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Urban Soil Lead Abatement Demonstration Project

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Volume III: Part 2
Baltimore Report

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Urban Soil Lead Abatement Demonstration Project

Volume III. Part 2
Baltimore Report

Environmental Criteria and Assessment Office
Office of Health and Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

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Baltimore Lead in Soil Project

Data Management Plan

Overview of Data Management Plan

The Baltimore Lead in Soil Project (BLISP) has collected several kinds of environmental and biological data in the hope of explaining the question: Does the removal of lead (Pb) through the abatement of Soil surrounding a house and exterior Paint have an impact on the levels of Lead in children's blood who live in that house. These data have been entered, manipulated, and quality controlled using Personal Computers and the Dbase III+ software package. These data are being analyzed statistically using the SAS statistical Software Package.

Quality Control

Quality control has been achieved through the duplication of effort and computer programs. Data has usually progressed through the following steps.

1) Data transferred from laboratory source to data entry sheets. (Done twice)
2) Data entered into computer for each set of data entry sheets.
3) Dbase program run on two files to identify differences.
   (See appendix A - page 1)

Organization of Data

Data collected can be cast into four groups; Environmental, Biological, Questionnaire, and Support Data. Support files contain the names of participants, names of property owners, etc. Two of the three groups of data, Biological and Questionnaire, are gathered every time blood samples are retrieved from the participants. BLISP refers to each Blood sampling as a round. Our study presently consist of six rounds. Within the third group, Environmental Data, Soil and Dust samples were retrieved before and after abatement, Paint samples were retrieved once for the Exterior and Interior of the house, and Water samples were retrieved once during the pre-abatement period of the project.

Producing Files for Data Analysis

The files generally do not contain enough information to be analyzed directly. However, we can combine information from various files, to produce a new file with just the information you want to analyze. The fields **PROPID** and **ID** are KEY fields in this database. The field PROPID is an identification number for a property in the study. The field ID is an identification number for each child participant in the study. Each file contains one of these KEY fields.

This means that any variables in this database can be combined into a new file using those key fields or any fields that happen to be contained in the two files being merged. The new file can be then analyzed directly using a statistical package. All the **Environmental** data files contain the field **PROPID**. All the **Biological** data files contain the field **ID**. All the **Questionnaire** data files contain both the **KEY** fields, **ID** and **PROPID**. The Questionnaire file is the key link between the Biological and Environmental data files. Other important fields in this database include the **PARENTCODE, ROUND, DOT,** and **BIRTH** fields. The age of participants can be calculated using the **DOT** - Date of Test field in the QUESTIONNAIRE File and the **BIRTH** field in the KIDS File. One might want to add or delete records from a new file based on the **ROUND** field, which occurs in the QUESTIONNAIRE and BIO_# Files. If you wanted to group participants with the same mother you would use the **PARENTCODE** field located in the KIDS File.

There are fields which can be broken down into new fields, because these fields might have some special qualities. One of these is the **PROPID** field. BLISP maintains a study area and a control area, each having distinct properties (homes). The study area is designated as **Area 1** and the control area is designated as **Area 2.** This data item is the only field in the database which has been broken down into another field. The field **AREA** was derived from the field **PROPID** in the Questionnaire file and placed back into the original Questionnaire file. There also exist a street code and a house code within the **PROPID** field. Refer to the field definitions section for specific information on fields with multiple values, such as SAMPNUM AND SAMPCODE.

A very important factor to consider when analyzing this database is that an experience data processing professional, or an environmental analyst with high level data manipulation skills using SAS or Dbase Language is needed to get the data into the various structure(s) that you may want to analyze.

Files

Biological	Questionnaire	Environmental
BIO_1.	QUEST_1.	PRE_SOIL.
BIO_2.	QUEST_2.	POSTSOIL.
BIO_3.	QUEST_3.	PRE_DUST.
BIO_4.	QUEST_4.	WATER.
BIO_5.	QUEST_5.	I_PAINT.
BIO_6.	QUEST_6.	E_PAINT.

Support Files

KIDS.

File Structures

Structures for KIDS File

field no.	field name	data type	width	dec
1	ID	NUMERIC	3	0
2	BIRTH	DATE	8	0
3	PARENTCODE	NUMERIC	4	0

Structures for BIO_# file

field no.	field name	data type	width	dec
1	ID	NUMERIC	3	0
2	ROUND	NUMERIC	1	0
3	MPB	NUMERIC	5	1
4	MFP	NUMERIC	3	0
5	FE	NUMERIC	3	0
6	TIBC	NUMERIC	3	0
7	H	NUMERIC	6	2
8	ELB	NUMERIC	6	2

Structures for WATER file

field no.	field name	data type	width	dec
1	PROPID	NUMERIC	7	0
2	SAMPNUM	CHARACTER	9	0
3	SAMPCODE	NUMERIC	4	0
4	WF	NUMERIC	6	3

Structures for E_PAINT file

field no.	field name	data type	width	dec
1	PROPID	NUMERIC	7	0
2	SAMPNUM	CHARACTER	9	0
3	SAMPCODE	NUMERIC	4	0
4	PF_XRF	NUMERIC	6	0

Structures I_PAINT file

field no.	field name	data type	width	dec
1	PROPID	NUMERIC	7	0
2	SAMPNUM	NUMERIC	2	0
3	SAMPCODE	NUMERIC	5	0
4	PF_PGT_1	NUMERIC	6	0
5	PF_PGT_2	NUMERIC	6	0
6	PF_PGT_3	NUMERIC	6	0

Structures for PRE_DUST file

field no.	field name	data type	width	dec
1	PROPID	NUMERIC	7	0
2	SAMPNUM	CHARACTER	9	0
3	SAMPCODE	NUMERIC	4	0
4	WGT_AAS	NUMERIC	8	0
5	WGT_XRF	NUMERIC	8	0
6	AAS_PPM	NUMERIC	8	0
7	XRF_PPM	NUMERIC	8	0

Structures for PRE_SOIL file

field no.	field name	data type	width	dec
1	PROPID	NUMERIC	7	0
2	SAMPNUM	CHARACTER	9	0
3	SAMPCODE	NUMERIC	4	0
4	FSF	NUMERIC	4	0

Structures for POSTSOIL file

field no.	field name	data type	width	dec
1	PROPID	NUMERIC	7	0
2	SAMPNUM	CHARACTER	9	0
3	SAMPCODE	NUMERIC	4	0
4	FSF	NUMERIC	4	0

