

CONFIDENTIAL

To: Dr. O. E. Kurt

November 15, 1946

From: J. H. Huguet

Subject: TS 46-42 V, Air Analyses at Schuylkill Products Co. Plant

This report covers the second air contamination survey carried out at the Schuylkill lead smelter and includes all air analyses made since the first survey, reported in a memorandum of August 2, 1946 from R. H. Hobert to B. B. Turner. Data from both surveys are reviewed and evaluated.

The purpose of the second survey was (1) to determine if improved plant operation plus the wetting-down of dusty areas and piles of lead-bearing materials has decreased plant contamination, and (2) to obtain additional data as a basis for further operational and process improvements.

The general plant condition was much better during the second survey than during the period covered by Mr. Hobert's report, due primarily to a lower "low area" contamination (the content of air before it is contaminated by the smelter operation at an upwind sample point). The fact that the adjacent area contamination (fields within a half mile radius of the smelter) was much lower indicates that improved smelter operation should be credited with this reduction.

Data are inadequate to show that the wetting-down program has actually reduced the amount of lead dust in the air. However, the greatly improved house-keeping and general appearance are sufficient justification for continuing the program. This view is shared by the Schuylkill people.

Table I repeats the data of the first survey and presents the data of the second survey. Experiment numbers, revised sample point numbers to coincide with the permanent sample points shown on Figure 1, and classification letters have been added.

Table II shows the contamination of the various plant areas derived from the data of Table I.

Figure 1 shows a typical concentration pattern to be expected from the values obtained in Table II.

The results of these surveys may be summarized as follows:

1. By good operation of the fume collecting system, it is possible to maintain a low adjacent area contamination. This is desirable from the standpoint of the health of the community and also because of the resulting increase in plant contamination which occurs when the wind changes following poor operation.

2. Protection is needed (metal fume respirators) when tapping furnaces, working near dust, and, in general, throughout the smelter area. Wind direction and "low area" contamination dictate the open areas where respirators are not required. Hoods over pots should reduce smelter contamination.

KE 0002633

N 6354

3. Kiln operation is not so bad as might be expected; however, kiln cleaning is hazardous.

4. The dust concentration in the laboratory exceeded the tolerable limits and a laboratory annex for crushing, grinding and sampling was provided to lessen the dust exposure in the laboratory.

5. Normal stack loss (battery plate charge) is 8 lb./day/furnace.

Recommendations

A system of hoods is presently being installed over the kettles. It is recommended that their effectiveness be studied by additional air analyses. It is further recommended that areas adjacent to the Ethyl plant be studied to determine the extent of reverberatory furnace stack contamination.

Remarks

The Medical Department has done extensive work on correlating analyses of blood and urine on Schuylkill employees. This report should be of assistance to them in further studies of cause and effect.

The cooperative assistance of all those who participated in this work is acknowledged, particularly the Safety Department, the Schuylkill Management, and other Development Section personnel engaged in making the tests.

Reported by J. H. Huguet

Work Done by:

R. G. Beatty
E. W. Brignac
E. B. Brown
H. L. Burkholder, Jr.
C. B. Durham
L. C. Ricks

JHH/mgr
11-4-46

KE 0002634

SAMPLE CLASSIFICATION KEY FOR TABLES I and II

- A Low area contamination at an upwind sample point. Varies with wind direction.
- B High area contamination. Downwind of smelter. Air polluted by fume or dust.
- C Laboratory.
- D Kiln cleaning.
- E Kiln operating (downwind).
- F Dust samples (no other contamination).
- G Office.
- H White lunch room.
- I Colored lunch room.
- J Upwind of pots.
- K Downwind from pots.
- L Above pots - feed floor (no contamination from furnaces).
- M High special smelter (in fume or smoke).
- N Smelter fume from stacks - scrubbed or normal.
- O Adjacent area contamination. Normal area within half a mile of smelter.
Normal operation with fume through scrubbers.
- P Adjacent area contamination, high after faulty operation. Hot stacks open.
- Q Miscellaneous tests.
- X Must be thrown out because of insufficient wind to nullify recycle error of
Field Kit No. 2 before tailpipe installed.

