

IX. _ APPENDIX III
MATERIAL SAFETY DATA SHEET

The following items of information which are applicable to a specific product or material containing lead shall be provided in the appropriate section of the Material Safety Data Sheet or other approved form. If a specific item of information is inapplicable (i.e. flash point) initials "n.a." (not applicable) should be inserted.

(i) The product designation in the upper left hand corner of both front and back to facilitate filing and retrieval. Print in upper case letters in as large print as possible.

(ii) Section I. Name and Source

(A) The name, address, and telephone number of the manufacturer or supplier of the product.

(B) The trade name and synonyms for a mixture of chemicals, a basic structural material, or for a process material; and the trade name and synonyms, chemical name and synonyms, chemical family, and formula for a single chemical.

(iii) Section II. Hazardous Ingredients

(A) Chemical or widely recognized common name of all hazardous ingredients.

(B) The approximate percentage by weight or volume (indicate basis) which each hazardous ingredient of the mixture bears to the whole mixture. This may be indicated as a range of maximum amount, i.e., 10-20% V; 10% max. W.

(C) Basis for toxicity for each hazardous material such as established OSHA standard in appropriate units and/or LD₅₀, showing amount and mode of exposure and species or LC₅₀ showing concentration and species.

(iv) Section III. Physical Data

(A) Physical properties of the total product including boiling point and melting point in degrees Fahrenheit; vapor pressure, in millimeters of mercury, vapor density of gas or vapor (air = 1), solubility in water, in parts per hundred parts of water by weight; specific gravity (water = 1); volatility, indicate if by weight or volume, at 70° Fahrenheit; evaporation rate for liquids (indicate whether butyl acetate or ether = 1); and appearance and odor.

(v) Section IV. Fire and Explosion Hazard Data

(A) Fire and explosion hazard data about a single chemical or a mixture of chemicals, including flash point, in degrees Fahrenheit; flammable limits, in percent by volume in air; suitable extinguishing media or agents; special fire fighting procedures; and unusual fire and explosion hazard information.

(vi) Section V. Health Hazard Data

(A) Toxic level for total compound or mixture, relevant symptoms of exposure, skin and eye irritation properties, principal routes of absorption, effects of chronic (long-term) exposure, and emergency and first aid procedures.

(vii) Section VI. Reactivity Data

(A) Chemical stability, incompatibility, hazardous decomposition products, and hazardous polymerization.

(viii) Section VII. Spill or Leak Procedures

(A) Detailed procedures to be followed with emphasis on precautions to be taken in cleaning up and safe disposal of materials leaked or spilled. This includes proper labeling and disposal of containers containing residues,

contaminated absorbants, etc.

(ix) Section VIII. Special Protection Information.

(A) Requirements for personal protective equipment, such as respirators, eye protection and protective clothing, and ventilation such as local exhaust (at site of product use or application), general, or other special types.

(x) Section IX. Special Precautions.

(A) Any other general precautionary information such as personal protective equipment for exposure to the thermal decomposition products listed in Section VI, and to particulates formed by abrading a dry coating, such as by a power sanding disc.

(xi) The signature of the responsible person filling out the data sheet, his address, and the date on which it is filled out.

(xii) The NFPA 704M numerical hazard ratings as defined in section (c) (5) following. The entry shall be made immediately to the right of the heading "Material Safety Data Sheet" at the top of the page and within a diamond symbol preprinted on the forms.