Structures for QUESTIONNAIRE file

field no.	field name	data type	width	dec
1	CITY	NUMERIC	3	0
2	ROUND	NUMERIC	3	0
3	FORM	NUMERIC	3	0
4	PROPID	NUMERIC	9	0
5	AREA	NUMERIC	3	0
6	ADDN	NUMERIC	4	0
7	ADD	NUMERIC	6	0
8	ID	NUMERIC	5	0
9	INT	NUMERIC	3	0
10	DOT	DATE	8	0
11	Q100A	NUMERIC	3	0
12	Q100B	NUMERIC	3	0
13	Q102A	NUMERIC	4	0
14	Q102B	NUMERIC	4	0
15	Q200	NUMERIC	4	0
16	Q201A	NUMERIC	4	0
17	Q201B	NUMERIC	4	0
18	Q300	DATE	8	0

19	Q301	NUMERIC	3	0
20	Q302	NUMERIC	3	0
21	Q303	NUMERIC	4	0
22	Q304	NUMERIC	3	0
23	Q305	NUMERIC	4	0
24	Q_306A	NUMERIC	3	0
25	Q_306B	NUMERIC	3	0
26	Q_306C	NUMERIC	3	0
27	Q_306D	NUMERIC	3	0
28	Q_306E	NUMERIC	3	0
29	Q_307A	NUMERIC	3	0
30	Q_307B	NUMERIC	3	0
31	Q_307C	NUMERIC	3	0
32	Q_307D	NUMERIC	3	0
33	Q_307E	NUMERIC	3	0

field no.	field name	data type	width	dec
34	Q308	NUMERIC	3	0
35	Q310	NUMERIC	4	0
36	Q311	NUMERIC	4	0
37	Q312	NUMERIC	4	0
38	Q400	NUMERIC	3	0
39	Q401	NUMERIC	3	0
40	Q402	NUMERIC	3	0
41	Q403	NUMERIC	3	0
42	Q403A	NUMERIC	3	0
43	Q403B	NUMERIC	3	0
44	Q403C	NUMERIC	3	0
45	Q404	NUMERIC	3	0
46	Q405	NUMERIC	3	0
47	Q407	NUMERIC	3	0
48	Q407A	NUMERIC	4	0
49	Q408	NUMERIC	3	0
50	Q409	NUMERIC	3	0
51	Q410	NUMERIC	3	0
52	Q411	NUMERIC	3	0
53	Q412	NUMERIC	4	0
54	Q413	NUMERIC	3	0
55	Q414	NUMERIC	3	0

56	Q415	NUMERIC	4	0
57	Q500	NUMERIC	3	0
58	Q501	NUMERIC	3	0
59	Q502	NUMERIC	3	0
60	Q_505A	NUMERIC	3	0
61	Q_505B	NUMERIC	3	0
62	Q_505C	NUMERIC	3	0
63	Q_505D	NUMERIC	3	0
64	Q_505E	NUMERIC	3	0
65	Q_505F	NUMERIC	3	0
66	Q_506A	NUMERIC	3	0
67	Q_506B	NUMERIC	3	0
68	Q_506C	NUMERIC	3	0
69	Q_506D	NUMERIC	3	0
70	Q_506E	NUMERIC	3	0

field no.	field name	data type	width	dec
71	Q_506F	NUMERIC	3	0
72	Q600	NUMERIC	3	0
73	Q601A	NUMERIC	3	0
74	Q601B	NUMERIC	3	0
75	Q602A	NUMERIC	3	0
76	Q602B	NUMERIC	4	0
77	Q602C	NUMERIC	3	0
78	Q603A	NUMERIC	3	0
79	Q603B	NUMERIC	4	0
80	Q603C	NUMERIC	3	0
81	Q604A	NUMERIC	3	0
82	Q604B	NUMERIC	3	0
83	Q700A	NUMERIC	3	0
84	Q700B	NUMERIC	6	0
85	Q701	NUMERIC	3	0
86	Q702	NUMERIC	3	0
87	Q703A	NUMERIC	3	0
88	Q703B	NUMERIC	4	0
89	Q704A	NUMERIC	3	0

90	Q704B	NUMERIC	4	0
91	Q800	NUMERIC	3	0
92	Q801	NUMERIC	3	0
93	Q802	NUMERIC	4	0
94	Q803	NUMERIC	4	0
95	Q804	NUMERIC	4	0
96	Q805	NUMERIC	5	0
97	Q806	NUMERIC	4	0
98	Q807	NUMERIC	3	0
99	Q808	NUMERIC	3	0
100	Q809	NUMERIC	3	0
101	Q1002	NUMERIC	3	0

Field Descriptions

QUESTIONNAIRE FILE

	Field	Description or Codes
1	CITY	1 = Baltimore
2	ROUND	1-6
3	FORM	Internal Use Only
4	PROPID	The next 3 field combined in this sequence
5	AREA	1 = Study Area 2 = Control Area
6	ADDN	Code for street name
7	ADD	House Number
8	ID	Child id - a three digit sequential number
9	INT	1 digit code for name of interviewer
10	DOT	Date of Interview - 6 digits: month, day, year
11	Q100A	Are you the parent or guardian of study child? 1 = yes 2 = no
12	Q100B	Relationship to child 1 = mother 2 = father 3 = aunt or uncle 4 = grandparent 5 = foster parent or guardian 6 = other

13	Q102A	How long has the child been living at this address ? two digits for years
14	Q102B	How many months has the child been living at this address ?
15	Q200	What is the total number of persons aged 18 or over living in the household?
16	Q201A	What is the total number of persons less than 18 years old living in the household?
17	Q201B	How many of these are under six years old?
18	Q300 *********	What is the child's date of birth? Blanked out - Retrieve from **KIDS** File
19	Q301	What is the child's race? 1 = black 2 = white
20	Q302	What is the child's sex? 1 = male 2 = female
21 2	Q303	How many hours per day does the child play outdoors? Two digit number 99 = Unknown
22	Q304	Where does the child spend most of their time outside ? 1 = Around your home 2 = Around a baby sitters, friends, or relative's home 3 = around a day care center or school 4 = at a public park or play-ground 8 = not applicable 9 = unknown

23 Q305 How many hours does the child play outside their home ? Two digit number

99 = Unknown
88 = Not applicable

24-28 Q306A-E Does the child play outdoors around their home in the following places ?