KE 0002635

TABLE I - AIR ANALYSES

Point No.	Location	Survey No.	Date 1946	Time	Wind	Weather	mg./cu.ft.
1	Shop at White	1	7-23	2:00 PM	ENE	Part. Cloudy	0.018
			7-24	9:40 AM	WNW	Clear	.007
			7-24	9:40 AM	WNW	Clear	.010
	Drinking Fountain	2	8-28	11:05 AM	SW	Clear	0.002
			8-28	11:05 AM	SW	Clear	.001
			8-30	9:55 AM	SE	Cloudy	.003
			9-3	9:55 AM	E	Clear	.002
			9-15	2:30 PM	E	Clear	.004
2	Kiln	1	7-23	2:15 PM	ENE	Part. Cloudy	0.005
			7-24	10:35 AM	WNW	Part. Cloudy	.008
			7-24	11:00 AM	WNW	Part. Cloudy	.017
			7-24	11:00 AM	WNW	Part. Cloudy	.008
	Aspirator	2	8-19	10:15 AM	NW	Clear	0.009
			8-30	2:45 PM	NW	Clear	.003
			9-3	10:05 AM	E	Clear	.003
			9-4	10:15 AM	E	Clear	.003
			9-27	2:15 PM	E	Clear	.003
			10-7	9:50 AM	E	Clear	.014
3	Drive	1	7-23	2:40 PM	E	Stormy	0.005
	West of Kiln	2	8-15	4:00 PM	SW	Clr. aft. Rain	0.004
			8-19	4:00 PM	SW	Cloudy	.004
			9-4	10:00 AM	E	Clear	.002
			10-1	10:00 AM	NE	Clear	.006
			10-7	10:30 AM	E	Clear	.000
4	N. W. Corner of Smelter	1	7-23	3:25 PM	NE	Part. Cloudy	0.030
		2	8-15	2:30 PM	N	Clear	0.002
			8-30	1:35 PM	E	Cloudy	.001
			9-4	9:30 AM	E	Clear	.003
5	Between	1	7-24	9:40 AM	WNW	Clear	0.005
			7-25	10:30 AM	WNW	Clear	.007
	Offices and Shop	2	8-15	3:30 PM	ESE	Clr. aft. Rain	0.004
			8-15	4:15 PM	W	Clr. aft. Rain	.004
			8-19	9:35 AM	NW	Clear	.003
			8-19	11:30 AM	NW	Clear	.005
			8-19	3:30 PM	SE	Cloudy	.004
			8-19	4:15 PM	W	Cloudy	.004
			8-21	1:30 PM	ENE	Clear	.003
			8-21	3:50 PM	NE	Clear	.019
			8-21	4:00 PM	NE	Clear	.004
			8-22	2:00 PM	ESE	Clear	.005
			8-23	10:30 AM	W	Cloudy	.003
			8-27	3:20 AM	E	Raining	.000
			8-28	3:25 PM	W	Raining	.002
			8-30	10:45 PM	E	Cloudy	.001
			8-30	2:00 PM	NW	Clear	.001
			9-3	1:45 PM	E	Clear	.001

KE 0002636

AT SCHUYLKILL PRODUCTS COMPANY PLANT

Sampler	Sampling Height	Exp. No.	Classification	Remarks
FK-1	18 in.	1	B	Tapped furnace while sampling (closed area).
FK-1	18 in.	6	A	
E.S.	54 in.	6A	A	
FK-2	54 in.	78	A	First of 2 scrubbers in series.
FK-2	54 in.	78	A	Second scrubber.
FK-2	54 in.	85	A	
FK-2	54 in.	98	A	
FK-2	54 in.	118	B	
FK-1	18 in.	2	A	No reason to expect contamination. Use aspirator for
E.S.	60 in.	8	E	Much smoke. Should be high. /vacuum
E.S.	60 in.	8A	E	Much smoke. Should be high.
FK-1	18 in.	8B	E	Much smoke. Should be high.
FK-1	54 in.	43	D	Sinter house not operating.
FK-2	54 in.	96	E	Kiln in operation.
FK-2	54 in.	99	A	Kiln in operation.
FK-2	54 in.	109	D	Cleaning Kiln.
FK-1	54 in.	136	A	Kiln operating.
FK-1	54 in.	148	D	Cleaning Kiln.
FK-1	18 in.	3	E	Much wind current. Some odor from flue mud pile.
FK-1	54 in.	29	D	Cleaning Kiln.
Asp.	54 in.	47	A	Cleaning Kiln.
FK-2	54 in.	108	E	Kiln operating.
FK-1	54 in.	140	E	Kiln operating. Light smoke.
FK-1	54 in.	151	A	
FK-1	60 in.	5	F	Should be clear. Payloader moving tin dross passed /up wind.
FK-1	54 in.	36	A	
FK-2	54 in.	92	A	
FK-2	54 in.	106	F	Black skims being piled with dragline.
FK-1	18 in.	7	A	No apparent contamination.
E.S.	60 in.	21	A	
FK-1	54 in.	29	A	Had rained 20 min. before sample taken. Kiln not
FK-1	54 in.	31	A	(Same.) /operating.
FK-1	54 in.	42	A	
FK-1	54 in.	45	F	Truck working near. One truck passed on road.
Asp.	54 in.	46	D	Cleaning Kiln.
Asp.	54 in.	48	A	Cleaning Kiln.
FK-2	54 in.	58	B	/stack surrounding point.
FK-2	54 in.	61	M	Start up No. 1 Furnace. Hot stack open. Turn on
FK-2	54 in.	62	B,N	
FK-2	54 in.	64	B,N	
FK-2	54 in.	73	A	
FK-2	54 in.	75	A	
FK-2	54 in.	81	A	
FK-2	54 in.	89	A	
FK-2	54 in.	93	A	
FK-2	54 in.	103	A	

TABLE 1 (cont.)

