

$$\log B = a_i + 0.153 \log \text{air Pb}$$

1.27

1.25

1.21

1.20

1.13

<u>air Pb</u>	<u>P</u>	<u>S</u>	<u>B</u>	<u>LAC</u>	<u>LAO</u>
0.2	14.6	12.7	10.5	13.9	12.4
1.0	18.6	16.2	13.5	17.8	15.8
1.5					
2.0	20.7	18.0	15.0	19.8	17.6
3.0	22.0	19.2	16.0	21.0	18.7
4.0	23.0	20.1	16.7	22.0	19.6
5.0	23.8	20.7	17.3	22.7	20.3
7.5	25.3	22.1	18.4	24.2	21.6
10.0	26.5	23.1	19.2	25.3	22.5
Slope 2-4	1.2	1.0	0.8	1.1	1.0

Discussion Section

Relate to EPA's treatment

of Ayon & Yanhel & Vol
London

See Federal Register
for Discussion

Relate to Current Situation

Test the model go to extremes

Range of interest $\sim 1.5 - 4$

(look at
differences
here)

0-2
2-4

Acknowledged interactions with EPA

TEH 0470568

In intro comment on EPA + AQS +
Pb

log Quad 2 (n=149)

$$\log B = a_i + .0780 A - .00677 A^2$$

<u>Site</u>	<u>a</u>	<u>$\hat{B}$</u>		<u>Slope</u>
		<u>A=2</u>	<u>A=4</u>	
P	1.19	20.37	24.19	1.9
S	1.12	17.74	21.07	1.7
B	1.03	14.42	17.13	1.4
LAC	1.16	19.45	23.10	1.8
LAO	1.11	17.33	20.59	1.6

Lead Exposure

$$B = 12.1 (A + B_i)^{0.2669}$$

<u>Site</u>	<u>B_i</u>	<u>$\hat{B}$</u>		<u>Slope</u>
		<u>A=2</u>	<u>A=4</u>	
P	6.00	21.08	22.37	0.6
S	1.46	16.85	19.03	1.1
B	0.44	15.35	18.01	1.3
LAC	6.26	21.26	22.52	0.6
LAO	2.23	17.78	19.72	1.0
	3.28	18.86	20.55	0.8

Log-log (n=132)

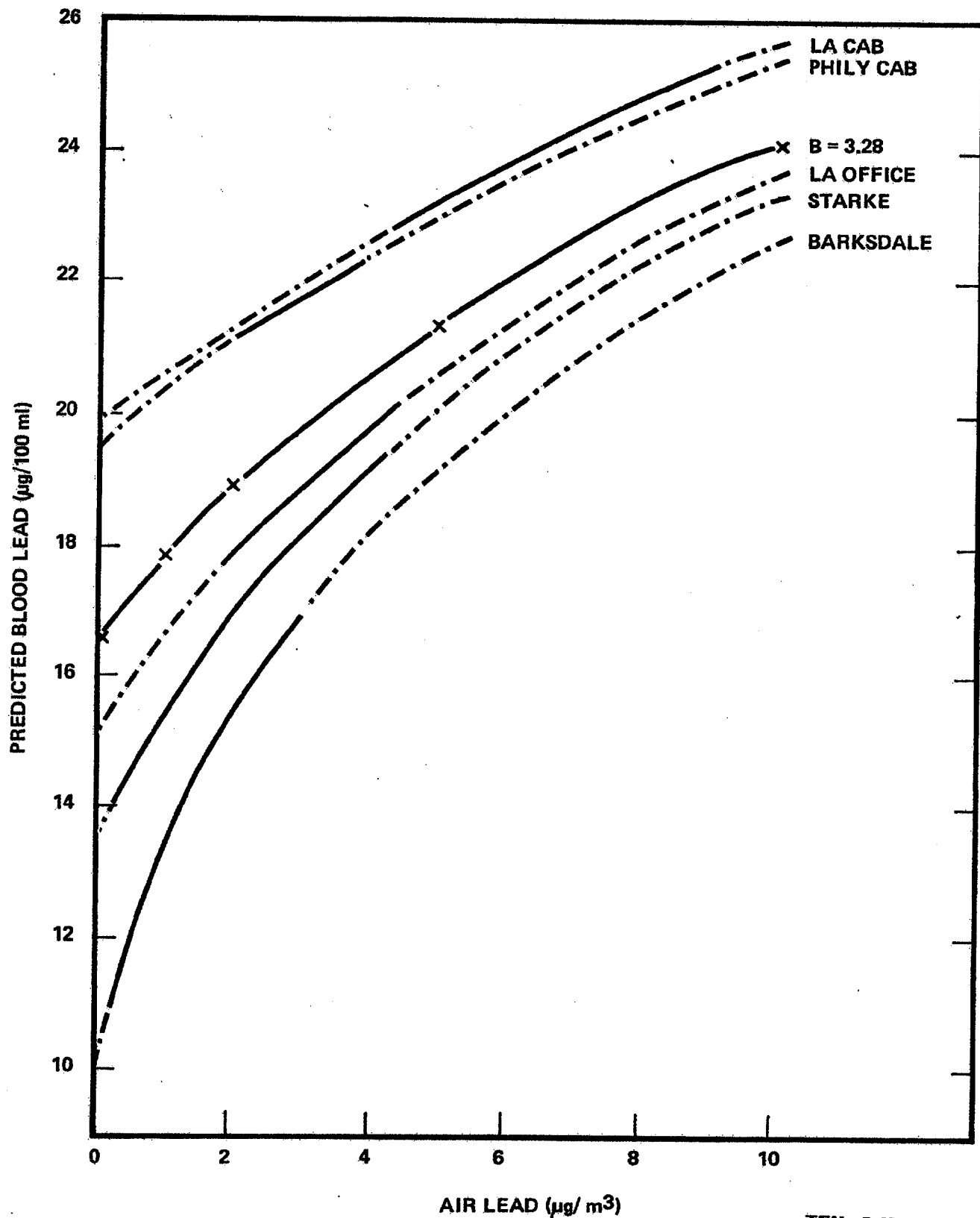
$$\log B = a_i + .1936 \log A$$

<u>Site</u>	<u>a_i</u>	<u>$\hat{B}$</u>		<u>SLOPE</u>
		<u>A=2</u>	<u>A=4</u>	
P	1.26	20.8	23.8	1.5
S	1.22	19.0	21.7	1.4
B	1.15	16.2	18.5	1.2
LAC	1.23	19.4	22.2	1.4
LAO	1.19	17.7	20.3	1.3