24 Q306A = backyard
25 Q306B = side yard
26 Q306C = front yard
27 Q306D = street
28 Q306E = alley

The possible responses for each are ;

1 = yes
2 = no response
8 = not applicable
9 = unknown

29-33 Q307A-E Regardless of which place the child plays, does that area consist of all , or even a percentage of the following.

29 Q307A = grass
30 Q307B = concrete or asphalt
31 Q307C = dirt or soil
32 Q307D = a sandbox
33 Q307E = a painted porch or deck

The possible responses for each are ;

1 = yes
2 = no response
8 = not applicable
9 = unknown

34	Q308	Did the child often take food or a bottle with them when they played outside? 1 = yes 2 = no response 8 = not applicable 9 = unknown
35	Q310	How many hours does the child play indoors at home? Two digit number 99 = unknown
36	Q311	How many hours does the child play indoors away from home ? two digit number with code 99 = unknown
37	Q312	How many hours does the child spend sleeping? two digit number or code 99 = unknown
38	Q400	Does the child use a pacifier? 1 = yes 2 = no 9 = unknown
39	Q401	How often does the child put their fingers in their mouth? 1 = a lot 2 = just once in a while 3 = almost never 9 = unknown

40 Q402 How often does the child put toys and things that are not food into their mouth?

1 = a lot
2 = just once in a while
3 = almost never
9 = unknown

41 Q403 How often have you seen the child put their mouth on a window sill ?

1 = a lot
2 = just once in a while
3 = almost never
9 = unknown

42 Q403A Have you ever seen the child put his mouth on the window sill?

1 = yes
2 = no
9 = unknown

43 Q403B Have you ever seen the child put his mouth on the stair railing?

1 = yes
2 = no
9 = unknown

44 Q403C Have you ever seen the child put his mouth on any furniture?

1 = yes
2 = no
9 = unknown

45 Q404 Have you ever seen the child put paint chips into his mouth?

1 = yes
2 = no
9 = unknown

46 Q405 Have you ever seen the child eat dirt or sand?

1 = yes
2 = no
9 = unknown

47 Q407 What's the main type of milk that the child drinks?

1 = breast milk
2 = cow's milk
3 = formula
4 = condensed milk
9 = unknown

48 Q407A How many glasses of milk (ounces) does your child drink per day ? Two Digits

49 Q408 Does the child take Feosol, Poly Vi Sol, or any other iron supplement?

1 = yes
2 = no
3 = formula with iron
9 = unknown

50 Q409 Does the child drink fruit juices everyday?

1 = yes
2 = no
9 = unknown

51 Q410 Does the child eat table food?

1 = yes
2 = no
9 = unknown

52 Q411 Does the child eat any vegetables from your garden or any other garden in your neighborhood?

1 = yes
2 = no
8 = not applicable
9 = unknown

53 Q412 Does the child use their fingers when they eat table food?

1 = yes
2 = no
8 = not applicable
9 = unknown

54 Q413 Is the family's food or drink ever stored or served in home made or imported clay pottery?

1 = yes
2 = no
9 = unknown

55 Q414 Is any of the family's food stored in the original cans after being opened, for example fruit juice?

1 = yes
2 = no
9 = unknown

56 Q415 How many glasses or bottles of water does the child drink? two digit number

57 Q500 Do you have any dogs or cats?

1 = no dogs or cats
2 = dogs only
3 = cats only
4 = at least one dog and cat
9 = unknown

58 Q501 Where does the dog stay most of the time?

1 = inside
2 = outside
3 = in and out all the time
8 = not applicable
9 = unknown

59 Q502 Where does the cat stay most of the time?

1 = inside
2 = outside
3 = in and out
8 = not applicable
9 = unknown

60-65 Q505A-F Does anyone who lives in the household work in any of the following jobs?

54 Q505A = plumbing
55 Q505B = sandblasting
56 Q505C = auto body work
57 Q505D = painting
58 Q505E = demolition
59 Q505F = welding

The possible responses for each are ;

1 = yes
2 = no response
8 = not applicable
9 = unknown

66-71 Q506A-F In the last three months has anyone in your household done any of the following activities?

66 Q506A = painted pictures with artist's paint
67 Q506B = removed paint from anything
68 Q506C = painted bicycles or cars

69 Q506D = worked with stained glass
70 Q506E = soldered electronic parts
71 Q506F = soldered pipes

The possible responses for each are ;

1 = yes
2 = no response
8 = not applicable
9 = unknown

72 Q600 Does the child have any medical or developmental problems that you know of?

1 = yes
2 = no
9 = unknown

73 Q601A Has the child been tested for sickle cell?

1 = yes
2 = no
9 = unknown

74 Q601B If yes what were the results?

1 = negative
2 = sickle cell trait
3 = sickle cell disease
8 = not applicable
9 = unknown

75 Q602A Has the child ever had anemia or low blood?

1 = yes
2 = no
9 = unknown

76	Q602B	If yes what year was it diagnosed? 82-88? 99 = unknown or not applicable
77	Q602C	If yes, is the child being treated? 1 = yes 2 = no 8 = not applicable 9 = unknown
78	Q603A	Has the child ever been tested for lead before? 1 = yes 2 = no 9 = unknown
79	Q603B	If yes what year was it diagnosed? 82-88? 99 = unknown or not applicable
80	Q603C	If yes, is the child being treated? 1 = yes 2 = no 8 = not applicable 9 = unknown
81	Q604A	Has the child ever received medical care for lead poisoning? 1 = yes 2 = no 9 = unknown
82	Q604B	If yes, was the medical care: 1 = outpatient 2 = inpatient 8 = not applicable 9 = unknown

83	Q700A	Was your house built before WWII? 1 = yes 2 = no 9 = unknown
84	Q700B	Code the year as a four digit number or; 9999 = unknown
85	Q701	Has anyone removed paint or sanded a painted part of the house in the last three months? 1 = yes 2 = no 9 = unknown
86	Q702	Has anyone ever removed paint or sanded a painted part of the house? 1 = yes 2 = no 9 = unknown
87	Q703A	Since you lived in this house, has anyone removed or sanded paint inside the house? 1 = yes 2 = no 9 = unknown
88	Q703B	If so, when? Ex. 91 89 etc.
89	Q704A	Since you lived in this house, has anyone removed or sanded paint from the outside of the house? 1 = yes 2 = no 9 = unknown

90 Q704B If so, when? Ex. 91 89 etc.

91 Q800 Do you own or rent your home?

1 = rent
2 = own
3 = staying for free
9 = unknown

92 Q801 Marital status

1 = married
2 = divorced
3 = separated
4 = widowed
5 = single

93 Q802 Occupational status coded as a two digit response:

First digit: What is your occupational status?