Point No.	Location	Survey No.	Date 1946	Time	Wind	Weather	mg./cu.ft.	Sampler	Sampling Height	Exp. No.	Classification	Remarks
6	In field 100 yds. west of office.	1	7-24	10:45 AM	WNW	Part. Cloudy	0.007	FK-1	18 in.	9	O	
			7-25	11:00 AM	WNW	Clear	.008	FK-1	18 in.	18	O	
		2	8-15	2:00 PM	N	Clear	0.000	FK-1	54 in.	35	O	
			8-20	2:00 PM	N	Clear	.000	FK-1	54 in.	52	O	Furnaces down.
			10-1	10:15 AM	NE	Clear	.003	FK-1	54 in.	141	E	Kiln operating - fume around sample
7	Middle	1	7-24	11:30 AM	WNW	Clear	0.005	FK-1	36 in.	10	G	
			7-25	3:00 PM	WNW	Clear	.008	FK-1	36 in.	23	G	
			7-26	3:00 PM	NW	Clear	.001	E.S.	60 in.	28	G	
	Office	2	8-29	3:15 PM	N	Clear	0.003	FK-2	54 in.	83	G	
			9-3	1:30 PM	E	Clear	.005	FK-2	54 in.	102	G	
8	Laboratory	1	7-24	2:00 PM	NW	Part. Cloudy	0.016	FK-1	18 in.	11		First scrubber.
			7-24	2:00 PM	NW	Part. Cloudy	.008	FK-1	18 in.	11		Second scrubber.
			7-24	2:30 PM	NW	Part. Cloudy	.024	FK-1	18 in.	11A		Sample through respirator pad.
			7-26	2:15 PM	NW	Fair	.005	E.S.	60 in.	27	C	
		2	8-23	9:30 AM	E	Cloudy	0.001	FK-2	54 in.	69	X	Kiln not running - without discharge
			8-23	9:45 AM	E	Cloudy	.007	FK-2	54 in.	70	C	Kiln not running - with discharge
			8-23	10:00 AM	E	Cloudy	.001	FK-2	54 in.	71	X	Kiln not running - without discharge
			8-23	10:15 AM	E	Cloudy	.007	FK-2	54 in.	72*	C	Kiln not running - with discharge
			8-28	10:15 AM	NNW	Clear	.004	FK-2	54 in.	76	C	1st scrubber. Kiln not running.
			8-30	11:00 AM	E	Cloudy	.005	FK-2	54 in.	90	C	Kiln operating. Lab doors shut.
			9-3	10:30 AM	E	Clear	.002	FK-2	54 in.	101	C	Kiln operating. Lab doors shut.
			9-15	1:45 PM	E	Clear	.004	FK-2	54 in.	115	C, E	Kiln operating. Lab doors open.
		1	7-24	3:00 PM	NW	Clear	0.013	FK-1	18 in.	12	O	
			7-25	1:00 PM	WNW	Clear	.012	FK-1	18 in.	19	O	
10	1/4 mile SE of Smelter	1	7-24	3:15 PM	NW	Clear	0.004	FK-1	18 in.	13	O	Actually in fume from stack.
11	15 ft. N of Change House	1	7-24	1:30 PM	NW	Part. Cloudy	0.003	FK-1	18 in.	14	A	
12	White Lunch Room	1	7-24	2:15 PM	NW	Part. Cloudy	0.015	E.S.	60 in.	15	H	
		2	8-15	8:30 AM	NE	Clear	0.004	FK-1	54 in.	32	H	
			8-20	9:45 AM	NE	Clear	.004	FK-2	54 in.	49	X	
			8-29	3:35 PM	N	Clear	.001	FK-2	54 in.	84	H	
			9-3	2:15 PM	E	Clear	.002	FK-2	54 in.	105	H	
			9-4	10:00 AM	E	Clear	.001	FK-2	54 in.	110	H	
			9-25	10:00 AM	E	Clear	.001	FK-1	54 in.	125	H	
			10-7	10:50 AM	E	Clear	.002	FK-1	54 in.	152	H	
13	Colored Lunch Room	1	---	---	---	---	---	---	---	---	---	
		2	8-15	10:45 AM	NE	Clear	0.001	FK-1	54 in.	33	I	
			8-15	11:00 AM	NE	Clear	.001	FK-1	54 in.	33A	I	Check.
			8-20	10:45 AM	NE	Clear	.001	FK-2	54 in.	50	X	
			9-25	10:15 AM	E	Clear	.002	FK-1	54 in.	126	I	