Log Quad 1 (n=132)

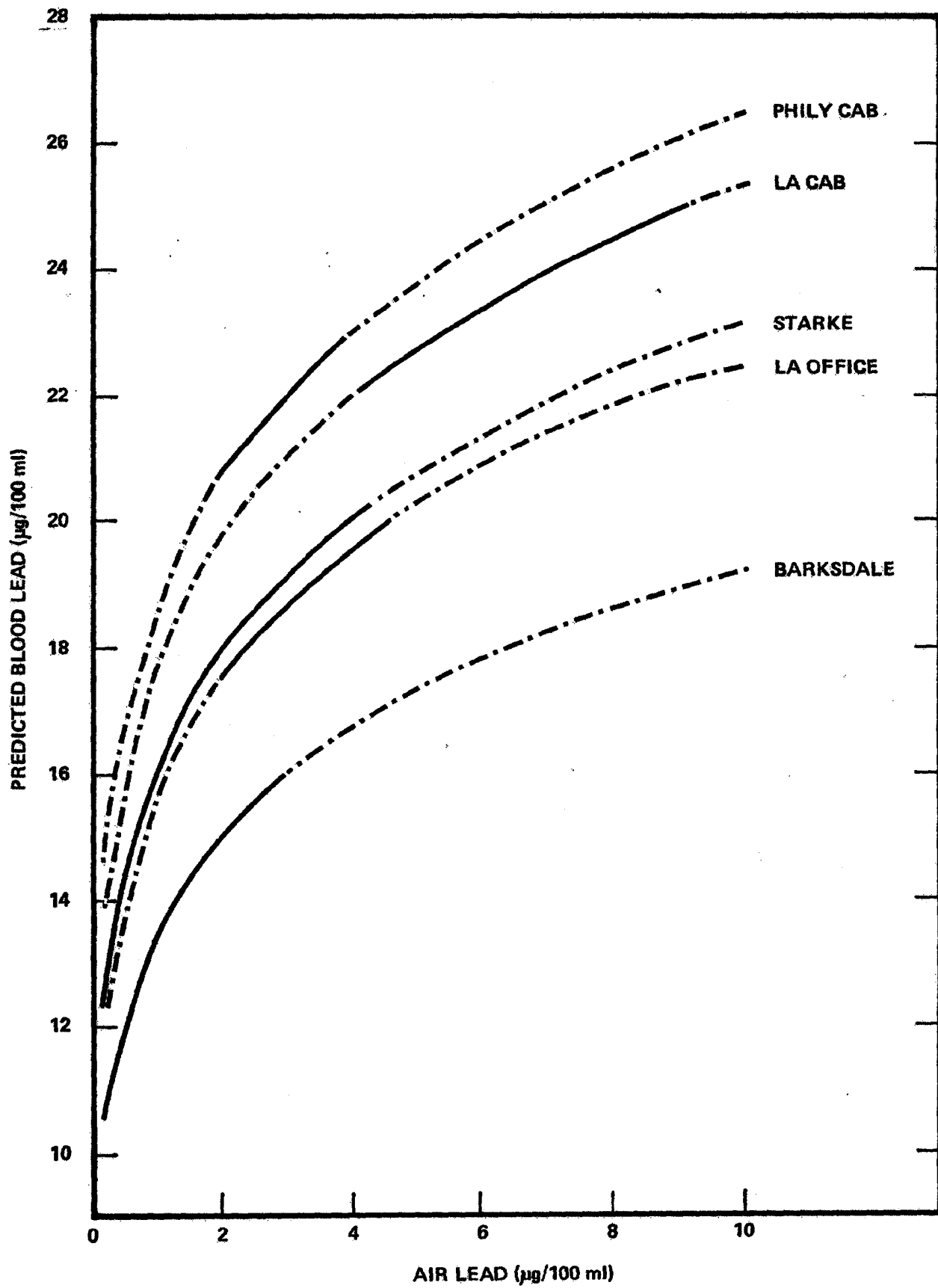
$$\log B = a_i + .0761 A - .00376 A^2$$

<u>Site</u>	<u>a_i</u>	<u>$\hat{B}$</u>		<u>Slope</u>
		<u>A=2</u>	<u>A=4</u>	
P	1.16	19.82	25.37	2.8
S	1.12	18.08	23.13	2.5
B	1.04	15.04	19.24	2.1
LAC	1.08	16.49	21.10	2.3
LAO	1.08	16.49	21.10	2.3



