

25-1933

FIELD POINT OR DEPT. & BLDG. NO.

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DATE YOUR LETTER

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M. A. Paschal

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P. M. Zakriski

Brecksville R & D Center, D/8506

April 28, 1977

Louisville Gas Badge Study

During the week of 3/21 - 3/25/77 a test of the Abcor Gasbadge Organic Vapor Dosimeter was carried out at the Louisville plant. The purpose of this study was to look for correlation between the Gasbadge and flasher tubes during vinyl chloride exposure.

It was found that linear correlation exists between the dosimeter and the flasher tubes (correlation coefficient .94). This alone is encouraging enough to warrant further study both in the lab and in the field.

The Gasbadge consists of a fiberglass pad impregnated with 150 mg of activated charcoal contained in a badge, which is open in the front with the exception of a filter paper wind screen.

The principle of collection is simple diffusion of vinyl chloride into the badge, and adsorption on the charcoal. The pads are then solvent washed with carbon disulfide (CS₂) and analyzed by gas chromatography.

During the week 37 employees were monitored simultaneously using Gasbadges and flasher tubes. The samples were from a variety of plant locations and varied exposure levels were expected thus assuring a reasonably good cross section.

After the samples were collected, the flasher tubes were analyzed at the Louisville plant and the badges at the Brecksville facility.

Enclosed is a summary of the results obtained.

Michael A. Paschal
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P. M. Zakriski (HR)
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jb

Encl.

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R & D Files

DSE	Corresponding Flasher Tubes	PERSON	Mg Flasiter	Mg Badge	PPM FLASHER
1	14, 2	CRONIN	50.9	5.8	3.82
2	70, 121	HALL	19.2	8.4	2.52
3	126, 94	BETTON	103.9	17.3	8.74
4	56, 147	JACKSON	15.4	16.2	1.67
5	81	MORRIS	4.9	4.2	0.53
6	161	STEWART	1.9	3.3	0.20
7	61	BELEW	5.3	4.9	0.51
8	165	YORK	2.4	2.7	0.24
10	125	JOHNSON	1.2	0.86	0.15
11	76, 96	CASTELLA	0.0	0.43	0.0
12	29, 42	THOMAS	5.2	3.0	0.36
13	99, 49	FULVENSEN	1.4	2.3	0.15
15	69, 160	DEAN	44.9	33.5	4.28
16	44, 175	KRELIN	1.2	2.9	0.12
18	75, 130	BARNES	0.1	1.5	0.12
19	119, 32	DENNIS	5.3	3.4	0.42
21	5, 182	UPANE, H.	9.8	5.2	1.32
22	26, 33	ELANK	26.3	13.7	2.96
23	36, 113	MURPHY	32.7	25.0	3.53
24	120, 142	KINSTON	73.0	40.3	8.03
25	154, 166	FILBURN	200.9	106.5	21.22
27	109, 107	ARNOLD	16.1	20.1	1.23
9	52, 47	PETRI	109.0	59.8	8.69
20	183, 86	COTTRELL	7.6	8.8	0.67
1	22, 27	RAY	0.3	2.7	0.03
2	181, 117	FERGUSON	7.8	10.7	0.65
3	190, 144	COSS	1.1	3.3	0.01

DATE #	CORRESPONDING FLASHER	PERSON	Mg Flasher	Mg BIDEE	PPM FLASHER
34	164, 174	PIERCE	5.2	6.5	0.63
35	43, 136	DENTON	4.4	5.1	0.56
36	147, 94	TAYLOR	8.1	7.6	0.94
37	115, 121	SCHMIDT	4.2	4.6	0.61
38	104, 81	BYRD	10.6	7.5	1.11
39	56, 14	CLAYTON	10.3	12.1	1.44
40	114, 132	NOE	10.2	10.8	0.82
41	7, 145	MASSEY	11.1	12.4	0.91
42	125, 134	DAVIS	14.6	18.4	2.22
43	—	YOUNG, M.	1.6	7.5	0.20