* All future determinations made with FK-2 have discharge line on tail pipe. All prior determinations which were not made

TABLE 1 (con't)

Point No.	Location	Survey No.	Date 1946	Time	Wind	Weather	mg./cu.ft.	Sampler	Sampling Height	Exp. No.	Classification	Remarks
14	Change House Outside East	1	--	--	--	--	--	--	--	--	--	
		2	8-15	1:30 PM	N	Clear	0.001	FK-1	54 in.	30	A	
			8-20	10:45 AM	N	Clear	.001	FK-2	54 in.	51	A	
			8-21	2:00 PM	ENE	Clear	.003	FK-2	54 in.	59	A	
			8-27	11:25 AM	NW	Raining	.000	FK-2	54 in.	74	A	
15	South of Refining Kettles	1	7-24	2:50 PM	NW	Part. Cloudy	0.031	E.S.	60 in.	16	K	
			7-24	3:05 PM	NW	Part. Cloudy	.036	E.S.	60 in.	16AA	K	
		2	8-15	3:00 PM	N	Clear	0.002	FK-1	54 in.	37	K	
			8-20	3:00 PM	N	Clear	.002	FK-2	54 in.	56	K	
			8-28	2:15 PM	W	Clear	.015	FK-2	54 in.	80	K	
			8-30	10:15 PM	E	Cloudy	.003	FK-2	54 in.	87	J	
			9-25	9:40 AM	SE	Clear	.004	FK-1	54 in.	121	K	Furnace not tapped - Sample Point W #2 Furnace.
			9-25	10:45 AM	E	Clear	.004	FK-1	54 in.	122	K	Furnace not tapped - Sample Point W #2 Furnace.
			9-25	1:45 PM	SW	Clear	.004	FK-1	54 in.	123	K	Furnace not tapped - Sample Point W #2 Furnace.
			10-3	10:15 AM	E	Clear	.042(est.)	FK-1	54 in.	144	M	Furnace tapped - heavy smoke.
			10-7	10:20 AM	E	Clear	.036(est.)	FK-1	54 in.	150	M	Furnace tapped - heavy smoke.
16	SE Corner of Sinter House	1	7-25	10:30 AM	WNW	Clear	0.006	FK-1	18 in.	17	A	Sinter house not operating.
			7-26	2:00 PM	NW	Clear	.010	FK-1	18 in.	25	A	Sinter house not operating.
		2	8-16	2:15 PM	E	Clear	0.012	FK-1	54 in.	39	D	Sinter house not operating. Cleaning Kiln.
			8-30	2:30 PM	NW	Clear	.001	FK-2	54 in.	95	A	Sinter house not operating. Kiln operating.
17	North of No. 2 Refining Kettle	1	7-25	2:30 PM	WNW	Clear	0.009	FK-1	18 in.	20	J	Taking antimony off # 1 and # 2 kettles.
			7-25	2:45 PM	WNW	Clear	.012	FK-1	18 in.	20A	J	
		2	8-16	3:15 PM	S	Clear	0.010	FK-1	54 in.	41	K	
			8-30	1:25 PM	E	Cloudy	.007	FK-2	54 in.	91	K	Hood on #2 kettle
			9-5	2:15 PM	E	Clear	.008	FK-2	54 in.	117	J	
18	Furnace	1	7-26	1:30 PM	NW	Fair	0.013	FK-1	18 in.	24	L	No furnaces running. Kettle contamination only.
			7-26	1:30 PM	NW	Fair	.013	FK-1	18 in.	24A	L	
			7-26	1:30 PM	NW	Fair	.005	E.S.	60 in.	24B	L	
	Charging Floor	2	8-28	10:50 AM	NW	Clear	0.020	FK-2	54 in.	77	M	First scrubber. Furnace top smoking.
			8-28	10:50 AM	NW	Clear	.001	FK-2	54 in.	77	M	Second scrubber.
			8-30	2:15 PM	NW	Clear	.009	FK-2	54 in.	94	L	Feed floor clear of smoke. Dumped charge down
			9-5	2:00 PM	E	Clear	.004	FK-2	54 in.	116	L	
			9-25	11:00 AM	E	Clear	.006	FK-1	54 in.	124	L	Two charges dropped.
			9-25	11:00 AM	E	Clear	.004	FK-1	54 in.	127	L	One charge dropped.
			9-27	10:30 AM	E	Clear	.012	FK-1	54 in.	133	M	Smoke from tapped furnace coming up to feed floor
			10-3	10:00 AM	E	Clear	.018	FK-1	54 in.	143	M	One charge dropped. Moderate smoke.
19	1/4 mile East of Smelter	1	7-26	2:30 PM	NW	Clear	0.011	FK-1	18 in.	26	O	
		2	8-21	2:45 PM	NE	Clear	0.005	FK-2	54 in.	60	O	
			8-22	4:05 PM	E	Clear	.012	FK-2	54 in.	68	O	Contamination resulting from hot stack being open
			9-4	2:05 PM	E	Clear	.001	FK-2	54 in.	112	O	
			9-27	3:00 PM	SE	Clear	.003	FK-1	54 in.	138	O	
			9-27	3:15 PM	SE	Clear	.002	FK-1	54 in.	139	O	

