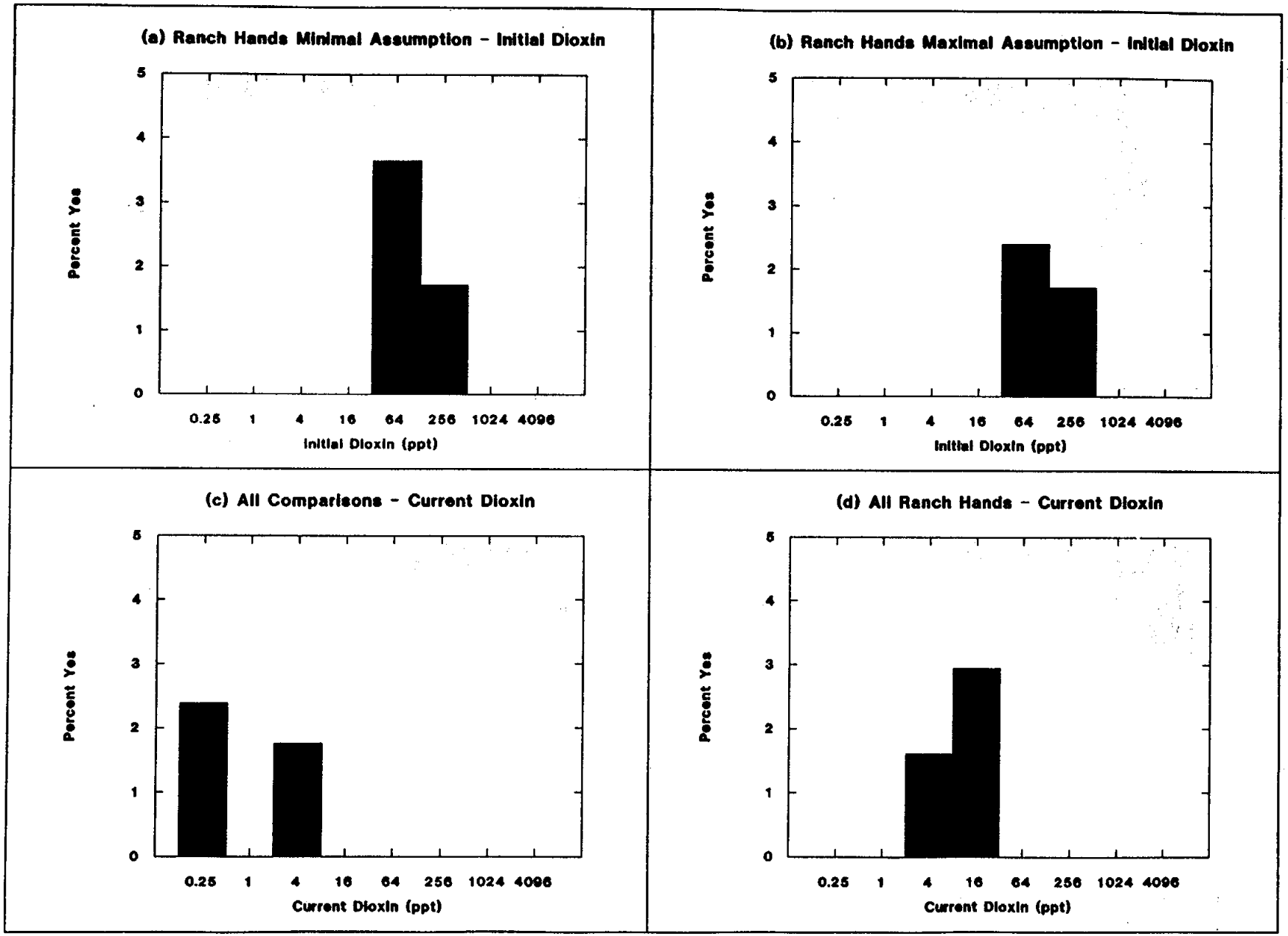

FIGURE F-1-34. Malignant Systemic Neoplasms versus Dioxin

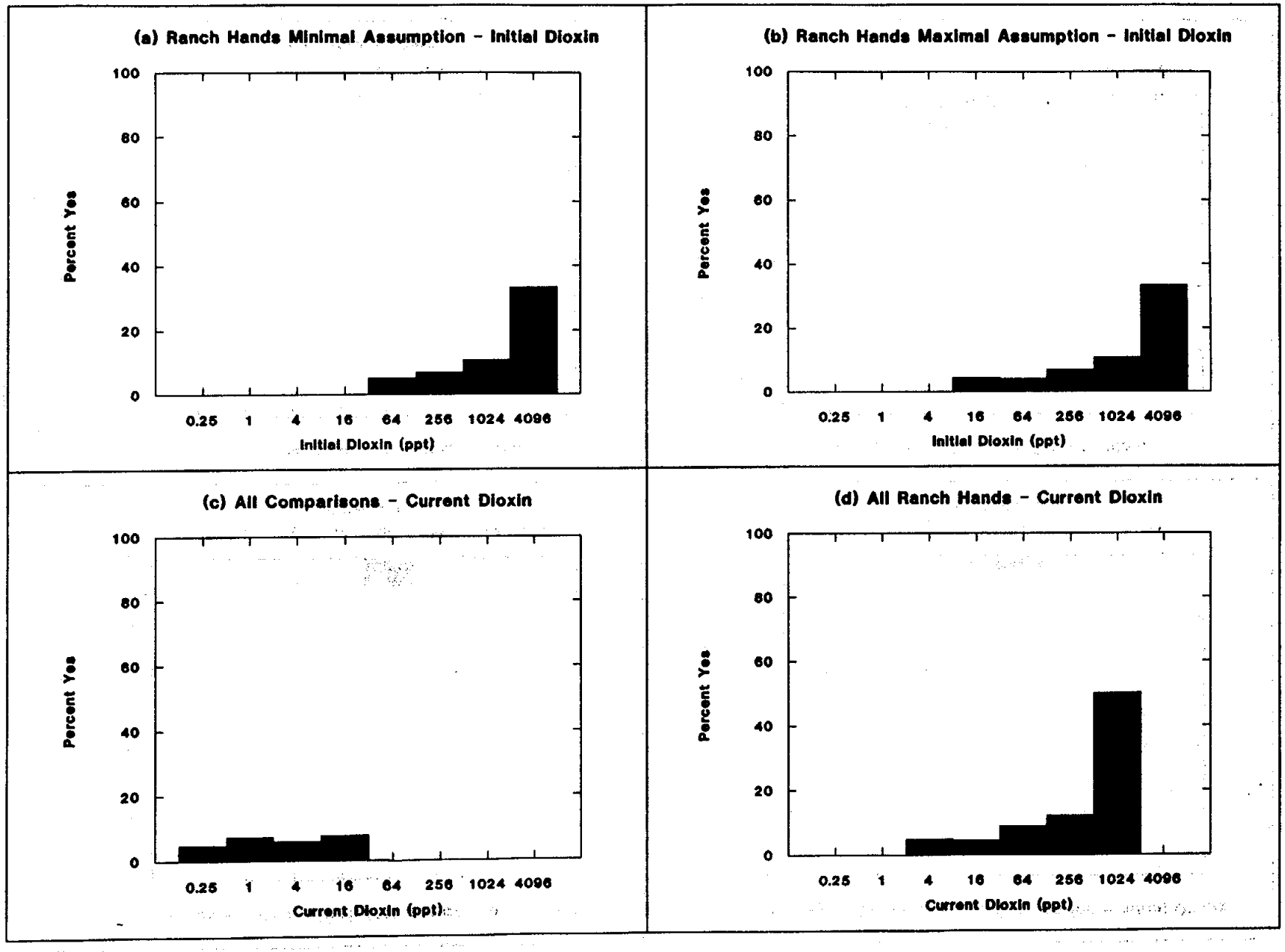

FIGURE F-1-35. Benign Systemic Neoplasms versus Dioxin