GASB5DGE 0-4.0

DEGREE 1

COEFFICIENTS

A(1)= 0.3445136E 00

A(2)= 0.4885557E 00

y INTERCEPT
SLOPE

	X	Y	PREDICTED	DELIA
1	0.4300000E 02	0.0000000E 00	0.5545926E 00	-0.5545926E 00
2	0.1500000E 01	0.1000000E 00	0.1077347E 01	-0.9773472E 00
3	0.2700000E 01	0.3000000E 00	0.1663614E 01	-0.1363614E 01
4	0.3300000E 01	0.1100000E 01	0.1956747E 01	-0.2567476E 00
5	0.8600000E 00	0.1200000E 01	0.7646715E 00	0.4353283E 00
6	0.2900000E 01	0.1200000E 01	0.1751325E 01	-0.5613253E 00
7	0.2300000E 01	0.1400000E 01	0.1468191E 01	-0.6819188E 01
8	0.7500000E 01	0.1600000E 01	0.4008631E 01	-0.2438681E 01
9	0.3300000E 01	0.1900000E 01	0.1956747E 01	-0.5674762E 01
10	0.2700000E 01	0.2400000E 01	0.1663614E 01	0.7263858E 00
11	0.4600000E 01	0.4200000E 01	0.2591870E 01	0.1608129E 01
12	0.5100000E 01	0.4400000E 01	0.2836147E 01	0.1563852E 01
13	0.4200000E 01	0.4900000E 01	0.2396447E 01	0.2503552E 01