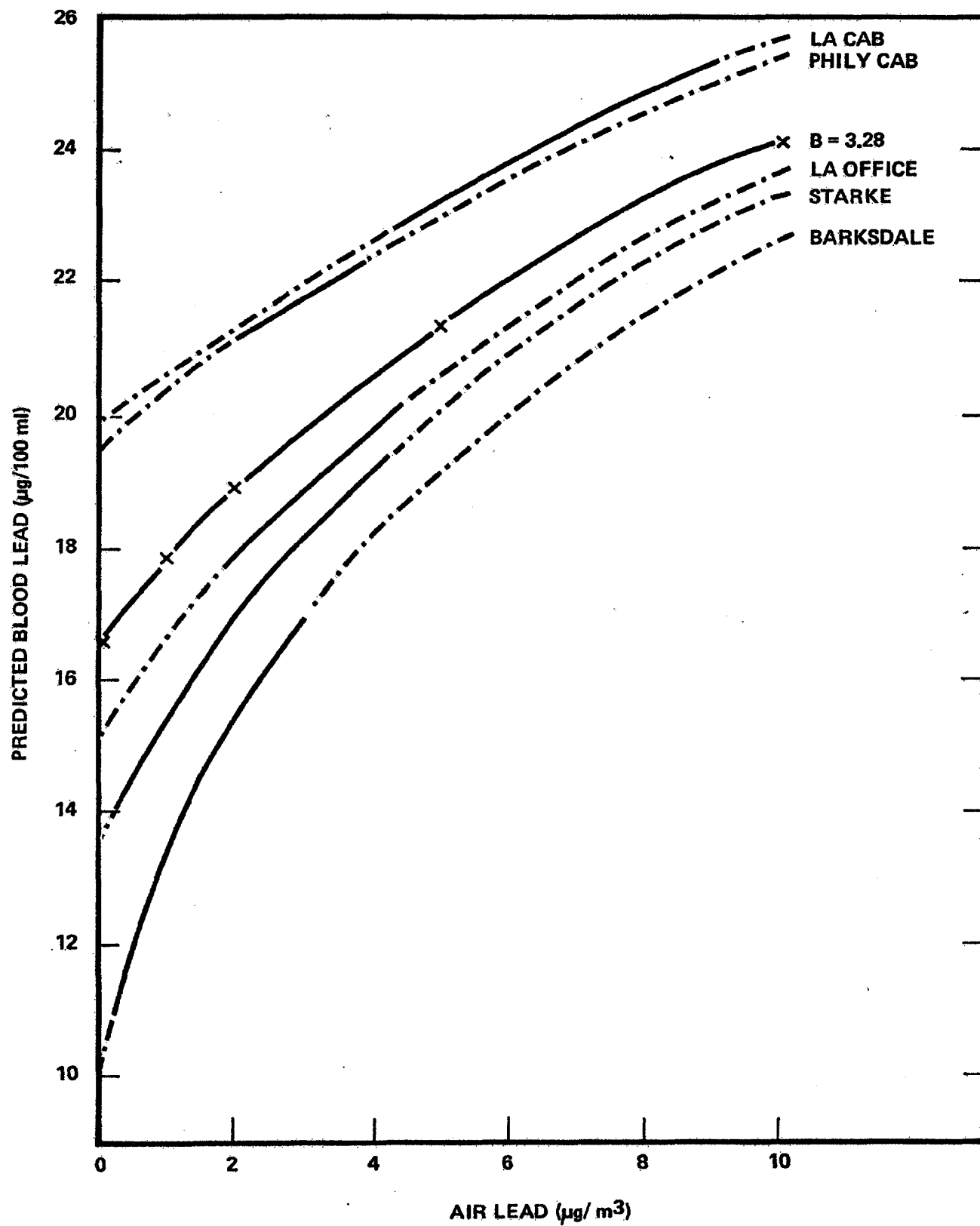
TEH 0470571

DUP050083390



TEH 0470572

DUP050083391



TEH 0470573

DUP050083392

KEHOE

25 ≤ AIR Pb ≤ 30

40

36

32

28

24

← HAMMOND ET AL

← LEAD EXPOSURE

TEH 0470574

DUP050083393

GRIFFIN STUDY

<u>GROUP</u>	<u>air Pb</u>	<u>BLOOD Pb</u>	
		<u>OBS'D</u>	<u>BASE = 16</u>
1	10.9	37	32
2	3.2	26	22

TEH 0470575

DUP050083394

Lead Exposure

$$B = 12.1 (A + 3.28)^{0.2669}$$

Hammond et al

$$B = [-0.09786 + .17904 (A + 3.46)^{-1.104}] - 0.9814$$

air Pb

Lead Exposure

Hammond

Angar

0

16.6

15.9

0.2

16.9

16.2

13.1

0.5

17.3

16.5

15.1

1.0

17.8

17.1

16.8

1.5

18.4

17.6

17.9

2

18.9

18.1

18.7

3

19.8

19.9

4

20.6

20.8

5

21.3

20.7

21.5

10

24.1

24.3

23.9

15

26.3

27.3

25.4

20

28.0

30.1

26.6

25

29.5

32.8

27.5

30

30.8

35.4

28.3

Angar

$$B = 16.8(A)^{1.53}$$

TEH 0470576

DUP050083395

Williams Data

ON DUTY

air Pb

EQN 6

EQN 8

10

29

28

50

42

44

100

55

56

200

71

70

300

79

81

EQ 6

$$B = 16.1 (A + 1.65) \cdot 3779 \Rightarrow A = \left(\frac{B}{16.1} \right)^{\frac{1}{.3779}} - 1.65$$