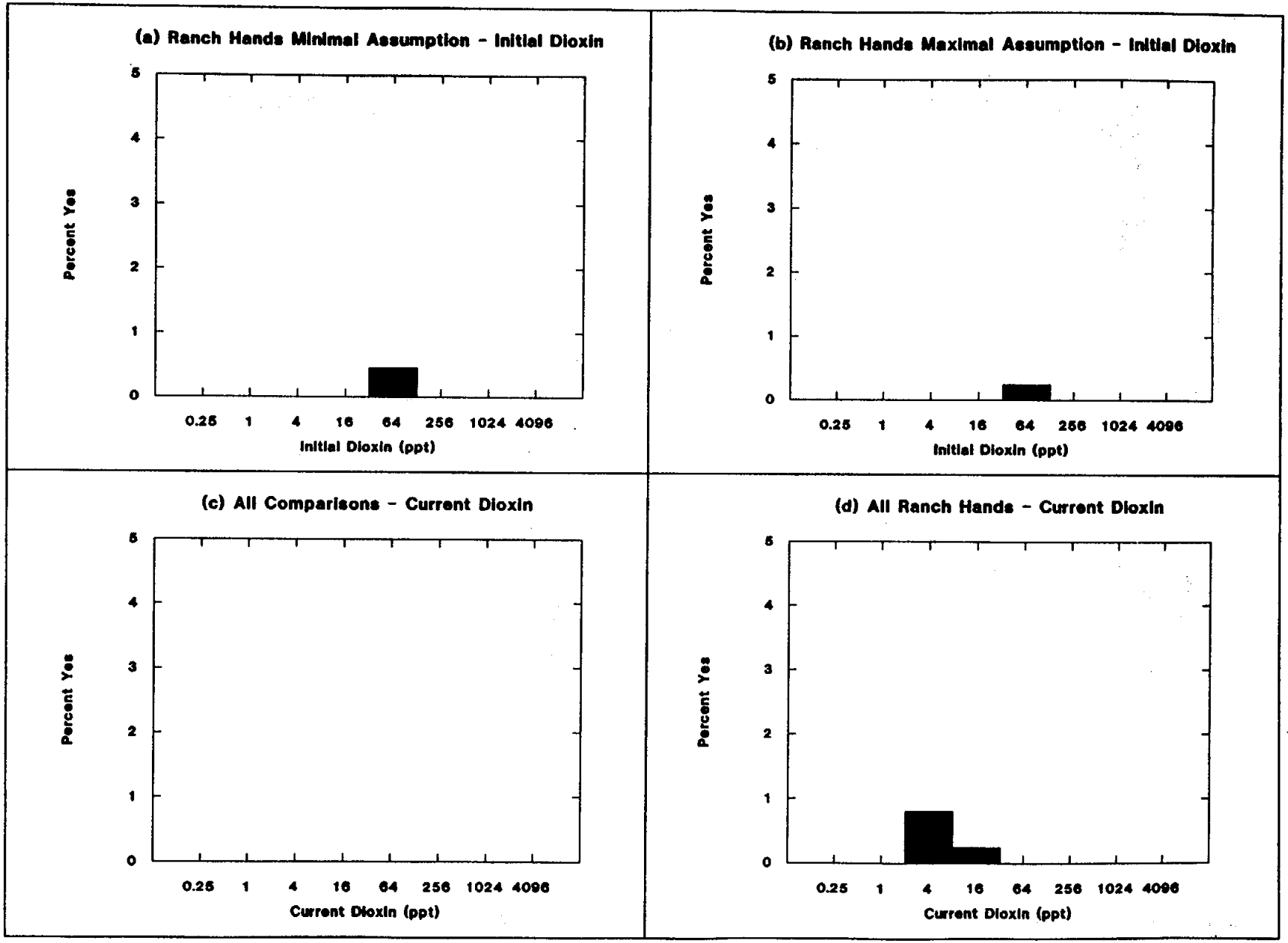

FIGURE F-1-36. Malignant Systemic Cancer of the Bronchus and Lungs versus Dioxin

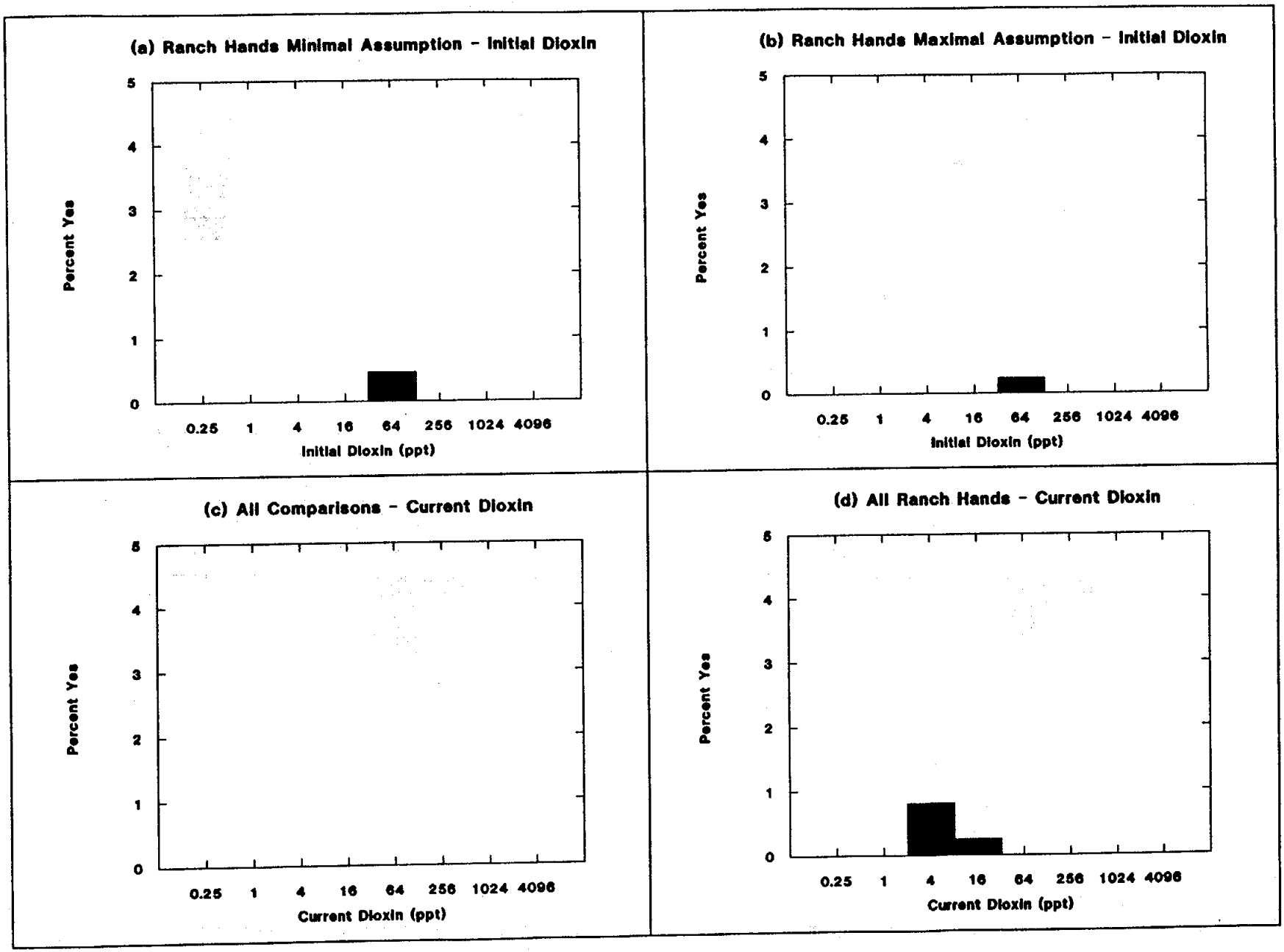