X E 0002638

TABLE I (con't)

Point No.	Location	Survey No.	Date	Time	Wind	Weather	mg./cu.ft.	Sampler	Sampling Height	Exp. No.	Classification	Remarks
14	Change House Outside East	1	8-15	1:30 PM	N	Clear	0.001	FK-1	54 in.	34	A	
		2	8-20	10:45 AM	N	Clear	.001	FK-2	54 in.	51	A	
			8-21	2:00 PM	ENE	Clear	.003	FK-2	54 in.	59	A	
			8-27	11:25 AM	NW	Raining	.000	FK-2	54 in.	74	A	
15	South of Refining Kettles	1	7-24	2:50 PM	NW	Part. Cloudy	0.031	E.S.	60 in.	19	K	
			7-24	3:05 PM	NW	Part. Cloudy	.036	E.S.	60 in.	18AA	K	
		2	8-15	3:00 PM	N	Clear	0.002	FK-1	54 in.	37	K	
			8-20	3:00 PM	N	Clear	.002	FK-2	54 in.	54	X	
			8-28	2:15 PM	W	Clear	.015	FK-2	54 in.	80	K	
			8-30	10:15 PM	E	Cloudy	.003	FK-2	54 in.	87	J	
			9-25	9:40 AM	SE	Clear	.004	FK-1	54 in.	121	K	Furnace not tapped - Sample Point W #2 F
			9-25	10:45 AM	E	Clear	.004	FK-1	54 in.	122	K	Furnace not tapped - Sample Point W #2 F
			9-25	1:45 PM	SW	Clear	.004	FK-1	54 in.	123	K	Furnace not tapped - Sample Point W #2 F
			10-3	10:15 AM	E	Clear	.042(est.)	FK-1	54 in.	144	M	Furnace tapped - heavy smoke.
			10-7	10:20 AM	E	Clear	.036(est.)	FK-1	54 in.	150	M	Furnace tapped - heavy smoke.
16	SE Corner of Sinter House	1	7-25	10:30 AM	WNW	Clear	0.006	FK-1	18 in.	17	A	Sinter house not operating.
			7-26	2:00 PM	NW	Clear	.010	FK-1	18 in.	25	A	Sinter house not operating.
		2	8-16	2:15 PM	E	Clear	0.012	FK-1	54 in.	39	D	Sinter house not operating. Cleaning Kiln
			8-30	2:30 PM	NW	Clear	.001	FK-2	54 in.	95	A	Sinter house not operating. Kiln operat.
17	North of No. 2 Refining Kettle	1	7-25	2:30 PM	WNW	Clear	0.009	FK-1	18 in.	20	J	Taking antimony off # 1 and # 2 kettles.
			7-25	2:45 PM	WNW	Clear	.012	FK-1	18 in.	20A	J	
		2	8-16	3:15 PM	S	Clear	0.010	FK-1	54 in.	41	E	
			8-30	1:25 PM	E	Cloudy	.007	FK-2	54 in.	91	K	Hood on #2 kettle
			9-5	2:15 PM	E	Clear	.008	FK-2	54 in.	117	J	
18	Furnace	1	7-26	1:30 PM	NW	Fair	0.013	FK-1	18 in.	24	L	No furnaces running. Kettle contamination only.
			7-26	1:30 PM	NW	Fair	.013	FK-1	18 in.	24A	L	
			7-26	1:30 PM	NW	Fair	.005	E.S.	60 in.	24B	L	
	Charging Floor	2	8-28	10:50 AM	NW	Clear	0.020	FK-2	54 in.	77	M	First scrubber. Furnace top smoking.
			8-28	10:50 AM	NW	Clear	.001	FK-2	54 in.	77		Second scrubber.
			8-30	2:15 PM	NW	Clear	.009	FK-2	54 in.	94	L	Feed floor clear of smoke. Dumped charge
			9-5	2:00 PM	E	Clear	.004	FK-2	54 in.	116	L	
			9-25	11:00 AM	E	Clear	.006	FK-1	54 in.	122	L	Two charges dropped.
			9-25	11:00 AM	E	Clear	.004	FK-1	54 in.	127	L	One charge dropped.
			9-27	10:30 AM	E	Clear	.012	FK-1	54 in.	133	M	Smoke from tapped furnace coming up to f
			10-3	10:00 AM	E	Clear	.018	FK-1	54 in.	143	M	One charge dropped. Moderate smoke.
19	1/4 mile East of Smelter	1	7-26	2:30 PM	NW	Clear	0.011	FK-1	18 in.	26	O	
		2	8-21	2:45 PM	NE	Clear	0.005	FK-2	54 in.	60	O	
			8-22	4:05 PM	E	Clear	.012	FK-2	54 in.	68	B	Contamination resulting from hot stack
			9-4	2:05 PM	E	Clear	.001	FK-2	54 in.	112	O	
			9-27	3:00 PM	SE	Clear	.003	FK-1	54 in.	136	O	
			9-27	3:15 PM	SE	Clear	.002	FK-1	54 in.	136	O	