1 = unemployed
2 = homemaker
3 = employed part time
4 = employed full time
5 = retired

Second digit : What is your occupation?
Refer to the Hollingshead Index of Social Status
for listing of occupations under each main heading

0 = unemployed or homemaker
1 = menial service workers
2 = unskilled workers
3 = machine operators and semiskilled workers
4 = skilled manual workers and craftsmen
5 = clerical and sales workers
6 = technicians, semi-professional and small business owners
7 = small business owners, managers and minor professionals
8 = administrators and proprietors of medium Businesses
9 = unknown

94 Q803 What is the highest grade of school finished?

99 = unknown

95 Q804 Is the child supported by another person coded?

First digit:

1 = yes
2 = no
9 = unknown

Second digit, what is their relationship to the child?

1 = mother
2 = father
3 = aunt or uncle
4 = grandparent, great aunt or uncle, or grandparent
5 = foster parent or guardian
6 = other
9 = unknown

96 Q805 What is the relationship of the head of the household to the child?

First digit:

1 = mother
2 = father
3 = aunt or uncle
4 = grandparent, great aunt or uncle, or great grandparent
5 = foster parent or guardian
6 = other
9 = unknown

Second digit: occupational status

1 = unemployed
2 = homemaker
3 = employed part time
4 = employed full time
5 = retired

Third digit: occupation code

Refer to the Hollingshead Index of Social Status
for listing of occupations under each main heading

0 = unemployed or homemaker
1 = menial service workers
2 = unskilled workers
3 = machine operators and semiskilled workers
4 = skilled manual workers and craftsmen
5 = clerical and sales workers
6 = technicians, semi-professional and small business owners
7 = small business owners, managers and minor professionals
8 = administrators and proprietors of medium Businesses
9 = unknown

97 Q806 What is the highest grade of school completed?
99 = unknown

98 Q807 Does your family use the WIC program?

1 = yes
2 = no
9 = unknown

99 Q808 What type of medical insurance does your child have?

1 = no medical insurance
2 = private medical insurance (eg. BC/BS)
3 = Medicaid
8 = other
9 = unknown

100 Q809 What was the total income for the family before taxes in the previous year?

1 = less than $5,000
2 = $5,000 or more but less than $10,000
3 = $10,000 or more but less than $15,000
4 = $15,000 or more but less than $20,000
5 = $20,000 or more but less than $25,000
6 = $25,000 or more
8 = refused to answer
9 = unknown

101 Q1002 In your opinion, the quality of the interview is:

1 = reliable
2 = some doubt
3 = unreliable

KIDS FILE

	Field	Description or Codes
1	ID	Sequential number ID for children in study All id's are original - used only once
2	FIRST	First name of child in study
3	LAST	Last name of child in study
4	BIRTH	Date of birth of child in study.

BIO FILE

	Field	Description or Codes	
1	ID	Identification number for each child in the study	
2	ROUND	Round that Sample was taken	
3	MPB	Mean Blood Lead	-1 = no data
4	MFP	Mean Free Erythrocytic Protoporphyrin	
			-1 = no data
5	FE	Ferritin	-1 = no data
6	TIBC	Total Iron Binding Capacity	
			-1 = no data
7	H	Hand-wipe	.01 = undetectable -1 = no data
8	ELB	Elbow-wipe	.01 = undetectable
			-1 = no data

WATER FILE

	Field	Description or Codes
1	PROPID	Identification number of each property in the study

1st Digit	-	Study Area - "1" or "2"
2nd and 3rd Digits	-	Codes for Street Names
4th - 7th Digits	-	House Number

2 SAMPNUM Identification number of each Water Sample collected

1st Digit	-	Sample type W=Water etc.
2nd Digit	-	Last digit of year sample taken
3rd and 4th Digits	-	Month sample taken
5th and 6th Digits	-	Day sample taken
7th Digit	-	Sequential number of houses sampled on day in digits 2-6
8th and 9th Digits	-	Sequential number of samples taken on a single property

3 SAMPCODE Code for location of Water sample within house

1st Digit - Floor of House sample taken

1 = 1st floor
2 = 2nd floor
3 = 3rd floor

2nd Digit - What type of condition water sample taken

1 = hot tap
2 = cold tap
3 = hot/cold tap

3rd and
4th Digits - Special Codes

11 = 1st draw kitchen
12 = 1st draw bathroom
13 = non-1st draw kitchen
14 = non-1st draw bathroom

4 WF Water Fraction

E_PAINT FILE

Field		Description or Codes
1	PROPID	Identification number of each property in the study
	1st Digit -	Study Area - "1" or "2"
	2nd and 3rd Digits -	Codes for Street Names
	4th - 7th Digits -	House Number
2	SAMPNUM	Identification number of each Paint Sample collected
	1st Digit -	Sample type P=Paint etc.
	2nd Digit -	Last digit of year sample taken
	3rd and 4th Digits -	Month sample taken
	5th and 6th Digits -	Day sample taken
	7th Digit -	Sequential number of houses sampled on day in digits 2-6
	8th and 9th Digits -	Sequential number of samples taken on a single property

3 SAMPCODE Code for location of Paint sample within house

1st Digit — What part of outside of house was sample taken as you face the front door of house

1 = LEFT
2 = RIGHT
3 = FRONT
4 = BACK

2nd Digit - What area on that part of the house was sample taken

1 = 1st floor - LEFT
2 = 1st floor - RIGHT
3 = 1st floor - CENTER
4 = 2nd floor - LEFT
5 = 2nd floor - RIGHT
6 = 2nd floor - CENTER
7 = 3rd floor - LEFT
8 = 3rd floor - RIGHT
9 = 3rd floor - CENTER

3rd and 4th Digits - Special Codes

1 = DOOR
2 = WINDOW SILL
3 = STEPS
4 = WALL (HOUSE)
5 = COLUMN/BEAM
6 = RAILING/BANNISTER
7 = PORCH ROOF
8 = PORCH FLOOR
9 = PORCH WALL
10 = TRAP DOOR
11 = YARD - BRICKS/STONES
12 = FENCE
13 = GARAGE

14 = SHED
15 = CLOTHES LINE POLE
16 = YARD - SWING/SLIDING BOARD
17 = PORCH BASE
18 = DRAIN PIPES
19 = SEWAGE PIPES
20 = PORCH BENCH
21 = FLOWER POT
22 = STORAGE BOX
23 = OIL TANK