FIGURE F-1-37. Cancer of the Bronchus and Lungs versus Dioxin

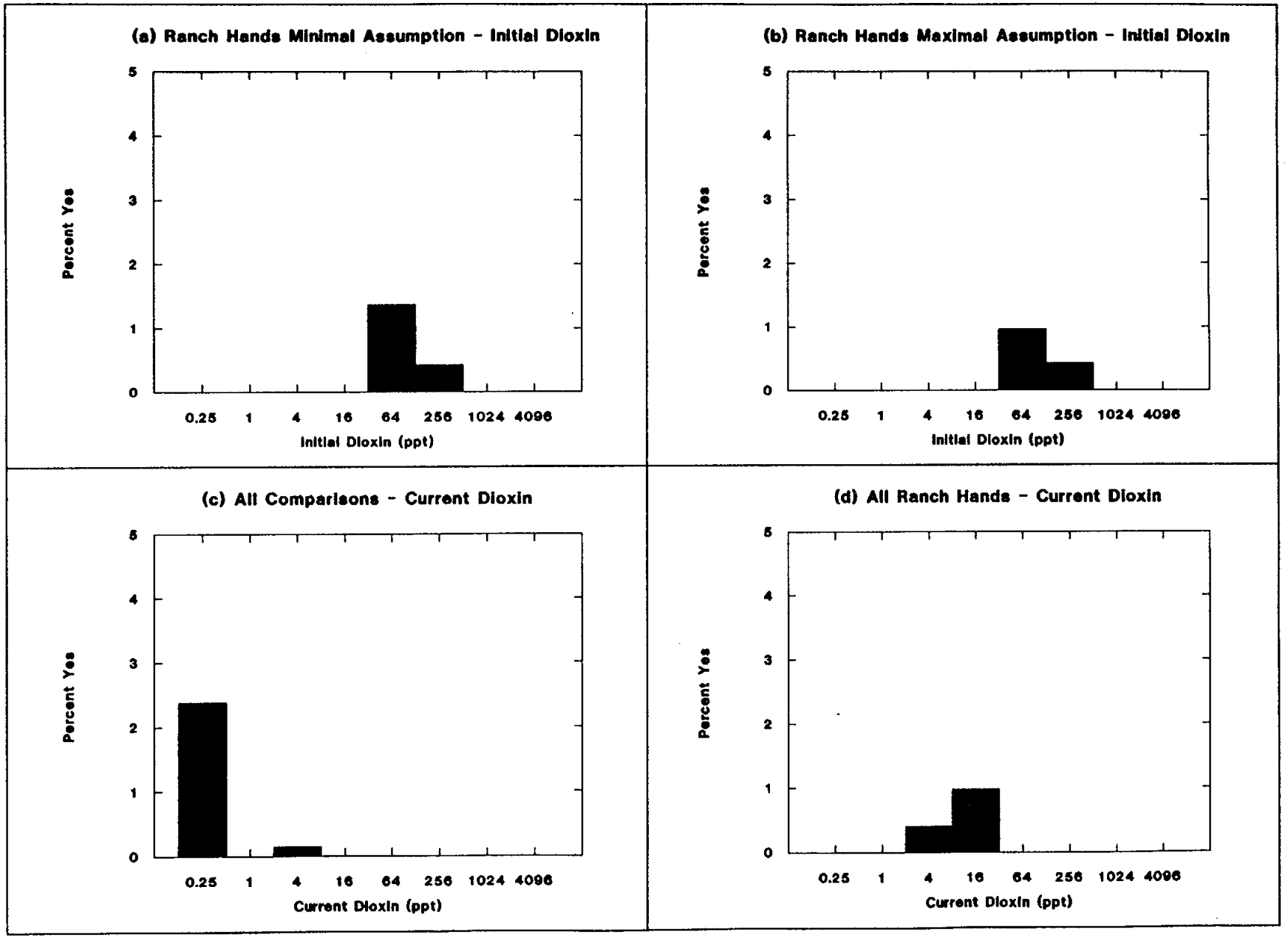

FIGURE F-1-38. Cancer of the Kidney and Bladder versus Dioxin