KE 0002639

TABLE I (cont)

Point No.	Location	Survey No.	Date 1946	Time	Wind	Weather	mg./cu.ft.	Sampler	Sampling Height	Exp. No.	Classification	Remarks
20		1	--	--	--	--	--	--	--	--	--	
	50 Ft.	2	8-16	2:45 PM	E	Clear	0.006	FK-1	54 in.	40	B	2 trucks passed men working 100 ft. to east.
			8-19	10:45 AM	NW	Clear	.006	FK-1	54 in.	44	A	/around
			8-21	11:00 AM	ENE	Clear	.009	FK-2	54 in.	56	B	Cutting agitator support off of #3 kettle. S
	West of		8-22	2:15 PM	ENE	Clear	.008	FK-2	54 in.	65	B, N	Fume from wood stack around sample point.
			8-28	11:00 AM	NW	Clear	.001	FK-2	54 in.	79	A	First scrubber.
			8-28	11:00 AM	NW	Clear	.000	FK-2	54 in.	79	A	Second scrubber.
	Smelter		8-30	10:00 AM	E	Cloudy	.029	FK-2	54 in.	86	J	First scrubber. Slagging furnace.
			8-30	10:00 AM	E	Cloudy	.001	FK-2	54 in.	86	A	Second scrubber.
			9-3	9:45 AM	E	Clear	.009	FK-2	54 in.	97	B	Furnace not tapped.
			9-3	2:00 PM	E	Clear	.009	FK-2	54 in.	104	B	Furnace tapped, but smoke not blowing to sam
			9-27	9:45 AM	SE	Clear	.004	FK-1	54 in.	139	B	
			10-3	10:30 AM	E	Clear	.005	FK-1	54 in.	145	B	
21		1	--	--	--	--	--	--	--	--	--	
	North of	2	8-20	2:30 PM	N	Clear	0.002	FK-2	54 in.	53	A	
	Smelter		8-21	10:30 AM	ENE	Clear	.001	FK-2	54 in.	55	A	
	Beyond		8-21	4:15 PM	NE	Clear	.003	FK-2	54 in.	63	A	
	L & A		8-22	3:15 PM	E	Clear	.004	FK-2	54 in.	67	A	
	Spur		9-4	9:45 AM	E	Clear	.000	FK-2	54 in.	107	A	
			9-27	1:45 PM	E	Clear	.000	FK-1	54 in.	135	A	
22		1	--	--	--	--	--	--	--	--	--	
	Blower	2	8-21	11:30 AM	ENE	Clear	0.007	FK-2	54 in.	57	K	Smoke from kettle coming directly to sample
	House		9-4	1:45 PM	E	Clear	.001	FK-2	54 in.	111	A	
	Door											
23		1	--	--	--	--	--	--	--	--	--	
	N. E. of	2	8-16	1:45 PM	NE	Clear	0.005	FK-1	54 in.	38	F	Changing bucket.
	Smelter		8-29	3:15 PM	W	Clear	.014	FK-2	54 in.	82	B	First scrubber. Second scrubber - nil.
			8-30	10:30 AM	E	Cloudy	.001	FK-2	54 in.	88	A	
			9-27	10:15 AM	E	Clear	.012	FK-1	54 in.	132	F	Breaking buttons 15 ft. upwind.
Special I		1	7-23	3:15 PM	E	Cloudy	0.025	FK-1	96 in.	4	M	Corner SW of kettle floor 8 ft. above #4 ket
Special II		1	7-25	9:45 AM	WNW	Clear	0.008	E.S.	60 in.	22	A	Truck loading B.P. on pile 20 ft. south. One
Special III		2	8-22	2:45 PM	ENE	Clear	0.006	FK-2	54 in.	66	F	Downwind of submarine battery plate pile whi
Special IV		2	8-23	11:00 AM	--	--	0.020 x 20	FK-2	--	120	Q	/being unloaded with dregline - dust contain
Special V		2	9-4	3:00 PM	E	Clear	0.002	FK-2	54 in.	114	F	25 instead of 500 turns taken directly from
Special VI		2	9-4	2:25 PM	E	Clear	0.001	FK-2	60 in.	113	Q	/stack equivalent to 0.27 lb./hr.
Special VII		2	9-27	10:00 AM	SE	Clear	0.020	FK-1	54 in.	131	F	Downwind of kettle dross pile - one barrow o
Special VIII		2	9-27	2:00 PM	E	Clear	0.005	FK-1	54 in.	153	G	/while sampling.
												Taken on Third St. in front of Elder's Jewel
												Traffic moderate.
												Two workers shovelling slag.
												Taken in laboratory annex where crude samp
												crushing, and grinding operations are per