4	PF_XRF	Paint Fraction

I_PAINT FILE

	Field	Description or Codes
1	PROPID	Identification number of each property in the study

1st Digit	-	Study Area - "1" or "2"
2nd and 3rd Digits	-	Codes for Street Names
4th - 7th Digits	-	House Number

2 SAMPNUM Identification number of each Paint Sample collected

1st Digit	-	Sample type P=Paint etc.
2nd Digit	-	Last digit of year sample taken
3rd and 4th Digits	-	Month sample taken
5th and 6th Digits	-	Day sample taken
7th Digit	-	Sequential number of houses sampled on day in digits 2-6
8th and 9th Digits	-	Sequential number of samples taken on a single property

3 SAMPCODE Code for location of Paint sample within house

1st Digit - What level of house was sample taken

1 = 1st Floor
2 = 2nd Floor
3 = Basement
4 = between 1st & 2nd floor
5 = between basement & 1st Floor

2nd and 3rd Digit	What room or area of that part of the house was sample taken

1 = front entrance
2 = back entrance
3 = hallway
4 = living room
5 = dining room
6 = kitchen
7 = child's bedroom
8 = parent's bedroom
9 = bedroom - other
10 = family room
11 = den
12 = steps
13 = playroom
14 = enclosed porch
15 = bathroom

4th Digits - Special Codes

1 = Window header
2 = Window casing
3 = Window sash
4 = Window mullions
5 = Window steps
6 = Window sill
7 = Window apron
8 = Door header
9 = Door casing
10 = Door jamb
11 = Staircase railings
12 = Staircase balusters
13 = Staircase stringer
14 = Staircase newel post
15 = Staircase baseboards
16 = Staircase treads
17 = Staircase risers
18 = Upper Walls
19 = Chair Walls

20 = Lower Walls
21 = Baseboard Walls
22 = Floor
23 = Radiator
24 = Ceiling
25 = Other

4 Results XRF XK-3 analysis in Parts Per Million

DUST FILE

	Field	Description or Codes
1	PROPID	Identification number of each property in the study

1st Digit	-	Study Area - "1" or "2"
2nd and 3rd Digits	-	Codes for Street Names
4th - 7th Digits	-	House Number

2 SAMPNUM Identification number of each Dust Sample collected

1st Digit	-	Sample type P=Paint etc.
2nd Digit	-	Last digit of year sample taken
3rd and 4th Digits	-	Month sample taken
5th and 6th Digits	-	Day sample taken
7th Digit	-	Sequential number of houses sampled on day in digits 2-6
8th and 9th Digits	-	Sequential number of samples taken on a single property

3 SAMPCODE Code for location of Dust sample within house

1st Digit	-	What level of house was sample taken

1 = First floor
2 = Second floor
3 = Basement
4 = Steps between first and second floor
5 = Steps between basement & first floor

2nd and
3rd Digits - On that level what is the general name of the room where the Dust sample was taken

1 = Front entrance
2 = Back entrance
3 = Hallway
4 = Living room
5 = Dinning room
6 = Kitchen
7 = Child's bedroom
8 = Parents bedroom
9 = Bedroom - other
10 = Family room
11 = Den
12 = Steps
13 = Playroom
14 = Enclosed Porch
15 = Bathroom

4th Digit - Special Codes

1 = Wood floor
2 = Linoleum floor
3 = Carpet on floor
4 = Tile floor
5 = Scatter rug
6 = Window sill
7 = Window well
8 = Plastic runner
9 = Other floor surface

4 WGT_AAS Weight of AAS Analysis Sample

5 WGT_XRF Weight of XRF Analysis Sample

6 AAS_PPM Results from Atomic Absorption Spectrometry analysis

7 XRF_PPM Results from X-Ray Fluorescence analysis

SOIL FILE

	Field	Description or Codes
1	PROPID	Identification number of each property in the study

1st Digit	-	Study Area - "1" or "2"
2nd and 3rd Digits	-	Codes for Street Names
4th - 7th Digits	-	House Number

2 SAMPNUM Identification number of each Soil Sample collected

1st Digit	-	Sample type P=Paint etc.
2nd Digit	-	Last digit of year sample taken
3rd and 4th Digits	-	Month sample taken
5th and 6th Digits	-	Day sample taken
7th Digit	-	Sequential number of houses sampled on day in digits 2-6
8th and 9th Digits	-	Sequential number of samples taken on a single property

2 SAMPNUM Identification number of each Soil Sample collected

1st Digit	-	Sample type S=Soil etc.
2nd-	-	Last digit of year sample taken
4th Digits	-	Month sample taken
5th and 6th Digits	-	Day sample taken
7th Digit	-	Sequential number of houses sampled on day in digits 2-6
8th and 9th Digits	-	Sequential number of samples taken on a single property ODD numbers are TOP samples EVEN numbers are BOTTOM samples

3 SAMPCODE Code for location of sample within property

1st Digit - What side of property sample taken in relation to house - as you face house from sample position

1 = LEFT
2 = RIGHT
3 = FRONT
4 = BACK

2nd Digit - What part of area of yard determined in 1st digit are you within

1 = Near foundation - LEFT
2 = Near foundation - RIGHT
3 = Near foundation - CENTER
4 = Mid-yard - LEFT
5 = Mid-yard - RIGHT
6 = Mid-yard - CENTER
7 = Near boundary - LEFT
8 = Near boundary - RIGHT
9 = Near boundary - CENTER

3rd and 4th Digits - Special Codes

01 = Non-patch near foundation
02 = Non-patch in mid-yard area
03 = Non-patch near boundary
11 = patch area near foundation
12 = patch area in mid-yard area
13 = patch area near boundary of
21 = patch area outside boundary