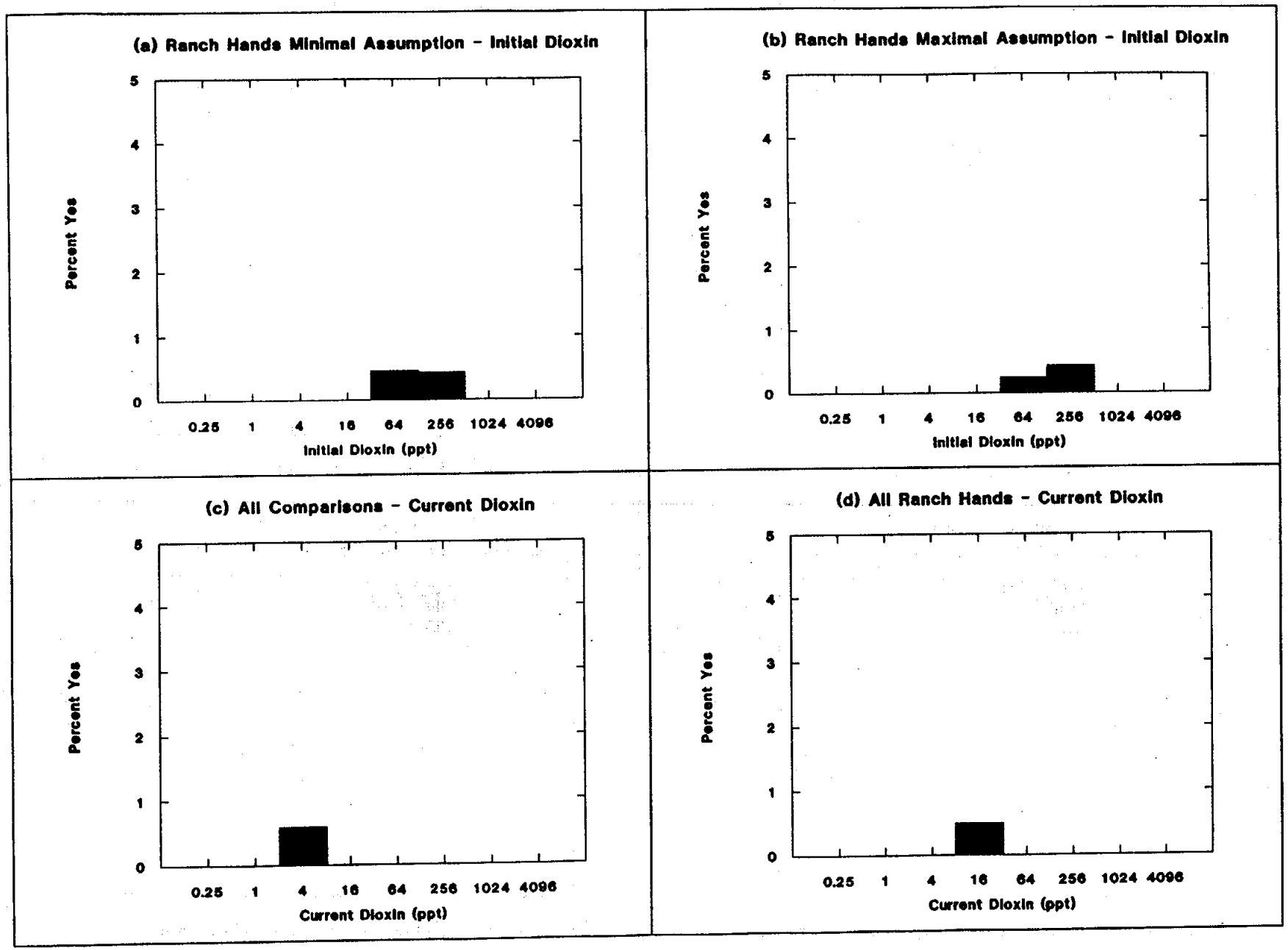

FIGURE F-1-39. Prostate Cancer versus Dioxin

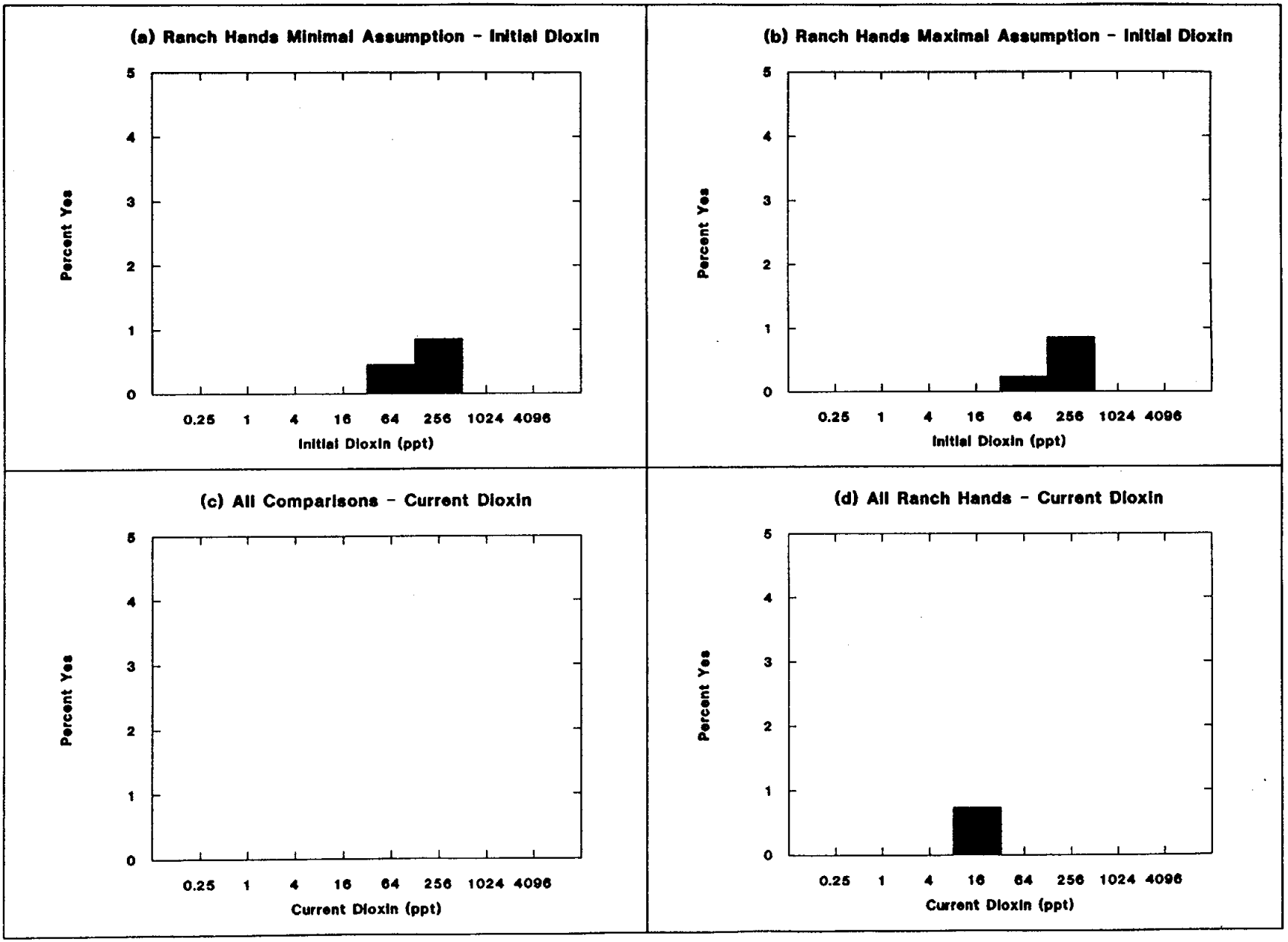

FIGURE F-1-40. Cancer of the Testicles versus Dioxin