KE 0002640

TABLE II - COMPARISON OF VARIOUS AREA CONCENTRATIONS, FIRST AND SECOND SURVEYS

Survey Exp.
No. No. Sampler mg./cu.ft.

A - Low Area Contamination

1	2	FK-1	0.005
	6	FK-1	.007
		E.S.	.010
	7	FK-1	.005
	14	E.S.	.003
	17	FK-1	.006
	21	E.S.	.007
	22	E.S.	.008
	25	FK-1	.010

Average 0.0068

2	29	FK-1	0.004
	31	FK-1	.004
	36	FK-1	.002
	42	FK-1	.003
	44	FK-1	.006
	47	FK-1	.004
	48	FK-1	.004
	51	FK-2	.001
	53	FK-2	.002
	55	FK-2	.001
	59	FK-2	.003
	63	FK-2	.003
	67	FK-2	.004
	73	FK-2	.003
	74	FK-2	.000
	75	FK-2	.000
	78	FK-2	.002
	79	FK-2	.001
	81	FK-2	.002
	85	FK-2	.003
	88	FK-2	.001
	89	FK-2	.001
	92	FK-2	.001
	93	FK-2	.001
	95	FK-2	.001
	98	FK-2	.002
	99	FK-2	.003
	103	FK-2	.001
	107	FK-2	.000
	111	FK-2	.001
	135	FK-1	.000
	136	FK-1	.003
	151	FK-1	.000

Average 0.0020

Survey Exp.
No. No. Sampler mg./cu.ft.

B - High Area Contamination

1	1	FK-1	0.018
		Average	0.018

2	40	FK-1	0.006
	56	FK-2	.009
	58	FK-2	.003
	62	FK-2	.004
	64	FK-2	.005
	65	FK-2	.008
	82	FK-2	.014
	97	FK-2	.007
	104	FK-2	.008
	118	FK-2	.004
	119	FK-1	.004
	130	FK-1	.004
	134	FK-1	.006
	145	FK-1	.005
	146	FK-1	.002
	149	FK-1	.010

Average 0.0063

C - Laboratory

1	27	E.S.	0.0053
---	----	------	--------

Average 0.0053

2	70	FK-2	0.007
	72	FK-2	.007
	76	FK-2	.004
	90	FK-2	.005
	101	FK-2	.002
	115	FK-2	.004
	128	FK-1	.002
	129	FK-1	.003
	137	FK-1	.002
	142	FK-1	.004
	147	FK-1	.005
	153	FK-1	.005

Average 0.0042

Note: All samples taken during first survey except Electrostatic were taken at ground level; therefore, dust might interfere with true area contamination. For this reason, these figures cannot be strictly compared.

All samples taken during second survey at 4.5 ft. level.

TABLE II (con't)

Survey No.	Exp. No.	Sampler	mg./cu.ft.
------------	----------	---------	------------

D - Kiln Cleaning

1	None		
2	29	FK-1	0.004
	39	FK-1	.012
	43	FK-1	.009
	46	FK-1	.004
	108	FK-2	.003
	148	FK-1	.014
	Average		0.0077

E - Kiln Operating

1	3	FK-1	0.005
	8	E.S.	.008
		E.S.	.017
		FK-1	.008
	Average		0.007
2	96	FK-2	0.003
	107	FK-2	.002
	115	FK-2	.004
	140	FK-1	.006
	141	FK-1	.003
	Average		0.0036

F - Dust Samples - Matl. Handling

1	5	FK-1	0.030
	Average		0.030
2	23	FK-1	0.005
	45	FK-1	.005
	66	FK-2	.006
	106	FK-2	.003
	114	FK-2	.002
	* 131	FK-1	.020
	132	FK-1	.012
	Average		0.0055

* Not included in average.