4 FSF Fine Soil Fraction

5 TSF Total Soil Fraction

Quality Control Program

```
CLOSE ALL
SET SAFETY OFF
SET talk on
SET STATUS ON
set print oFF
FILE1='Quest6'
FILE2='Q666'
USE &FILE1
INDEX ON  ID+Q804+Q805+Q806+Q807+Q808+Q809+Q1002  TO SINDEX.IDX
USE
SELECT A
USE &FILE2
SELECT B
USE &FILE1 INDEX SINDEX.IDX
SELECT A
SET RELATION TO ID+Q804+Q805+Q806+Q807+Q808+Q809+Q1002   INTO B
GOTO TOP
END1=[N]
? FILE2
SCAN
  SELECT B
  IF EOF()
      SELECT A
***      LIST NEXT 1
      ? recno()
  else
      select a
  ENDIF
ENDSCAN
close all
set print off

* eject
*INDEX ON ID+CITY+FORM+AREA+ADDN+ADD+INT+DTOC(dot)
*Q100A+Q100B+Q200+Q201A+Q201B+DTOC(Q300)
*Q301+Q302+Q303+Q304+Q305+Q306A+Q306B
*Q306C+Q306D+Q306E+Q307A+Q307B+Q307C+Q307D
*Q307E+Q308+Q310+Q311+Q312+Q400+Q401
*Q402+Q403+Q404+Q405+Q407+Q408+Q409
*Q410+Q411+Q412+Q413+Q414+Q415
*Q500+Q501+Q502+Q505A+Q505B+Q505C+Q505D
*Q505E+Q505F+Q506A+Q506B+Q506C+Q506D+Q506E
*Q506F+Q600+Q601A+Q601B+Q602A+Q602B+Q602C
*Q603A+Q603B+Q603C+Q604A+Q604B+Q700A
*Q700B+Q701+Q800+Q801+Q802+Q803
*Q804+Q805+Q806+Q807+Q808+Q809+Q1002
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SAFETY GUIDELINES

FOR LEAD PAINT

AND

SOIL ABATEMENT CONTRACTORS

SAFETY GUIDELINES
FOR LEAD PAINT STABILIZATION AND SOIL ABATEMENT CONTRACTORS

Health and safety during lead paint stabilization and soil abatement may be optimized by using the following engineering and administrative controls.

A. Lead Paint Stabilization Workers

1. Training

Workers who perform paint stabilization shall receive one day of approved training. Training shall include: proper techniques of lead paint stabilization, worker personal hygiene practices, and general safety precautions. This training shall also include information on lead hazards and the risk of lead exposure to their families and to the residents of the neighborhoods where paint stabilization is in progress.

Specific laws applicable to the lead workers shall be discussed including the Maryland Occupational Safety and Health (MOSH) Standard for Occupational Exposure to Lead in Construction Work, Code of Maryland Regulation (COMAR) 09.12.32 and the Maryland Department of the Environment (MDE) Occupational, Industrial, and Residential Hazards, COMAR 26.02.07.

2. Other Personnel

Contractor and MDE personnel who supervise stabilization and abatement activities shall undergo the same training and monitoring requirements, and shall adhere to the rules governing personal protective devices and safety when engaged in stabilization or abatement activities.

B. Contract Worker Blood Lead Level Monitoring

Blood lead level monitoring shall be provided by MDE and results will be provided to the contractor by the Project Manager. Blood samples shall be taken from stabilization and abatement workers to determine baseline blood lead levels (PbB) and free erythrocyte protoporphyrins (FEP) before commencing stabilization and abatement activities. Workers whose PbB exceeds 25μg shall not be allowed to work while their lead levels remain elevated. Follow-up blood lead sampling occurs after 30 days and every two months thereafter while stabilization and abatement activities are ongoing. At the end of the work, or when the contractor employee is no longer employed for this work PbB and FEP is required.

If a worker's PbB reaches 20μg, that worker's work practices and hygiene practices shall be reviewed with the employee to identify pathways of exposure and to minimize further increases in blood lead levels. A worker shall not be permitted to continue abating if: one PbB sampling of 25μg or three successive PbB samplings of 20μg occurs. If blood lead reaches these levels, then blood lead level monitoring shall continue every 30 days until reduction of the blood lead levels is accomplished.

The worker may be returned to the job according to the requirements of Maryland Occupational Safety and Health Standard for Occupational Exposure to Lead in Construction Work.

C. Personal Protection Equipment

-Half face piece air purifying negative pressure respirator equipped with High Efficiency Particulate Air (HEPA) filters (lead paint stabilization),

-Disposable work clothing and booties,

-Heavy duty leather or cotton work gloves,

-Protective eye goggles or safety glasses, and

-Heavy soled work boots.

D. Clothing and Equipment Decontamination

1. HEPA vacuuming of disposable work clothing, prior to removal, will prevent the spread of lead dust. Work clothing may be rolled down, keeping the outside on the inside of the bundle for disposal.

2. Water-safe equipment may be rinsed and stored off site, by the contractor, at the end of each work day. Hand and face washing stations shall be supplied by the contractor on site. Liquid soap, disposable towels, and trash receptacles shall be available.

3. A first aid kit and an emergency eye wash station shall be available on site. At least one worker on site shall be trained in first aid.

4. Potable drinking water shall be supplied on site by the contractor and shall be protected from lead contamination.

E. Dust Control

1. Eating, drinking, smoking, chewing gum, or applying cosmetics shall not be permitted on site. Workers hands and face shall be washed each time they leave the work site.

2. Adequate misting of lead painted surfaces and soil abatement areas is required to reduce dust levels.

F. Project Participants

Participants shall leave the residence during stabilization or abatement activities. The MDE/LIS OutReach Coordinator will arrange for suitable, alternate facilities during the work day.

Signs shall be erected seven days prior to the commencement of the work and shall read:

Baltimore Lead in Soil Project
Caution
Work In Progress to Make Your
Neighborhood Lead Safe
Dust may contain lead which is hazardous to health.
WORK TO BEGIN:_____

G. Project Debris

Lead contaminated debris and excavated soil becomes the property of the contractor. Non-hazardous soil, based on the EP toxicity testing, shall be disposed according to hazardous waste requirements. The contractor shall remove all debris and excavated soil from the residence for off site disposal. The excavated soil will be removed at the end of each work day. During transportation of the soil, the debris shall be covered to prevent dust generation.

Reasonable measures shall be taken to prevent process water and other wet debris from entering the storm water system.

PUBLIC RELATIONS PLAN

BALTIMORE LEAD IN SOIL PROJECT

ENVIRONMENTAL PROTECTION AGENCY

MARYLAND DEPARTMENT OF THE ENVIRONMENT

June 1988

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INTRODUCTION AND BACKGROUND

The Baltimore Lead in Soil Project is a cooperative agreement involving as principals the U.S. Environmental Protection Agency (EPA) and the Maryland Department of Environment (MDE). The project is unusually complex and dependent on the goodwill and cooperation of a variety of individuals and groups within and outside government. The proposal as submitted to the oversight panel appointed by EPA described many of the agencies and groups which will, through their support and cooperation, make this project possible. Letters of agreement have also been submitted from some of the most vital contributors to the project, such as Baltimore City government.

The success of this cooperative agreement, however, depends not on written guarantees, but on continuing good relationships between agencies and groups as well as the maintenance of a positive image for the project in the eyes of the general public, the academic world, and a variety of special interests including the communities directly impacted by the project. This image depends not only as what is done, but on how what is done is presented.

OVERVIEW OF PROJECT

The three year project will be carried out in Baltimore, Maryland to test the effectiveness of measures to reduce soil lead contamination in the prevention of lead poisoning.