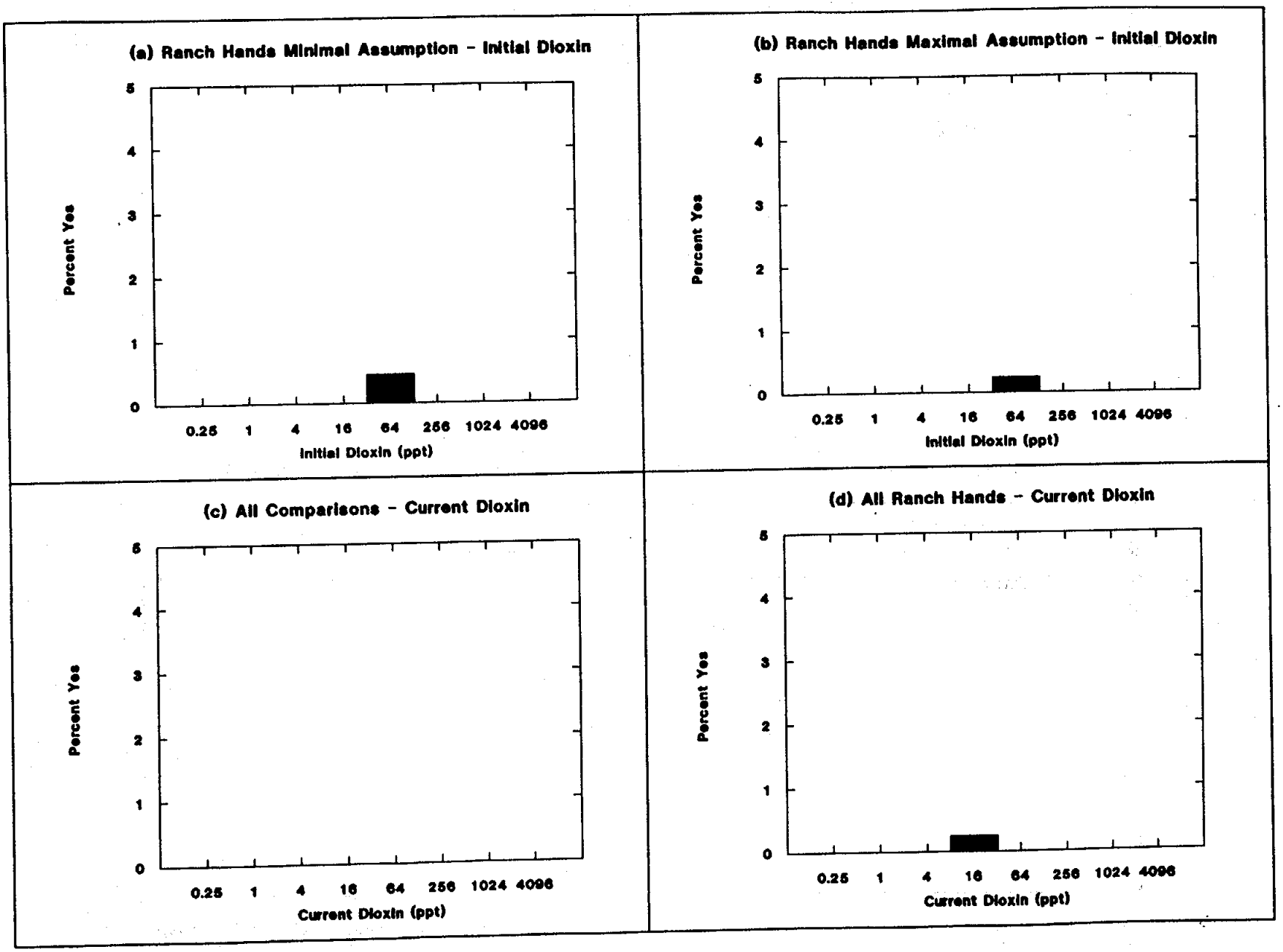

FIGURE F-1-41. Carcinoma in Situ for Other and Unspecified Sites versus Dioxin

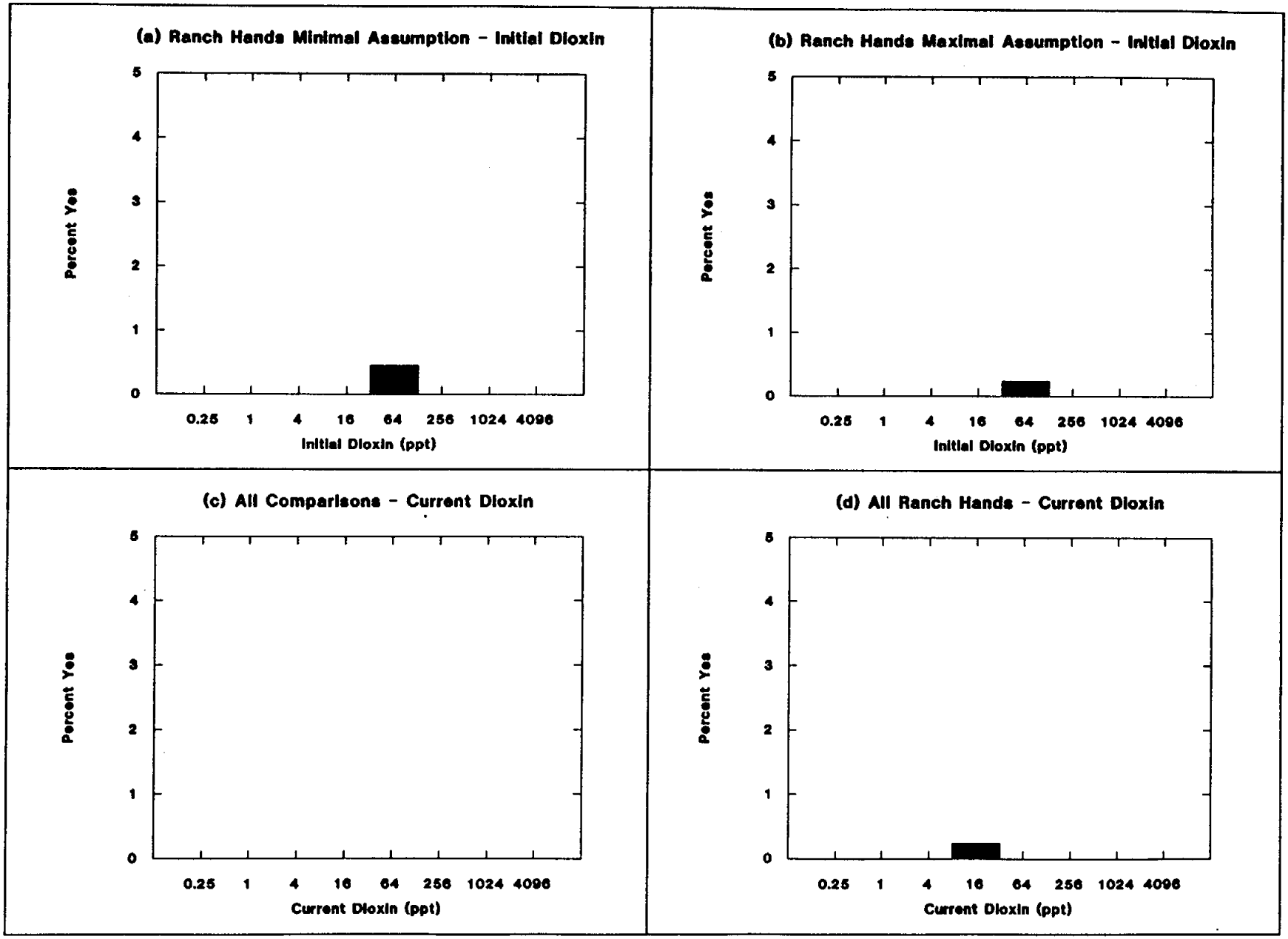