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MATERIAL SAFETY DATA SHEET

I PRODUCT IDENTIFICATION		
MANUFACTURER'S NAME	REGULAR TELEPHONE NO EMERGENCY TELEPHONE NO	
ADDRESS		
TRADE NAME		
SYNONYMS		
II HAZARDOUS INGREDIENTS		
MATERIAL OR COMPONENT	%	HAZARD DATA
III PHYSICAL DATA		
BOILING POINT (760 MM HG)		MELTING POINT
SPECIFIC GRAVITY (H ₂ O=1)		VAPOR PRESSURE
VAPOR DENSITY (AIR=1)		SOLUBILITY IN H ₂ O % BY WT
% VOLATILES BY VOL		EVAPORATION RATE (BUTYL ACETATE = 1)
APPEARANCE AND ODOOR		

IV FIRE AND EXPLOSION DATA			
FLASH POINT (TEST METHOD)		AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % BY VOL		LOWER	UPPER
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARD			
V HEALTH HAZARD INFORMATION			
HEALTH HAZARD DATA			
ROUTES OF EXPOSURE			
INHALATION			
SKIN CONTACT			
SKIN ABSORPTION			
EYE CONTACT			
INGESTION			
EFFECTS OF OVEREXPOSURE			
ACUTE OVEREXPOSURE			
CHRONIC OVEREXPOSURE			
EMERGENCY AND FIRST AID PROCEDURES			
EYES			
SKIN			
INHALATION			
INGESTION			
NOTES TO PHYSICIAN			

VI REACTIVITY DATA
CONDITIONS CONTRIBUTING TO INSTABILITY
INCOMPATIBILITY
HAZARDOUS DECOMPOSITION PRODUCTS
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION
VII SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED
NEUTRALIZING CHEMICALS
WASTE DISPOSAL METHOD
VIII SPECIAL PROTECTION INFORMATION
VENTILATION REQUIREMENTS
SPECIFIC PERSONAL PROTECTIVE EQUIPMENT
RESPIRATORY (SPECIFY IN DETAIL)
EYE
GLOVES
OTHER CLOTHING AND EQUIPMENT

IX SPECIAL PRECAUTIONS

**PRECAUTIONARY
STATEMENTS**

**OTHER HANDLING AND
STORAGE REQUIREMENTS**

PREPARED BY _____

ADDRESS _____

DATE _____

TABLE X-1

Physical Properties of Lead

<u>Property</u>	<u>Value</u>	
Atomic Number	82	
Atomic Weight	207.19	
Thermal Conductivity	0.346 watts/cm C	(25 C)
Density	11.344 g/ml	(16 C)
Melting Point	327.5 C	
Boiling Point	1744 C	
Electrical Resistivity	20.6 μ ohm-cm	(20 C)

Adapted from reference¹

TABLE X-2

Lead consumption in the United States, by products 1969

(Short tons)

<u>Product</u>	<u>1969</u>
Metal products:	
Ammunition	79,233
Bearing metals	17,406
Brass and bronze	21,512
Cable covering	54,203
Calking lead	44,857
Casting metals	9,918
Collapsible tubes	12,484
Foil	5,881
Pipes, traps, and bends	19,407
Sheet lead	25,818
Solder	72,626
Storage batteries:	
Battery grids, posts, etc.	280,386
Battery oxides	302,160
Terne metal	1,583
Type metal	25,660
Total	<u>973,134</u>
Pigments:	
White lead	6,617
Red lead and litharge	79,898
Pigment colors	14,670
Other	1,201
Total	<u>102,386</u>
Chemicals:	
Gasoline antiknock additives	271,128
Miscellaneous chemicals	602
Total	<u>271,730</u>
Miscellaneous uses:	
Annealing	4,252
Galvanizing	1,797
Lead plating	406
Weights and ballast	17,366
Total	<u>23,821</u>
Other, unclassified	<u>18,287</u>
Grand total	<u>1,389,358</u>