$$\begin{array}{r} + .38 \\ \hline 2.03 \end{array}$$

EQ 8

$$B = 17.9 (A + .93) \cdot 3513$$

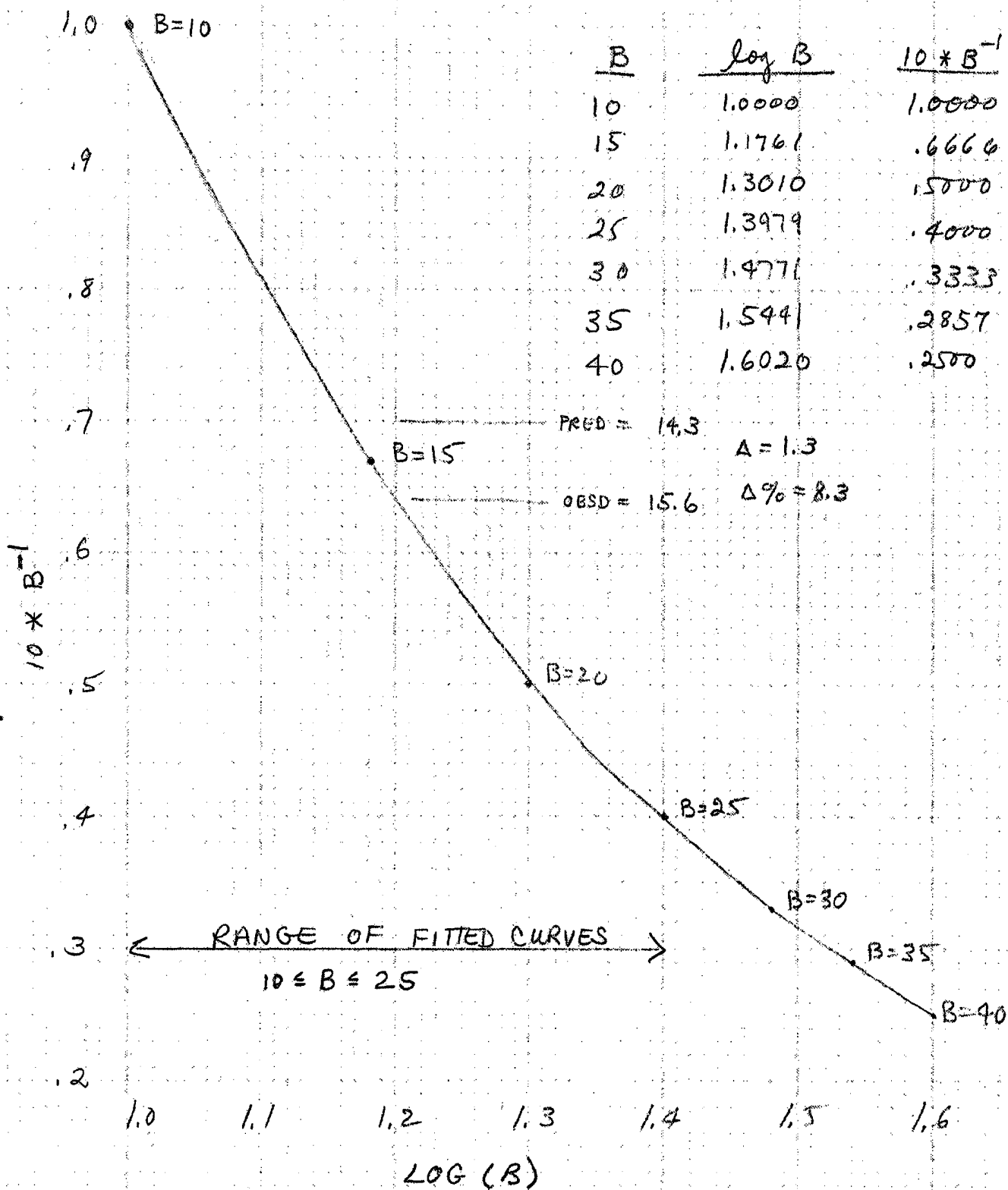
$$\begin{array}{r} + .38 \\ \hline 1.31 \end{array}$$

$$A = \text{Total Exposure} = .24 (\text{ON}) + .76 (\text{OFF} = .5)$$

$$= .24 (\text{ON}) + .38$$

TEH 0470577

DUP050083396



Conclude that there is no practical difference between Hammond et al (B^{-1}) and Snee ($\log B$) models

SITE: PHILY CAB

PREDICTED BLOOD LEAD LEVEL

AIR LEAD	LOG-LOG	LEAD EXPOSURE	HAMMOND
2.0000	20.7042	21.0775	20.8179
2.1000	20.8593	21.1475	20.8961
2.2000	21.0083	21.2169	20.9738
2.3000	21.1517	21.2857	21.0512
2.4000	21.2898	21.3538	21.1282
2.5000	21.4232	21.4214	21.2048
2.6000	21.5522	21.4883	21.2810
2.7000	21.6770	21.5548	21.3569
2.8000	21.7979	21.6206	21.4324
2.9000	21.9153	21.6859	21.5075
3.0000	22.0292	21.7507	21.5823
3.1000	22.1400	21.8149	21.6568
3.2000	22.2478	21.8786	21.7309
3.3000	22.3528	21.9419	21.8047
3.4000	22.4552	22.0046	21.8782
3.5000	22.5550	22.0668	21.9513
3.6000	22.6524	22.1286	22.0242
3.7000	22.7476	22.1899	22.0967
3.8000	22.8406	22.2507	22.1689
3.9000	22.9315	22.3111	22.2409
4.0000	23.0205	22.3710	22.3125

TEH 0470580

DUP050083398

SITE: STARKE

PREDICTED BLOOD LEAD LEVEL

AIR LEAD	LOG-LOG	LEAD EXPOSURE	HAMMOND
-----	-----	-----	-----
.2000	12.6782	13.8526	13.5262
.3000	13.4896	14.0706	13.7046
.4000	14.0966	14.2797	13.8774
.5000	14.5862	14.4807	14.0452
.6000	14.9988	14.6743	14.2082
.7000	15.3568	14.8611	14.3669
.8000	15.6737	15.0417	14.5217
.9000	15.9588	15.2165	14.6726
1.0000	16.2181	15.3860	14.8202
1.1000	16.4563	15.5505	14.9644
1.2000	16.6769	15.7104	15.1056
1.3000	16.8824	15.8659	15.2440
1.4000	17.0749	16.0173	15.3797
1.5000	17.2561	16.1649	15.5128
1.6000	17.4273	16.3089	15.6435
1.7000	17.5897	16.4495	15.7719
1.8000	17.7442	16.5868	15.8982
1.9000	17.8916	16.7211	16.0224
2.0000	18.0326	16.8525	16.1447
2.1000	18.1677	16.9812	16.2651
2.2000	18.2975	17.1072	16.3838
2.3000	18.4223	17.2307	16.5007
2.4000	18.5427	17.3518	16.6161
2.5000	18.6588	17.4707	16.7298
2.6000	18.7712	17.5874	16.8421
2.7000	18.8799	17.7020	16.9530
2.8000	18.9852	17.8145	17.0625
2.9000	19.0874	17.9252	17.1706
3.0000	19.1867	18.0340	17.2775
3.1000	19.2832	18.1411	17.3832
3.2000	19.3771	18.2464	17.4877
3.3000	19.4685	18.3501	17.5911
3.4000	19.5576	18.4522	17.6934
3.5000	19.6446	18.5528	17.7946
3.6000	19.7294	18.6519	17.8948
3.7000	19.8123	18.7496	17.9940
3.8000	19.8933	18.8459	18.0923
3.9000	19.9725	18.9408	18.1896
4.0000	20.0500	19.0345	18.2861
4.1000	20.1259	19.1270	18.3816
4.2000	20.2003	19.2182	18.4764
4.3000	20.2731	19.3082	18.5703