A M O V A

SOURCE	SS(CORRECTED)	DF	MEAN SS
REGRESSION	0.1014E 02	1	0.1014E 02
RESIDUAL	0.2201E 02	11	0.2001E 01
TOTAL	0.3216E 02	12	

STANDARD DEVIATION 0.1414E 01

F 5.0

R-SQUARED 0.315

CORRELATION COEFFICIENT 0.561

ST. DEV. SLOPE 0.2169E 00

X-LEFT 0.0000000E 00 X-RIGHT 0.8000000E 01 X-INC 0.8000E 00

Y-LOW 0.0000000E 00 Y-TOP 0.8000000E 01 Y-INC 0.8000E 00

CORRELATION
COEFFICIENT 0.90

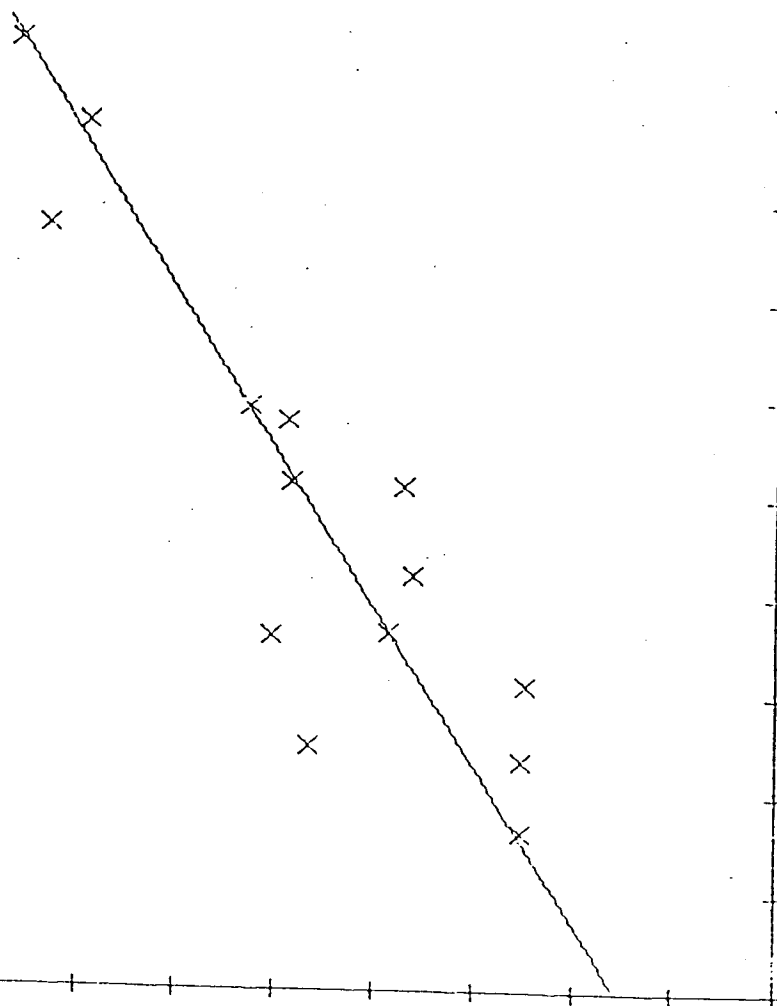
X GASBADGE 5-20.0 FLYER DELETED

Mg FLASKER

Mg BRIDGE

21.000

BFG-I- 550



GASBAGE 5-20.0 FLYER DELETE

DEGREE 1

COEFFICIENTS

A(1)= 0.3250810E 01 *y intercept*
A(2)= 0.6344996E 00 *slope*

	X	Y	PREDICTED	DELTA
1	0.6500000E 01	0.5200000E 01	0.7385058E 01	-0.2185058E 01
2	0.4900000E 01	0.5300000E 01	0.6369858E 01	-0.1069858E 01
3	0.3400000E 01	0.5300000E 01	0.5419109E 01	-0.1181092E 00
4	0.9900000E 01	0.7600000E 01	0.8844437E 01	-0.1244407E 01
5	0.1070000E 02	0.7800000E 01	0.1034995E 02	-0.2249957E 01
6	0.7600000E 01	0.8100000E 01	0.8083097E 01	0.1699204E -01
7	0.5200000E 01	0.9800000E 01	0.6560208E 01	0.3239791E 01
8	0.1080000E 02	0.1020000E 02	0.1011340E 02	0.8659300E -01
9	0.1210000E 02	0.1030000E 02	0.1093925E 02	-0.6382565E 00
10	0.7500000E 01	0.1060000E 02	0.8019557E 01	0.2580442E 01
11	0.1240000E 02	0.1110000E 02	0.1112860E 02	-0.2860650E -01
12	0.1840000E 02	0.1460000E 02	0.1493560E 02	-0.3256046E 00
13	0.1620000E 02	0.1540000E 02	0.1353970E 02	0.1860294E 01
14	0.2010000E 02	0.1610000E 02	0.1601425E 02	0.8574584E -01

ANOV A

SOURCE	SS(CORRECTED)	DF	MEAN SS
REGRESSION	0.1365E 03	1	0.1365E 03
RESIDUAL	0.3369E 02	12	0.2807E 01
TOTAL	0.1702E 03	13	

STANDARD DEVIATION	0.1675E 01
F	48.6
R-SQUARED	0.802
CORRELATION COEFFICIENT	0.895
ST. DEV. SLOPE	0.9099E -01

X-LEFT	0.0000000E 00	X-RIGHT	0.2100000E 02	X-INC	0.2100E 01
Y-LOW	0.0000000E 00	Y-TOP	0.2100000E 02	Y-INC	0.2100E 01

RELATION
COEFFICIENT 0.91

X GASBADGE 20-80

60-000

FLASHER

50-000

BADGE

10-000

10-000

BFG-I- 552

GASBADGE 20-80

DEGREE 1

COEFFICIENTS

A(1) = -0.1957023E 01

A(2) = 0.1642027E 01

y INTERCEPT
SLOPE

	X	Y	PREDICTED	DELTA
1	0.1370000E 02	0.2630000E 02	0.2053875E 02	0.5761246E 01
2	0.2500000E 02	0.3270000E 02	0.3909366E 02	-0.6393664E 01
3	0.3350000E 02	0.4490000E 02	0.5305089E 02	-0.8150897E 01
4	0.4030000E 02	0.7300000E 02	0.6421668E 02	0.8793315E 01