Adapted from Reference 2

TABLE X-3

Potential Occupational Exposures to Inorganic Lead

Babbitters	Gold refiners	Patent leather makers
Battery makers	Gun barrel browners	Pearl makers, imitation
Bookbinders	Incandescent lamp makers	Pipe fitters
Bottle cap makers	Insecticide makers	Plastic workers
Brass founders	Insecticide users	Plumbers
Brass polishers	Japan makers	Pottery glaze mixers
Braziers	Japanners	Pottery workers
Brick burners	Jewelers	Putty makers
Brick makers	Junk metal refiners	Riveters
Bronzers	Lacquer makers	Roofers
Brush makers	Lead burners	Rubber buffers
Cable makers	Lead counterweight makers	Rubber makers
Cable splicers	Lead flooring makers	Scrap metal workers
Canners	Lead foil makers	Sheet metal workers
Cartridge makers	Lead mill workers	Shellac makers
Ceramic makers	Lead miners	Ship dismantlers
Chemical equipment makers	Lead pipe makers	Shoe stainers
Chippers	Lead salt makers	Shot makers
Cutlery makers	Lead shield makers	Solderers
Demolition workers	Lead smelters	Solder makers
Dental technicians	Lead stearate makers	Steel engravers
Diamond polishers	Lead workers	Stereotypers
Dye makers	Linoleum makers	Tannery workers
Electronic device makers	Linotypers	Temperers
Electroplaters	Lithographers	Tetraethyl lead makers
Electrotypers	Match makers	Tetramethyl lead makers
Emery wheel makers	Metal burners	Textile makers
Enamel burners	Metal cutters	Tile makers
Enamelers	Metal grinders	Tin foil makers
Enamel makers	Metal miners	Tinners
Farmers	Metal polishers	Type founders
File cutters	Metal refiners	Typesetters
Filers	Mirror silverers	Varnish makers
Flower makers, artificial	Motor fuel blenders	Wallpaper printers
Foundry molders	Musical instrument makers	Welders
Galvanizers	Painters	Zinc mill workers
Glass makers	Paint makers	Zinc smelter chargers
Glass polishers	Paint pigment makers	

From reference 3

TABLE X-4

General Exposure from Operations Utilizing Lead

Operation	Incidence of Plumbism	Average Lead Concentrations Found Air (mg/m ³)		Urine (mg/l)	
		Avg	Max	Avg	Max
Metalizing	High				
Paint spraying: red lead	High	1.8	3.5		
Brush painting: red lead	Some			0.26	0.35
Paint sanding, scraping	High	0.32		0.30	0.48
Leaded iron pouring	High	19.5			
Bearing bronze pouring	Some	1.86	3.4	0.54	0.82
Bearing bronze grinding	Low	0.84		0.33	
Storage-battery manufacturing:					
Mixing	Some	0.73	3.8	0.70	1.00
Pasting	Some	0.75	2.1	0.26	0.48
Grouping	Some	0.50	4.0	0.22	0.68
Separating	Low	0.15	0.41	0.15	0.27
Casting	Low	0.26	0.65	0.19	0.31
Lead smelting, refining	Some	0.35	1.45	0.35	0.88
Lead burning	Some	0.57	1.5	0.26	0.37
Homogenizing	Some	3.0			
Painted-steel burning	Some			0.41	0.50
Lead powder mixing	Some	2.2	10.2	0.22	0.32
Lead sanding, grinding	Some	4.2	7.4	0.26	
Paint mixing	Low	1.75	5.8	0.17	0.29
Painting, N.O.C.	Low			0.09	0.16
Paint spraying: chrome yellow	Low	3.9		0.10	
Wire patenting	Low	0.29	0.60	0.12	0.21
Steel tempering	Low	0.13	0.22	0.10	0.21
Bronze pouring	Low	0.34	1.56	0.20	0.34
Bronze grinding	Low	0.47	1.24	0.17	0.34
Lead casting	Low	0.12	0.35	0.14	0.37
Printing:					
Stereotyping	Low	0.26	0.51	0.15	0.22
Linotyping	None	0.07	0.24	0.08	0.14
Soldering, tinning	Low	0.25	0.62	0.15	0.23
Lead sawing	Low	0.25			
Lead glass working	Low	0.01	0.02	0.05	0.10
Gasoline-tank cleaning	Low			0.07	0.14