TEH 0470581

DUP050083399

SITE: BARKSDALE

PREDICTED BLOOD LEAD LEVEL

AIR LEAD	LOG-LOG	LEAD	
		EXPOSURE	HAMMOND
.3000	11.2202	11.1656	10.8343
.4000	11.7251	11.5498	11.1572
.5000	12.1323	11.9018	11.4540
.6000	12.4755	12.2273	11.7296
.7000	12.7732	12.5306	11.9877
.8000	13.0369	12.8150	12.2310
.9000	13.2739	13.0831	12.4615
1.0000	13.4896	13.3368	12.6809
1.1000	13.6878	13.5780	12.8906
1.2000	13.8712	13.8079	13.0917
1.3000	14.0421	14.0277	13.2851
1.4000	14.2023	14.2385	13.4715
1.5000	14.3530	14.4411	13.6517
1.6000	14.4954	14.6361	13.8261
1.7000	14.6305	14.8243	13.9953
1.8000	14.7590	15.0061	14.1598
1.9000	14.8816	15.1820	14.3198
2.0000	14.9988	15.3525	14.4756
2.1000	15.1112	15.5180	14.6277
2.2000	15.2192	15.6788	14.7763
2.3000	15.3230	15.8351	14.9215
2.4000	15.4231	15.9873	15.0636
2.5000	15.5198	16.1357	15.2028
2.6000	15.6132	16.2804	15.3392
2.7000	15.7036	16.4216	15.4731
2.8000	15.7912	16.5596	15.6045
2.9000	15.8762	16.6945	15.7336
3.0000	15.9588	16.8265	15.8606
3.1000	16.0390	16.9556	15.9854
3.2000	16.1171	17.0822	16.1082
3.3000	16.1932	17.2062	16.2292
3.4000	16.2673	17.3278	16.3484
3.5000	16.3396	17.4471	16.4658
3.6000	16.4102	17.5642	16.5816
3.7000	16.4792	17.6792	16.6959
3.8000	16.5465	17.7922	16.8086
3.9000	16.6124	17.9032	16.9199
4.0000	16.6769	18.0124	17.0298
4.1000	16.7400	18.1198	17.1383
4.2000	16.8019	18.2255	17.2456
4.3000	16.8624	18.3295	17.3516
4.4000	16.9219	18.4319	17.4565
4.5000	16.9801	18.5328	17.5602
4.6000	17.0373	18.6322	17.6628
4.7000	17.0935	18.7302	17.7644
4.8000	17.1486	18.8267	17.8649
4.9000	17.2028	18.9220	17.9644
5.0000	17.2561	19.0159	18.0629

TEH 0470582

DUP050083400

5.1000	17.3085	19.1086	18.1605
5.2000	17.3600	19.2000	18.2572
5.3000	17.4106	19.2903	18.3531
5.4000	17.4605	19.3794	18.4480
5.5000	17.5096	19.4674	18.5422
5.6000	17.5579	19.5544	18.6356
5.7000	17.6055	19.6403	18.7281
5.8000	17.6524	19.7251	18.8200
5.9000	17.6987	19.8090	18.9110
6.0000	17.7442	19.8919	19.0014
6.1000	17.7892	19.9739	19.0911

TEH 0470583

DUP050083401

SITE: LA CAB

PREDICTED BLOOD LEAD LEVEL

AIR LEAD	LOG-LOG	LEAD EXPOSURE	HAMMOND
4.2000	22.1492	22.6411	22.0460
4.3000	22.2290	22.6987	22.1184
4.4000	22.3074	22.7559	22.1906
4.5000	22.3842	22.8127	22.2624
4.6000	22.4596	22.8691	22.3340
4.7000	22.5336	22.9251	22.4053
4.8000	22.6063	22.9807	22.4763
4.9000	22.6778	23.0360	22.5470
5.0000	22.7480	23.0909	22.6175
5.1000	22.8170	23.1455	22.6876
5.2000	22.8849	23.1997	22.7576
5.3000	22.9517	23.2535	22.8273
5.4000	23.0174	23.3070	22.8967
5.5000	23.0821	23.3602	22.9659
5.6000	23.1458	23.4131	23.0348
5.7000	23.2086	23.4656	23.1035
5.8000	23.2704	23.5178	23.1720
5.9000	23.3314	23.5697	23.2402
6.0000	23.3914	23.6213	23.3082
6.1000	23.4507	23.6726	23.3759
6.2000	23.5091	23.7235	23.4435
6.3000	23.5667	23.7742	23.5108
6.4000	23.6236	23.8246	23.5779
6.5000	23.6797	23.8746	23.6448
6.6000	23.7351	23.9244	23.7115
6.7000	23.7897	23.9740	23.7780
6.8000	23.8437	24.0232	23.8443
6.9000	23.8970	24.0721	23.9104
7.0000	23.9497	24.1208	23.9762
7.1000	24.0017	24.1692	24.0419
7.2000	24.0531	24.2174	24.1074
7.3000	24.1040	24.2653	24.1727
7.4000	24.1542	24.3129	24.2378
7.5000	24.2038	24.3603	24.3028
7.6000	24.2529	24.4074	24.3675
7.7000	24.3015	24.4543	24.4321
7.8000	24.3495	24.5009	24.4965
7.9000	24.3970	24.5473	24.5607
8.0000	24.4440	24.5935	24.6248
8.1000	24.4905	24.6394	24.6887
8.2000	24.5366	24.6851	24.7524
8.3000	24.5821	24.7305	24.8159
8.4000	24.6272	24.7757	24.8793
8.5000	24.6718	24.8207	24.9425
8.6000	24.7160	24.8655	25.0056
8.7000	24.7598	24.9100	25.0685
8.8000	24.8031	24.9544	25.1313
8.9000	24.8460	24.9985	25.1939