Two neighborhoods have been identified for inclusion in the project after a review of demographics, soil lead levels in previous studies and a determination that they are reasonably accessible and comparable. Baseline blood lead and free erythrocyte protoporphyrin (FEP's) will be obtained on children aged less than six years in both areas. Children will be tested in late summer when lead levels are usually highest, and again in mid-winter when they are lowest. Soil and house dust lead levels will also be determined at approximately 400 properties in the two neighborhoods.

Environmental abatement consisting of measures to prevent exposure to lead via soil, will be carried out in only one of the neighborhoods in the spring of 1989. The study area for abatement will be decided by a random method after the baseline sampling is complete. Follow up tests on children will be done at the same times of the year in 1989 for evaluation of post-abatement levels.

If soil lead abatement is found effective, it would also be performed in the control area and, again, follow-up tests would be done to further validate the first year's findings.

This project is being carried out by the Maryland Department of the Environment, in cooperation with Baltimore City and the John F. Kennedy Institute for Handicapped Children in fulfillment of a cooperative agreement between the State of Maryland and the Environmental Protection Agency.

PURPOSE OF THE PUBLIC RELATIONS PLAN

The objective of this plan is to create an awareness of lead hazards and of the benefits of measures which reduce exposure to lead in general, and particularly those specific activities being undertaken as part of the project.

The plan encompasses both health education aspects and, to a degree, marketing of the project to the public, especially the population which will directly contribute to the success of the project. The cooperative nature of this project makes it vital that the project maintain a high visibility, get good political support, and maintain a high standards of professionalism. Since health education can be a powerful preventive tool, it is essential that both neighborhoods be exposed to identical messages with the same degree of intensity to avoid confounding the results.

GENERAL LEAD AWARENESS

Since is was established in 1985, the Lead Poisoning Prevention Program in the Maryland Department of Environment has had the goal of reducing lead hazards in a primary prevention mode rather than continuing the more traditional approach of

screening and identifying children with lead poisoning and only then correcting the problem.

In order to achieve this goal, one of the major strategies is to increase public awareness of lead poisoning and its prevention. This approach not only helps people protect themselves, but even more importantly it creates a constituency for lead poisoning victims who in the past tended to be disorganized and poorly represented.

Past activities included distribution of a report entitled "Lead Poisoning: Strategies for Prevention," preparation and distribution of brochures, pamphlets and use of a static display at health fairs, county fairs, trade shows, medical conventions, etc. The display highlights lead exposure sources and includes a doll house painted on one side with peeling, chipping paint while the other side is well maintained. The "bad" side of the house also has exposed soil showing paint chips close to the painted wall, while the "good" side has grass, vegetation and trees.

Lead has been the topic of a large number of presentations to the public, academic meetings, trade groups, etc. Training seminars have been held statewide to build capacity within local governments to respond to lead related issues. Videotapes have been made and used by local cable TV companies, and another currently in production is aimed at training contractors to abate lead paint safely.

Future Plans for General Lead Awareness

All the aforementioned activities will continue with even greater emphasis particularly on Baltimore City as a target audience. The city not only has the largest number of at risk and affected children, but it also is the site for the Lead in Soil Project. At the June, 1988, meeting of the Council on Lead Poisoning Prevention, it was decided that a request would be made for State funding of additional lead education efforts in Maryland Department of the Environment (MDE) next year (FY'90). A brochure specifically designed to accompany the doll house exhibit is being prepared. An annual Lead Poisoning Prevention Week, held for the first time last May, is described

under Project Specific Publicity. We plan to create a video and slide library, and expand our single static display to make it more audience specific for special groups. Lead poisoning prevention is a major priority area for the department and will continue to receive a great deal of emphasis and publicity for the period of the project and beyond.

INTEGRATION OF PROJECT SPECIFIC PUBLICITY

With the good news of the funding of the Lead in Soil proposal, this Department began to increase efforts in the public relations and awareness area in order to lay the groundwork for the project itself.

- At a press conference on January 22 the award was announced. Various federal, state and local officials, including James Seif, EPA Region III Administrator, participated in the press briefing. Appropriately, this event was held in conjunction with a conference on Local/State/Federal Government cooperation. Television and newspaper coverage was widespread.
- The logo and slogan for the project were selected through an in-house departmental competition, offering as a prize dinner for two at a downtown hotel restaurant that was donated by the principal investigator and not charged to the project. The art work was done later after the selection of the winning ideas. Included in this packet are two versions of the logo and slogan, one specifically oriented towards children, and the other for use where a more serious image is appropriate.
- The Governor declared May 15 to 22 as Lead Poisoning Prevention Week, creating a forum for a variety of publicity/education efforts. The highlight of the week was the ceremonial first soil sample for the project on May 19. Maryland's Lieutenant Governor Melvin A. Steinberg took the sample and again various public figures including, Mr. Seif, participated. A more complete description of the event and of other activities of the week are included in Appendix I. All major events and project specific media contacts are being

coordinated with EPA Region III and Baltimore City Government. Much emphasis is being placed on the cooperative aspect of the project and its importance to the State of Maryland.

REACHING SPECIAL TARGET GROUPS

In addition to the general publicity efforts, we plan to promote specific messages aimed at potential clients in two categories:

1. Families being asked to participate;
2. Property owners being asked to cooperate.

In the first category efforts to reach the target groups were necessarily delayed until the selection of the neighborhoods was made. However, a great deal of groundwork has been completed with coalitions of community organizations, church groups, and political leaders in Baltimore who have been deeply involved in Lead Poisoning Prevention week. Interactions with the actual neighborhood groups is now being escalated and an additional component, staff training in community relations, will assure that the project retains its positive image in the community.

Staff Interaction with the Public

In order to create goodwill for the project, all field and other staff are being instructed as part of their training to interact in a professional, friendly, and positive way with members of the community. They have been given sufficient general information on lead to be able to discuss it, answer questions, and make referrals for non-lead related problems such as housing, social, and economic issues and, above all, to be good listeners. Field staff will wear T-shirts with the logo of the project in warm weather and jackets with the logo in inclement weather. They will, thus, be easily recognized as part of the project. They will also wear State I.D. cards.

Community Meetings:

These will be a prime methodology for enrolling participants. Parents who indicate interest will provide their names, addresses, and the names of children to be screened.