A N O V A

SOURCE	SS(CORRECTED)	DF	MEAN SS
REGRESSION	0.1064E 04	1	0.1064E 04
RESIDUAL	0.2176E 03	2	0.1088E 03
TOTAL	0.1282E 04	3	

STANDARD DEVIATION 0.1043E 02

F 9.7

R-SQUARED 0.830

CORRELATION COEFFICIENT 0.911

ST. DEV. SLOPE 0.5249E 00

X-LEFT 0.1000000E 02 X-RIGHT 0.8000000E 02 X-INC 0.7000E 0

Y-LOW 0.1000000E 02 Y-TOP 0.8000000E 02 Y-INC 0.7000E 0

COEFFICIENTS

A(1) = -0.3347099E 01
A(2) = 0.1516192E 01

4 INTERPT

SLOPE

PODICTED

DELTA

1	0.430000E 00	0.000000E 00	-0.2695047E 01	0.2695047E 01
2	0.150000E 01	0.100000E 00	-0.1072721E 01	0.1172721E 01
3	0.270000E 01	0.300000E 00	0.7467353E 00	-0.4467098E 00
4	0.330000E 01	0.110000E 01	0.1656425E 01	-0.5564253E 00
5	0.660000E 00	0.120000E 01	-0.2043084E 01	0.3243084E 01
6	0.290000E 01	0.120000E 01	0.1049948E 01	0.1500516E 00
7	0.230000E 01	0.140000E 01	0.1402328E 00	0.1259767E 01
8	0.750000E 01	0.160000E 01	0.4024433E 01	-0.6424433E 01
9	0.230000E 01	0.190000E 01	0.1656425E 01	0.2435746E 00
10	0.270000E 01	0.240000E 01	0.7467098E 00	0.1653290E 01
11	0.460000E 01	0.420000E 01	0.3627475E 01	0.5725243E 00
12	0.510000E 01	0.440000E 01	0.4385571E 01	0.1442813E 01
13	0.420000E 01	0.490000E 01	0.3020998E 01	0.1879001E 01
14	0.650000E 01	0.520000E 01	0.6508241E 01	-0.1308241E 01
15	0.490000E 01	0.530000E 01	0.4082332E 01	0.1217666E 01
16	0.340000E 01	0.530000E 01	0.1808044E 01	0.3491955E 01
17	0.880000E 01	0.760000E 01	0.9995484E 01	-0.2395484E 01
18	0.107000E 02	0.780000E 01	0.1277624E 02	-0.5076249E 01
19	0.760000E 01	0.810000E 01	0.8176053E 01	-0.7605312E 01
20	0.520000E 01	0.980000E 01	0.6537191E 01	0.5262508E 01
21	0.108000E 02	0.102000E 02	0.1302786E 02	-0.2827669E 01
22	0.121000E 02	0.103000E 02	0.1499891E 02	-0.4698919E 01
23	0.750000E 01	0.106000E 02	0.8024433E 01	0.2575566E 01
24	0.124000E 02	0.111000E 02	0.1545371E 02	-0.4353777E 01
25	0.184000E 02	0.146000E 02	0.2455092E 02	-0.9950932E 01
26	0.162000E 02	0.154000E 02	0.2121530E 02	-0.5815308E 01
27	0.201000E 02	0.161000E 02	0.2712845E 02	-0.1102845E 02
28	0.840000E 01	0.192000E 02	0.9389107E 01	0.9810992E 01
29	0.157000E 02	0.263000E 02	0.1742482E 02	0.8875172E 01
30	0.250000E 02	0.327000E 02	0.3455780E 02	-0.1857802E 01
31	0.335000E 02	0.449000E 02	0.4745439E 02	-0.2545439E 01
32	0.403000E 02	0.730000E 02	0.5775554E 02	0.1524445E 02

A N O A

SOURCE SS(CORRECTED) DF

MEAN SS

REGRESSION

0.6191E 04

1

RESIDUAL

0.4712E 03

30

TOTAL

0.7062E 04

31

STANDARD DEVIATION 0.5389E 01

F

213.1

R-SQUARED

0.876

CORRELATION COEFFICIENT

0.935

ST. DEV. SLOPE

0.1038E 00

X-LEFT 0.000000E 00

X-RIGHT

0.800000E 02

Y-LEFT 0.000000E 00

Y-TOP

0.800000E 02

Y-BOT 0.000000E 00

Y-INC 0.8000E 01

BFG-I-555