TEH 0470584

DUP050083402

9.0000
9.1000

24.8885
24.9306

25.0424
25.0861

25.2564
25.3187

TEH 0470585

DUP050083403

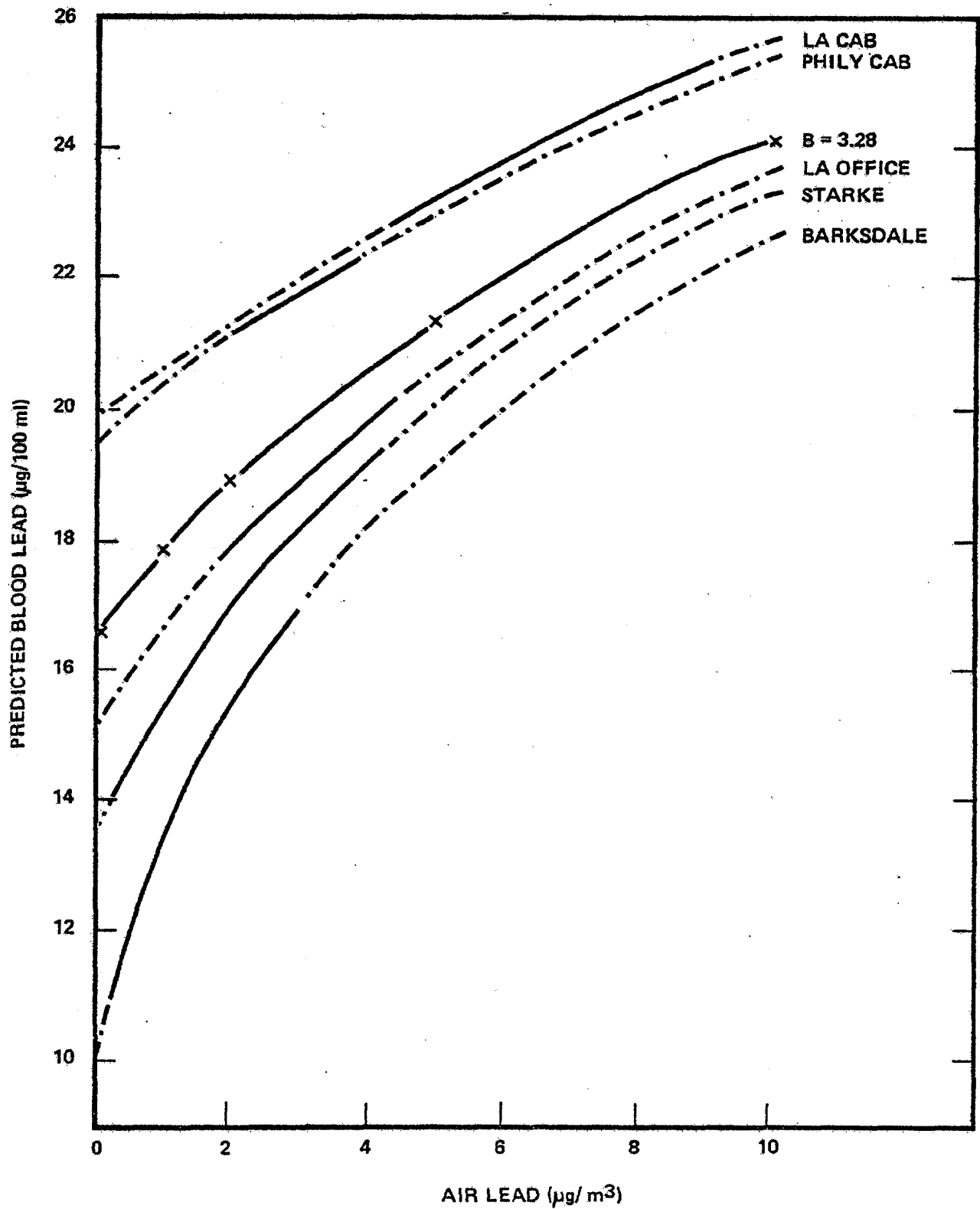
SITE: LA OFFICE

PREDICTED BLOOD LEAD LEVEL

AIR LEAD -----	LOG-LOG -----	LEAD EXPOSURE -----	HAMMOND -----
1.8000	17.3403	17.5526	17.2135
1.9000	17.4843	17.6678	17.3200
2.0000	17.6221	17.7810	17.4252
2.1000	17.7541	17.8922	17.5292
2.2000	17.8810	18.0016	17.6321
2.3000	18.0030	18.1091	17.7340
2.4000	18.1206	18.2150	17.8348
2.5000	18.2341	18.3192	17.9346
2.6000	18.3439	18.4217	18.0335
2.7000	18.4501	18.5228	18.1313
2.8000	18.5530	18.6223	18.2283
2.9000	18.6529	18.7204	18.3244
3.0000	18.7499	18.8171	18.4196
3.1000	18.8442	18.9125	18.5140
3.2000	18.9360	19.0066	18.6076
3.3000	19.0253	19.0994	18.7004
3.4000	19.1124	19.1909	18.7925
3.5000	19.1974	19.2813	18.8838
3.6000	19.2803	19.3706	18.9744
3.7000	19.3613	19.4587	19.0643
3.8000	19.4405	19.5457	19.1535
3.9000	19.5179	19.6317	19.2420
4.0000	19.5936	19.7167	19.3299
4.1000	19.6678	19.8007	19.4172
4.2000	19.7405	19.8837	19.5038
4.3000	19.8117	19.9658	19.5899
4.4000	19.8815	20.0469	19.6754
4.5000	19.9499	20.1272	19.7603