FIGURE F-1-42. Leukemia versus Dioxin

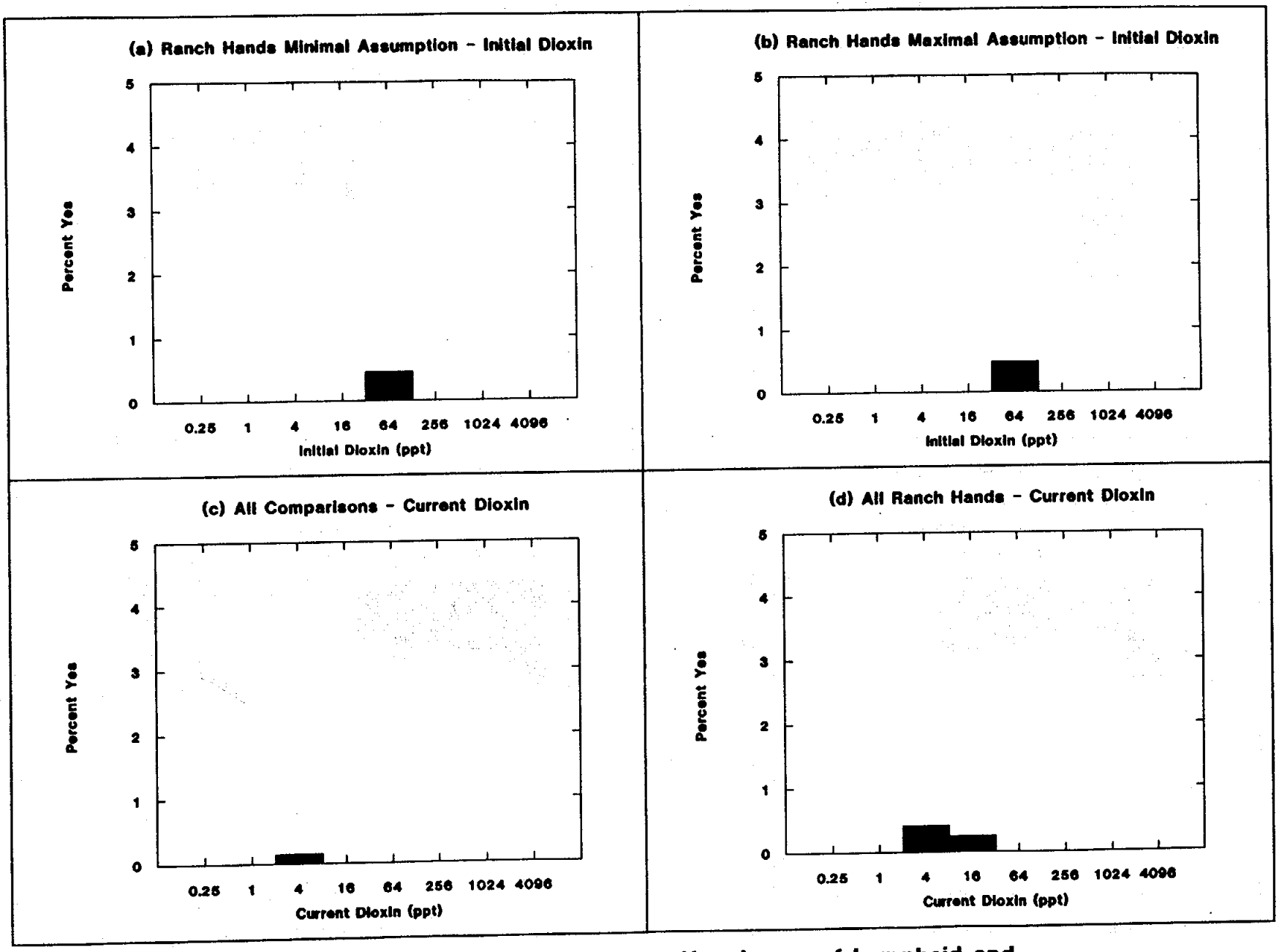

FIGURE F-1-43. Other Malignant Neoplasms of Lymphoid and Histiocytic Tissue versus Dioxin