TABLE X-5

Biochemical Values at Two Airborne Levels of Lead

Biochemical Test, mean (and 95% confidence limits)				
Air Pb conc. mg/m	Blood Pb mg/100 ml	Urine Pb mg/liter	Urine Copropor- phyrin (Donath)	Urine ALA* mg/100 ml
0.20	0.070 (0.048-0.092)	0.143 (0.056-0.230)	4.2 (2.4-6.0)	1.8 (0.3-3.3)
0.15	0.060 (0.038-0.082)	0.118 (0.031-0.205)	3.6 (1.8-5.4)	1.4 (0.1-2.9)

* ALA values were determined by a method which probably gives higher values than do other methods, thus a high "normal" value.

From Williams, King and Walford⁴⁷

TABLE X-6

Representative Lead Exposures in the Printing Industry

Location	Nature of Operations or Exposure	Lead Concentration in mg/m ³			Remarks
		Max.	Min.	Ave.	
Linotype Room	Lead concentration about 12" above lead pot of one of centrally loca- ted machines	0.027	0.007	0.014	Pot temperature ranged from 515° to 550° F.
	Exposure of machine operators	0.020	0.006	0.012	
Monotype Room	Lead concentration about 12" above lead pot of one of centrally loca- ted machines	0.570	0.056	0.163	Pot temperature ranged from 660° to 835° F.
	Exposure of machine operators	0.096	0.027	0.056	
Remelt Room	Average room concentration	0.158	0.004	0.041	Melt kettles enclosed are exhaust ventilated
	Workers' exposure while filling molds	0.132	0.035	0.073	Worker's face about 18 to 24 ¹¹ above molds while being poured. Lead temperature 600° to 700° F.
	Room concentration while drossing kettles and while removing cop- per plates from electrotypes	0.257	0.149	0.196	Several kettles drossed during sample but only one kettle door open at a time
Composing Room	Average room concentration	0.118	0.016	0.062	
Stereotype Room	Concentration at or near the breathing level of workers operating lead pots, pouring molds, etc.	0.026	0.003	0.008	Pot temperature ranged from 550° to 600° F.
	Exposure of operators of trimming and finishing machines such as saws, bevelers, planers and routers	0.442	0.002	0.104	

9-X

TABLE X-7

REPRESENTATIVE LEAD EXPOSURE IN PRINTING OPERATIONS

Description of Exposure	No. Of Samples	Range mg/m ³	Mean mg/m ³
Lead Concentrations over Linotype Melting Pots	9	< 0.01 - 0.054	0.029
Concentrations While Cleaning Linotype Plungers	6	0.06 - 2.8	0.783
Concentrations Around Metal Pots			
While Removing Dross	9	1.4 - 160.0	29.30
Atmospheric Lead at Breathing Zone of Linotype Operators	17	< 0.01 - 0.049	0.021
Atmospheric Lead in Hand Composing Areas			
Adjacent to Linotypes	7	< 0.01 - 0.045	0.017
Lead in General Atmosphere of Monotype Rooms	12	< 0.01 - 0.060	0.028
Lead Concentration 6 inches Above Monotype Metal Pots	22	< 0.01 - 10.0	1.070
Lead Concentrations 19 inches Above Monotype Metal Pots	8	< 0.01 - 0.38	0.148
Atmospheric Lead in Vicinity of Unexhausted Remelt Furnace During Various Phases of Operation			
1. Loading & Heating	8	< 0.01 - 0.16	0.052
2. Cleaning & Drossing	7	5.10 - 50.0	15.26
3. Pouring	7	0.094 - 0.78	0.313
Atmospheric Lead in Vicinity of Exhausted Remelt Furnace During Various Phases of Operation			
1. Loading & Heating	2	0.881 - 0.15	0.116
2. Cleaning & Drossing	2	1.8 - 5.3	3.55
3. Pouring	2	0.053 - 0.15	0.102