Survey No.	Exp. No.	Sampler	mg./cu.ft.
------------	----------	---------	------------

G - Office

1	10	FK-1	0.005
	23	FK-1	.008
	28	E.S.	.001
	Average		0.0047
2	83	FK-2	0.003
	102	FK-2	.005
	Average		0.0040

H - White Lunch Room

1	15	E.S.	0.015
	Average		0.015
2	32	FK-1	0.004
	84	FK-2	.001
	105	FK-2	.002
	110	FK-2	.001
	125	FK-1	.001
	152	FK-1	.002
	Average		0.002

I - Colored Lunch Room

2	33	FK-1	0.001
	(check)	FK-1	.001
	126	FK-1	.001
	Average		0.001

J - Upwind of Pots

1	20	FK-1	0.009
	20A	E.S.	.012
	Average		0.0105
2	87	FK-2	0.003
	100	FK-2	.002
	117	FK-2	.008
	Average		0.0043

KE

0002642

TABLE II (con't)

Survey No.	Exp. No.	Sampler	mg./cu.ft.
------------	----------	---------	------------

K - Downwind of Pits

1	16	E.S.	0.031
	16A	E.S.	.036
	Average		0.0335

2	37	FK-1	0.002 *
	41	FK-1	.010
	57	FK-2	.007
	80	FK-2	.015
	91	FK-2	.007
	121	FK-1	.004
	122	FK-1	.004
123	FK-1	.004	
Average		0.0082	

* Not included in average.

L - Above Pits

1	24	FK-1	0.013
		FK-1	.013
		E.S.	.005
Average		0.0103	

2	94	FK-2	0.009
	116	FK-2	.004
	124	FK-1	.006
	127	FK-1	.004
Average		0.0058	

M - High Special Smelter

1	4	FK-1	0.025
Average		0.025	

2	61	FK-2	0.019
	77	FK-2	.020
	86	FK-2	.029
	133	FK-1	.012
	143	FK-1	.018
	144	FK-1	.042
	150	FK-1	.036
Average		0.0251	

Survey No.	Exp. No.	Sampler	mg./cu.ft.
------------	----------	---------	------------

N - Smelter fume - Normal

2	62	FK-2	0.004
	64	FK-2	.005
Average		0.0045	

O - Adjacent Area - Normal

1	9	FK-1	0.007
	12	FK-1	.015
	13	FK-1	.004
	18	FK-1	.008
	19	FK-1	.012
	26	FK-1	.011
Average		0.0095	

2	35	FK-1	0.000
	52	FK-2	.000
	60	FK-2	.005
	112	FK-2	.001
	138	FK-1	.003
139	FK-1	.002	
Average		0.0018	

P - Adjacent Area - High

2	68	FK-2	0.012
---	----	------	-------

Note: Adjacent area contamination previous day was 0.005. The morning before this sample was taken hot stack was open 1/2 hr. - Area contamination increased 0.007 due to faulty operation

STORAGE AREA BATTERY

GARAGE-SHED

RAMP

MANUFACTURING

FURNACES

SMELTING
CHARGE
FLY

1
SHOP

SINTER HOUSE

16

OFFICE
E

CHANGE
HOUSE
12
13

PARKING
AREA

19

20

1/4 mi. ←

LIME

.006

.005

.003

0002611

STORAGE AREA BATTERIES

STORAGE AREA BATTERIES

N

RAMP

GARAGE-SHED

L & A R.R.

MANUFACTURING BUILDING

STORAGE

19

20

18

KETTLES

23

FURNACES

21

22

COMPRESSOR

1/4 mi.

LIME

SHOP

CHARGING FLOOR

Settling Tanks.
FLUE MUD PITS

(Unloading
Plates
(DUST))

SINTER HOUSE

JAW CRUSHER

16

17

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

PARKING AREA

CHANGE

12

HOUSE

13

WHITE

14

COLOR

15

16

17

18

19

20

21

22

23

24

25

26

SETTLING TANKS

DRAINAGE DITCH

NOTE

ENTIRE AREA-NORTH OF
DRAINAGE DITCH-RESTRICTED
EXCEPT-OFFICE AND SHOP

RESPIRATORS MUST BE WORN

SCHUYLKILL PRODUCTS CO.

SCALE-NONE

F.M.P.-AUG.23,1941

KE 0002645

9

1/4 mi.

1/4 mi.

1/4 mi.