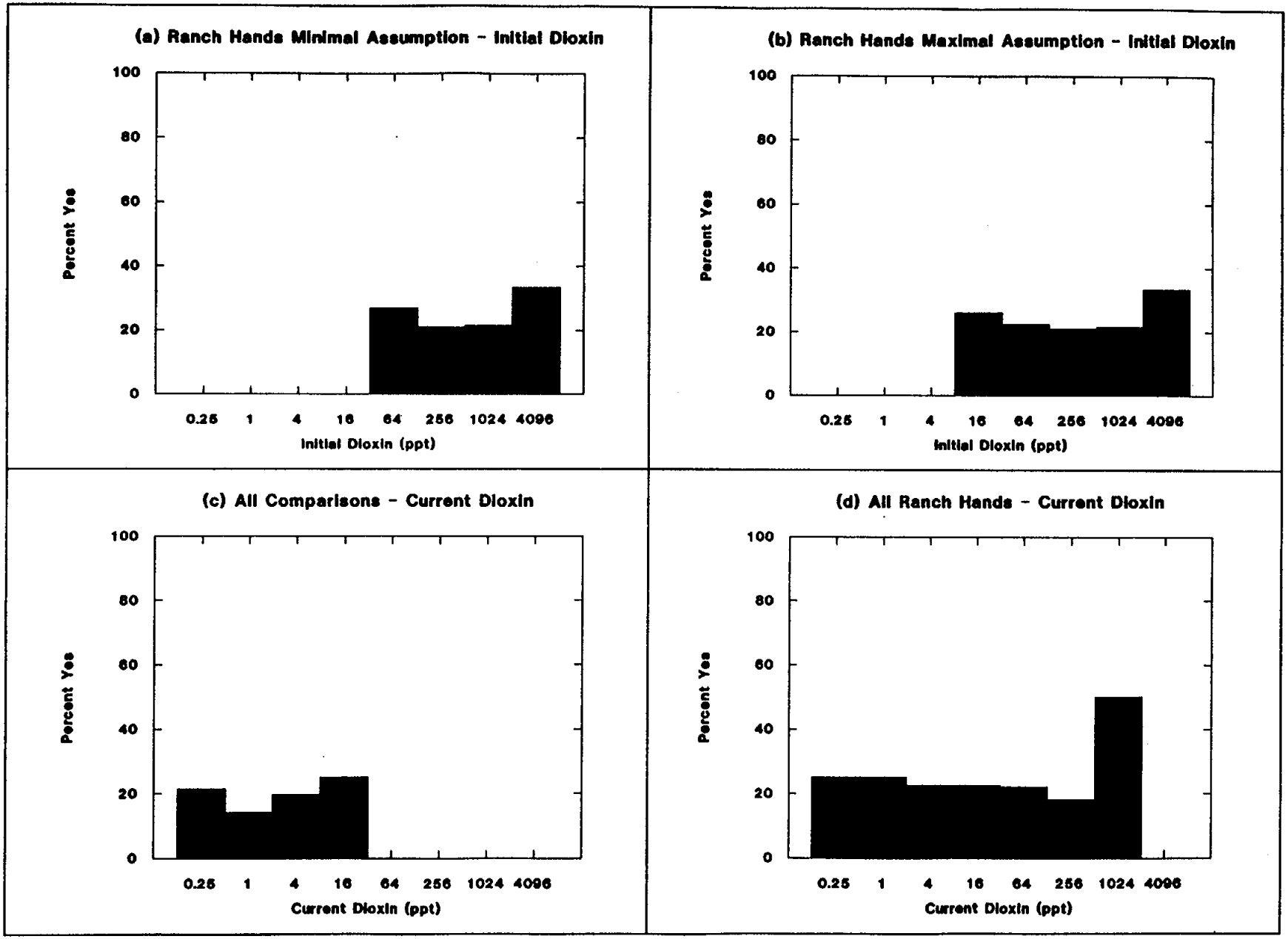

FIGURE F-1-44. All Skin and Systemic Neoplasms versus Dioxin

APPENDIX F-2.

Interaction Displays for the Malignancy Assessment

The following figures graphically display dioxin-by-covariate interactions found in the statistical analyses of the dependent variables in the malignancy assessment. For interactions with initial dioxin in the Ranch Hands involving discrete variables, the stratum-specific percentage of participants that exhibited a specified neoplasm is displayed for low, medium, and high initial dioxin categories (as defined in Appendix Table F-1), and each stratum is represented by a different design. Appendix Table F-1 also displays the sample sizes for each bar on the graph.

Figure		Page
F-2-1	Interaction of Initial Dioxin and Ionizing Radiation for Malignant Skin Neoplasms (Ranch Hands, Minimal Assumption)	F-2-2
F-2-2	Interaction of Initial Dioxin and Ionizing Radiation for Sun Exposure-Related Malignant Skin Neoplasms (Ranch Hands, Minimal Assumption)	F-2-3