Sampling - Electrostatic Precipitator

Analysis - Dithizone

Adapted from reference ⁵⁴

TABLE X-8

Representative Lead Exposure in the Printing Industry

	<u>Years in Printing</u>	<u>Calculated Exposure mg/m³</u>	<u>Urine Lead mg/liter</u>
Linotype Operators	9	0.03	-
	16	0.03	0.11
	15	0.10	0.04
	6	0.02	-
	20	0.02	0.17
	15	0.02	0.11
	19	0.02	0.17
	38	0.02	-
	12	0.02	-
	22	0.02	-
	11	0.02	-
	40	0.09	0.16
	18	0.02	0.11
	3	0.02	0.32
	8	0.04	0.21
	6	0.02	0.19
	4	0.02	0.24
	15	0.10	0.28
	20	0.10	0.26
Monotype Operators	3	0.04	0.03
	10	0.09	0.28
	19	0.06	0.17
	7	0.04	0.10
	17	0.06	0.18
Remelt Men	2	0.38	0.17
	7	0.15	0.13
	1	0.04	0.28
	10	0.09	0.06
	3	0.50	-
	5	0.03	-
	9	0.13	0.19

TABLE X-8 Cont.

	<u>Years in Printing</u>	<u>Calculated Exposure mg/m³</u>	<u>Urine Lead mg/liter</u>
Stereotypers	1	0.09	0.27
	10	0.10	0.17
	4	0.08	0.29
	1	0.10	0.26
Others	26	0.02	0.23
	1	0.03	0.36
	2	0.07	0.23
	6	0.02	-
	10	0.02	-

Sampling - Electrostatic Precipitator
 Analysis - Dithizone

Adapted from Reference 55

TABLE X-9

Representative Mean Lead Exposures and Biologic Lead Levels
for Workers in the Storage Battery Industry

Job	Number Workers	Air Lead Concentration, mg/m^3		Blood Lead Concentration, $\text{mg}/100\text{g Blood}$		Urine Lead Concentration, mg/Liter	
		Mean	SE	Mean	SE	Mean	SE
Machine pasting	6	0.218	0.025	74.2	4.7	163.8	21.2
Hand pasting	8	0.150	0.029	63.2	9.2	111.3	14.1
Forming	9	0.134	0.013	63.0	2.7	114.0	7.2
Casting	6	0.052	0.003	-	-	87.9	6.8
Plastics department A	5	0.012	0.0008	27.2	1.4	34.5	3.2
Plastics department B	5	0.009	0.0008	29.1	1.6	34.8	2.0

Adapted from reference ⁴⁷

TABLE X-10

Average and Median Blood Lead Content in mg/100 g of Blood in Storage-Battery Workers, by Exposure and Duration of Employment.

Duration of Lead Exposure, Years	Air Lead Content, mg/m ³				
	0-0.074	0.075-0.14	0.15-0.29	≥0.3	% >0.15
0-4					
Number	17	16	32	20	
Average	0.0187	0.0316	0.0378	0.0463	59
Median	0.021	0.030	0.038	0.050	
5-9					
Number	10	13	40	24	
Average	0.0278	0.0405	0.0501	0.0505	74
Median	0.033	0.040	0.043	0.050	
10-14					
Number	23	24	30	32	
Average	0.0198	0.0375	0.0502	0.0481	57
Median	0.018	0.038	0.046	0.048	
15+					
Number	44	30	59	45	
Average	0.0293	0.0407	0.0457	0.0493	58
Median	0.023	0.036	0.045	0.045	