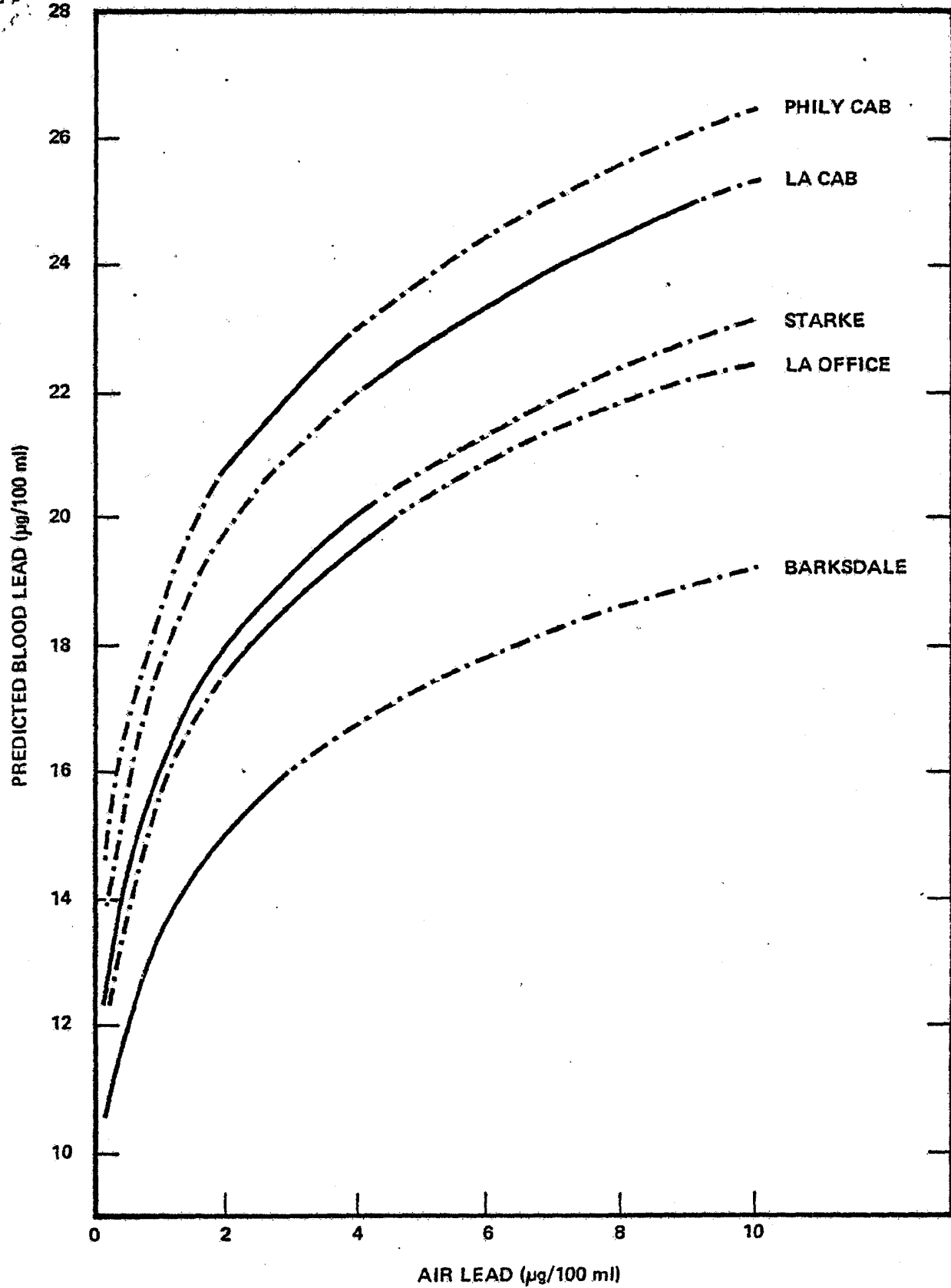
TEH 0470586

DUP050083404



TEH 0470587

DUP050083405



TEH 0470589

DUP050083406

PREDICTED BLOOD Pb				
<u>air Pb</u>	<u>RDS</u>	<u>GARTSIDE</u>	<u>A</u>	<u>Δ%</u>
0	16.6	16.0	.6	3.6
.2	16.9	16.2	.7	4.1
.5	17.3	16.5	.8	4.6
1.0	17.8	17.1	.7	3.9
1.5	18.4	17.6	.8	4.3
2.0	18.9	18.1	.8	4.2
5.0	21.3	20.7	.6	2.8
10.0	24.1	24.3	.2	0.8
20.0	28.0	30.1	2.1	7.5

RDS

$$B = 12.1 (A + 3.28)^{.2669}$$

GARTSIDE

$$B = \left[-19786 + .17904 (A + 3.46)^{-.104} \right]^{-.9814}$$

TEH 0470591

DUP050083407

<u>Site</u>	<u>air Pb Range</u>	<u>Blood Pb Range</u>
Phily Cab	2.11 - 3.91	15 - 29
Starke	.22 - 4.28	8 - 36
Berkdale	.29 - 6.08	8 - 37
LA CAB	4.28 - 9.12	17 - 33
LA office	1.82 - 4.47	12 - 40