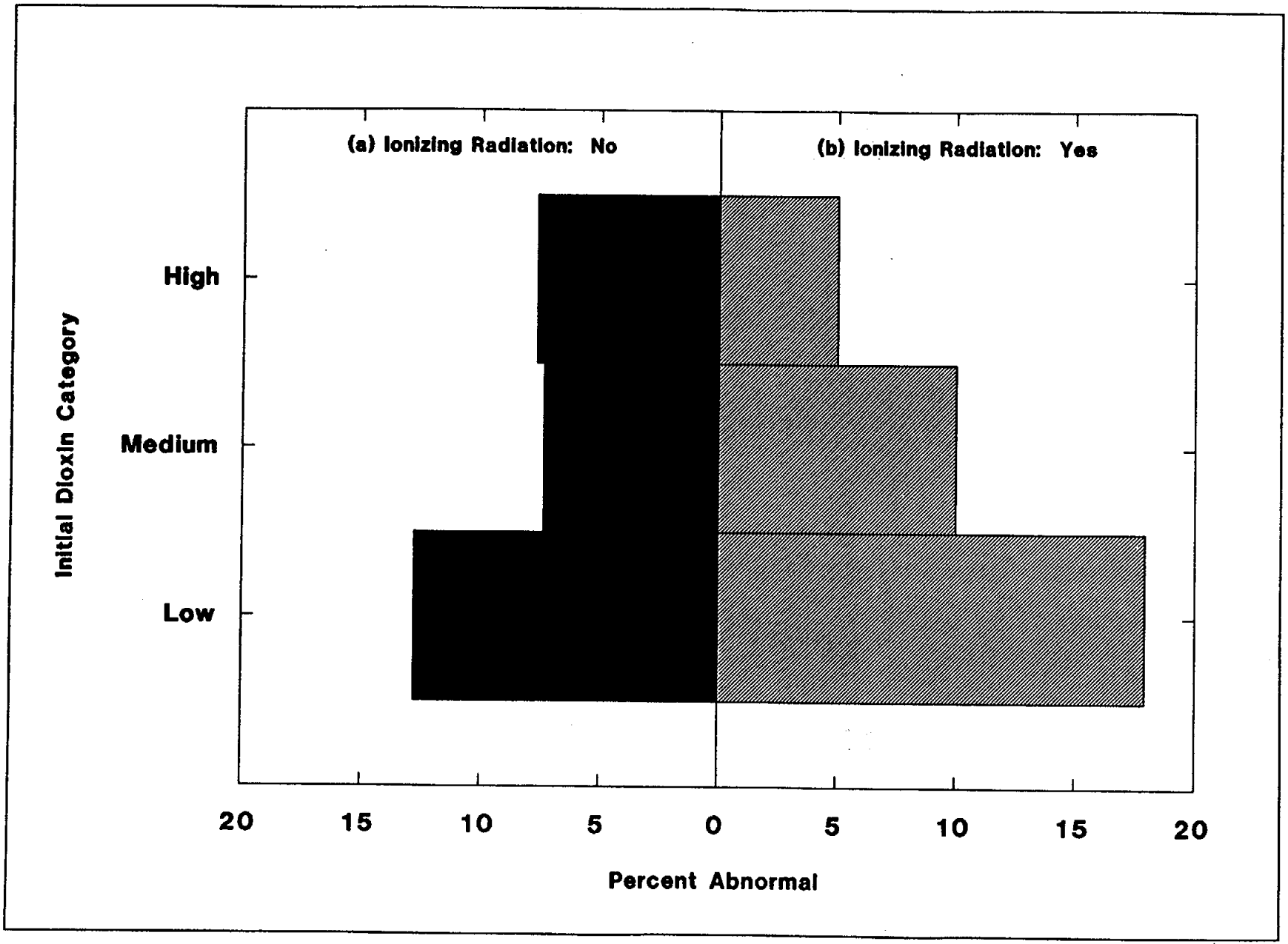

FIGURE F-2-1. Interaction of Initial Dioxin and Ionizing Radiation for Malignant Skin Neoplasms (Ranch Hands, Minimal Assumption)

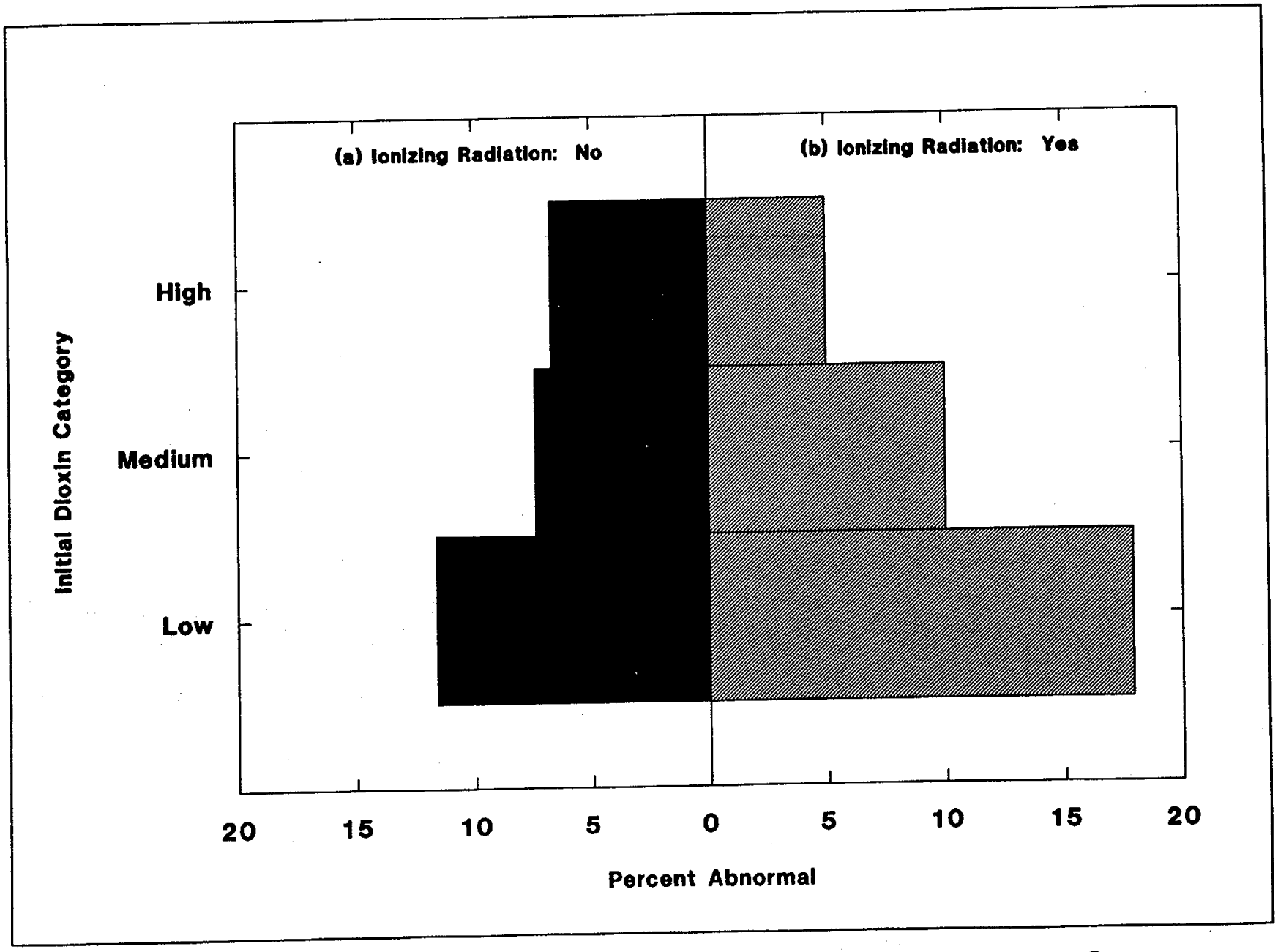

FIGURE F-2-2. Interaction of Initial Dioxin and Ionizing Radiation for Sun Exposure-Related Malignant Skin Neoplasms (Ranch Hands, Minimal Assumption)