Analysis - Dithizone

Adapted from references 4 and 11

TABLE X-11
 REPRESENTATIVE LEAD EXPOSURES WHILE PERFORMING
 WELDING OPERATIONS UNDER VARIOUS CONDITIONS

Coating	Type weld	Location of sampling probe	Lead	Avg.
POOR VENTILATION†		EXPERIMENTAL AREA	mg/m ³	
Zinc-silicate	Elect. arc	2' directly above welding	15.2	
" "	" "	3' above and 2-1/2' back of welding*	0.86	
" "	" "	3' above and 2' back of welding*	3.27	5.63
" "	" "	3' above and 2' back of welding*	3.65	
" "	" "	Attached to welder's shoulder*	5.16	
Zinc-silicate	Oxy-acetylene	1' above and 1' back of welding*	3.53	
" "	" "	3' above and 2-1/2' back of welding*	1.24	
" "	" "	3' above and 2-1/2' back of welding*	1.56	
" "	" "	3' above and 2' back of welding*	1.80	1.96
" "	" "	3' above and 2' back of welding*	1.80	
" "	" "	3' above and 2' back of welding*	1.76	
" "	" "	3' above and 2' back of welding*	2.00	
Galvanized steel	Elect. arc	2' above and 1' back of welding*	0.40	
" "	" "	2' above welder's face	0.69	
" "	" "	6' above floor, 5' in front of welder	0.35	0.52
" "	" "	Attached to welder's shoulders*	0.6 ⁴	
Galvanized steel	Oxy-acetylene	2' above and 2' back of welding*	0.66	
" "	" "	3' above and 2-1/2' back of welding*	0.24	
" "	" "	2' above and 1' back of welding*	0.41	0.43
" "	" "	6' above and 5' back of welder	0.30	
" "	" "	3' above and 1' back of welding	0.55	

X-12

TABLE X-11 (CONTINUED)

Coating	Type weld	Location of sampling probe	Lead	Avg.
Clean steel	Elect. arc	2' above and 1' back of welding. (Control sample)	0	
" "	Oxy-acetylene	20' from welding enclosure (Room air. Control sample)	0	
" "	Elect. arc	20' from welding enclosure (Room air. Control sample)	0	
GOOD VENTILATION		(BREATHING ZONE SAMPLES)		
Zinc-silicate	Oxy-acetylene cutting	Attached near welder's nose**	0.18	
Zinc-silicate	Electric arc beading	Inserted in welder's hood**	0.08	
Zinc-silicate	Electric arc welding	Inserted in welder's hood**	0.14	
Galvanized steel	Oxy-acetylene cutting	Attached near nose**	0.01	
Galvanized steel	Electric arc welding	Inserted in welder's hood**	0.01	
ROOM AIR SAMPLES		(DOWNWIND FROM WELDER)		
Zinc-silicate	Elect. arc	3' downwind from the welder. 3' from floor	0.81	
" "	" "	3' downwind from the welder. 3' from floor	0.76	0.78
" "	" "	20' downwind from the welder. 3' from floor	0.26	
" "	" "	20' downwind from the welder. 3' from floor	0.24	0.25
" "	" "	20' downwind from the welder. 6' from floor	0.27	
" "	" "	20' downwind from the welder. 6' from floor	0.53	0.40

TABLE X-11 (CONTINUED)

<u>Coating</u>	<u>Type weld</u>	<u>Location of sampling probe</u>	<u>Lead</u>	<u>Avg</u>
OUTDOOR SAMPLES		(10 MPH WIND)		
Zinc-silicate	Elect. arc	Welder sat upwind. Probe inserted in hood.	0.06	
Galvanized steel	Elect. arc	Welder sat upwind. Probe inserted in hood.	0.01	
Galvanized steel	Oxy-acetylene (cutting)	Welder sat upwind. Probe was held 3" from nose.	0.00	

- † Samples were not collected inside welder's hoods.
- * Sample probe located near welder's face.
- ** Welder located upwind from welding.