TEH 0470592

DUP050083408

Ref: GROSS via
Hammond et al
(1981)

Kohoe Data

<u>Subject</u>	<u>Air Pb</u>	<u>BLOOD Pb</u>	
		<u>OBS'D</u>	<u>BASE = 16</u>
MB	29.4	40	32
MOB	25.4	36	26
PB	28.4	33	26
SB	27.4	32	27
FC	30.4	35	29
LD	9.3	29	27
	27.6	39	37
DH	7.3	28	14
NK	2.4	25	21
HR	4.5	24	19
JOS	9.4	32	27
	27.4	41	36
JUS	28.1	32	27
SS	2.2	21	18
	6.0	26	23

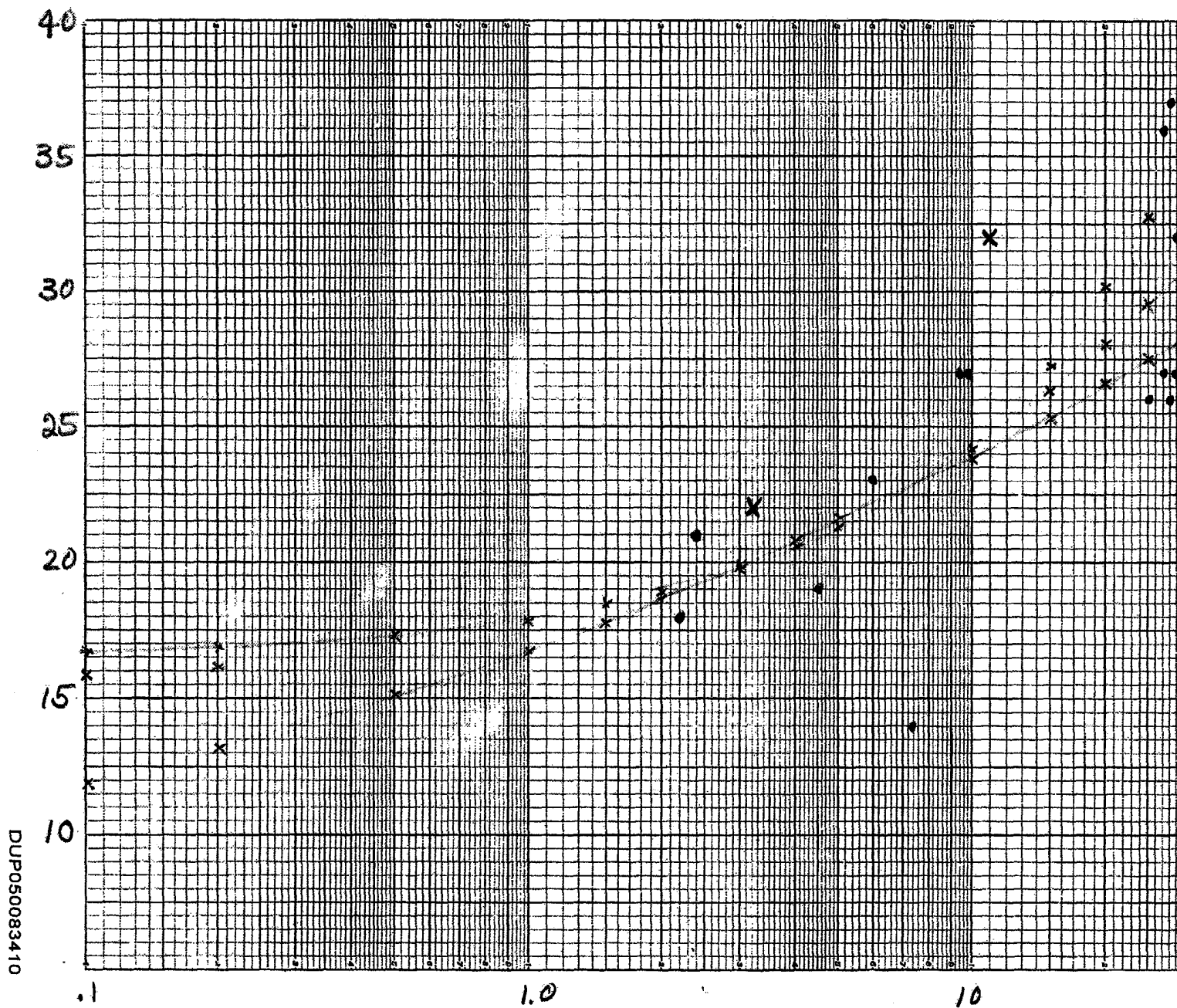
TEH 0470593

NO. 31.287. 10 DIVISIONS PER INCH (70 DIVISIONS) BY THREE 1/3-INCH CYCLES RATIO RULING.

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DUP050083410

Table 1
Williams Study Blood Lead And Air Lead Data

Job	Subject	On-Duty Air Lead ($\mu\text{g}/\text{m}^3$)	Blood Lead ($\mu\text{g}/100\text{ml}$)
Machine Pasting	1	234	74.8
	2	166	72.2
	3	248	93.0
	4	129	56.8
	5	234	73.6
	6	296	74.6
Hand Pasting	1	159	51.2
	2	298	85.6
	3	166	45.6
	4	104	70.4
Forming	1	84	69.4
	2	200	73.2
	3	121	61.0
	4	159	59.4
	5	176	64.6
	6	79	44.6
	7	146	63.2
	8	131	63.6
	9	111	67.6
Plastics Dept. A	1	13	22.5
	2	13	30.0
	3	9	28.8
	4	13	29.0
	5	10	25.8

TEH 0470595

DUP050083411

Plastics
Dept, B

1	8	32.4
2	12	27.6
3	8	24.6
4	9	28.0
5	8	33.0

TEH 0470596

DUP050083412