Analysis - Dithizone
Adapted from Reference 56

TABLE X-12

Lead Exposures and Urinary Lead Levels from
the Cutting of Painted Structural Steel

Exposures (Breathing Zone)	No.	Exposure mg/m ³	
	1	0.18	
	2	0.50	
	3	2.40	
	4	1.70	
	Avg.	1.20	

Urine-Lead	Respirator	Sp. Gr.	Mg. Lead/Liter Urine	Avg.
	Mech. Filter	1.014	0.06	
Mech. Filter	1.025	0.34		
Mech. Filter	1.026	0.30		
Mech. Filter	1.030	0.53		
Mech. Filter	1.016	0.36		
Mech. Filter	1.020	0.58		
Mech. Filter	1.034	0.28		
Mech. Filter	1.025	0.70		
Mech. Filter	1.031	0.50		
Mech. Filter	1.020	0.49		
Mech. Filter	1.030	0.33		
Mech. Filter	1.020	0.26		
				Avg. 0.39
	Canister-Type	1.020	0.26	
	Canister-Type	1.030	0.24	
				Avg. 0.25

Adapted from Reference 57

TABLE X-13

DISTRIBUTION OF PERSONS IN VARIOUS OCCUPATIONAL GROUPS ACCORDING TO
CONCENTRATIONS OF LEAD IN BLOOD-CINCINNATI

Lead in blood, mg/100g	Service station attend- ants 1956	Refinery handlers of gasoline 1956	Park- ing attend- ants 1956	Garage Me- chanics 1956	Drivers of		Police		Fire- men 1963	Post- Office Emp. 1963	City Health Dept. Emp. 1963	
					cars 1956	cars 1963	Traffic officers 1956	All police* 1963				
0-0.009												
0.010-0.019	1	2				1		3	12	18	22	10
0.020-0.029	42	30	1	8	17	4	7	23	78	123	90	24
0.030-0.039	71	46	26	43	19	9	9	9	27	44	24	2
0.040-0.049	14	8	20	72	9		1	4	5	6	2	
0.050-0.059	2			25							1	
0.060-0.069			1	4				1	1		1	
Totals	130	86	48	152	45	14	17	40	123	191	140	36
Mean	0.028	0.027	0.034	0.038	0.033	0.031	0.031	0.030	0.025	0.025	0.023	0.021
Std. Dev.	0.007	0.006	0.006	0.009	0.006	0.006	0.006	0.009	0.007	0.006	0.007	0.005

*Includes traffic officers for 1963.

From reference 58

TABLE X-14
 DISTRIBUTION OF PERSONS IN VARIOUS OCCUPATIONAL GROUPS ACCORDING TO
 CONCENTRATIONS OF LEAD IN URINE-CINCINNATI

Lead in urine, mg/100g	Service station attend- ants 1956	Refinery handlers of gasoline 1956	Park- ing attend- ants 1956	Garage Me- chanics 1956	Drivers of cars		Police		Fire- men 1963	Post- Office Emp. 1963	City Health Dept. Emp. 1963	
					1956	1963	Traffic officers 1956	1963				All police* 1963
0-0.009	1	1	1	4	1			2	2			
0.010-0.019		1	4	2	28		9		6	47	49	12
0.020-0.029	74	49	21	39	11	5	5	13	29	71	52	18
0.030-0.039	33	22	12	33	2	4		7	21	36	19	6
0.040-0.049	13	9	7	30	2	4	3	8	30	19	9	1
0.050-0.059	5		2	21		1		2	12	9	1	
0.060-0.069	3	4	1	16				1	7	2		
0.070-0.079				4	1			1	3	1		
0.08-0.12	1			3				3	6			
Totals	130	86	48	152	45	14	17	37	116	185	130	37
Mean	0.027	0.028	0.028	0.040	0.020	0.036	0.023	0.039	0.038	0.027	0.022	0.022
Std. Dev.	0.010	0.013	0.011	0.020	0.011	0.010	0.011	0.020	0.018	0.011	0.009	0.007

*Includes traffic officers for 1963.

From reference 58

X-17