They will be placed on a mailing list and be sent appointment cards as reminders when the clinics start biological monitoring. Meetings will, where possible, be held with sponsorship by community organizations and church groups.

Community Leaders Meetings:

These will be used to orient community leaders and enlist support for the project. Community leaders will be approached individually, if necessary. However, coalition groups will be targeted for presentations whenever possible.

USE OF MATERIALS AND MEDIA

Materials will be used to inform families in the neighborhoods about the study and to announce community meetings. An additional static display will be developed, as well as brochures on the project (one for general use, the other for property owners). T Shirts with the project logo will be worn by field staff and child-size versions will be issued to children who have blood tests performed at the clinics. Children will also receive stickers with the logo and pins (depending on age and the mothers' wishes). Additional incentives to encourage participation will be requested from corporate and non-profit sponsors who will be asked to provide samples of child care and cleaning products, coupons, etc.

Any costs incurred by participants for project-related expenses will be reimbursed. These might include water bills increased following abatement, as we may need to access homeowners water supplies. Even during the first year, it may be necessary to water down areas for sampling to avoid loss of the vital top 2cm of the sample. Dust control and care of sodded areas will, however, be the major areas of impact on water bills.

Incentives for study subjects need to provide immediate benefit at the time of screening, and a major benefit at time of completion of the protocol. Incentives will be selected based on the particular needs of the individual family and will be chosen to avoid interference with social security or welfare benefits, while being aimed at

achieving better health and quality of life. Where possible, the incentives will aim at reducing long term risk of lead exposure or improving health and nutritional status. In addition, we will aim at decreasing mobility and promoting a sense of pride in the community.

At the completion of the program, major incentives will be given to families which have participated in every screning for which they are eligible. In other words, those families which did not drop out of the project.

Property Owners:

While it is important to enroll neighborhood residents in the biological sampling, it is equally important to gain the cooperation of the property owners in order to assure access to properties for soil sampling and abatement. We anticipate varied success in this endeavor since the project may be viewed with some suspicion by some property owners. Cooperation in owner-occupied housing is likely to be higher than rental; however, the inclusion of rental properties in varying states of repair will be very important, since rental properties tend to have poorly maintained yards, more soil, and a higher population of young family occupancy.

To lay the groundwork for building good relationships, we intend to work through the Property Owners Association of Greater Baltimore, which has been extensively involved in the Governor's Council on Lead Poisoning prevention and has advocated that increased educational efforts be added to abatement efforts, so that abatements done by property owners are not rendered futile by either inadequate housekeeping by tenants or tracking of lead from neighboring properties. Since the focus of this project is on a neighborhood based approach, it should be consistent with their views. Some of their members are very much opposed to "door-to-door" screening or testing of properties since tenants can place rent in escrow if lead paint is identified on the property, while the finding of elevated blood levels in a tenant usually requires that an abatement be done.

Because of the publicity given to the problem of lead poisoning in Baltimore in the past few years, many property owners are interested in testing and abating their properties in a preventive mode or, at least, paying greater attention to the maintenance of high risk properties. Testing services are available from private companies for a fee which generally is about $150 per house. They are also available through a non-profit housing aid organization for low income families on a limited basis. The Baltimore City Health Department reserves testing services for the follow-up of children with elevated blood lead levels. As an incentive to assisting with this project, we can offer lead paint testing services for the exterior of dwellings and, on a limited basis, internal spurfaces. In addition, the assurance that flaking, peeling, or chalking lead paint on exterior surfaces would be stabilized by scraping, replacing essential wood trim if deteriorated, and re-painting will be a considerable benefit, especially if an entire block or more can be done together. Additionally, there will be a 50% chance of being included in the lead abatement area, which may mean landscape improvements, paving, and fence replacement as needed. The benefits of participation will be outlined in meetings with the Association, and a segment will be submitted for inclusion in their newsletter, "Proper Ties," which goes to all of their members. A mailing will also go to candidate property owners in the neighborhoods chosen for inclusion to enlist their cooperation and inform them about the project. A special meeting will be arranged for input and questions from property owners. Each participating owner will be contacted several times by project staff to ensure continuing goodwill and legality of all aspects of actions affecting property.

Political Leaders and Others in Leadership Roles:

A determination has been made as to the names of all political leaders representing these neighborhoods and additional public figures who reside there. These, along with church leaders and organization leaders, will be kept informed and asked for support for the project. Community meetings will, when possible, be called by local leaders or held

in cooperation with them. In accordance with Department policy, reports will be filed on all contacts with elected officials by individuals. The Office of Governmental Relations will assist in coordinating this aspect as they have already done for the media events referenced in other sections of this report.

In addition to local political support, we intend to fully avail the excellent support we have had from the Maryland Congressional Delegation, the Mayor of Baltimore, and several State Delegates and Senators along with members of the Baltimore City Council for other areas of Baltimore who welcome the focus this project brings to a city-wide problem. Below is a list of elected officials invited to the ceremony.

U.S. Senator Paul S. Sarbanes
U.S. Senator Barbara A. Mikulski
Congressman Benjamin Cardin
Congressman Kweisi Mfume
Baltimore Mayor Kurt L. Schmoke
State Senator Julian Lapides
State Delegate Samuel Rosenberg
State Delegate Curtis Anderson
State Delegate Anne S. Anderson
State Delegate Kenneth Montague
State Delegate Howard P. Rawlings
State Delegate John S. Arnick
State Delegate Margaret H. Murphy
City Councilman Jody T. Landers
City Councilman Martin E. Curran
City Councilman Wilber Cunningham

TIMETABLE - YEAR I
APRIL 88 - APRIL 89

Pre-Project: Media Announcement Regarding Project Funding. Press Conference, January 22 with press release. Present: Mr. Seif, EPA Region III; Secretary Walsh, MDE; Senator Sarbanes and others.

APRIL	MAY	JUNE	JULY	AUGUST	SEPT	OCTOBER
Day Care Center Poster Contest	Lead Awareness Week	Governor's Reception	Fliers, Community meetings	Medical Awareness efforts	Community meetings	Community meetings
		Annual report on Lead Program to Governor	Property owners, etc.	Possible press release on first clinic	Contractor Awareness efforts	Contractor Awareness efforts

NOV	DEC	JAN	FEB	MARCH	APRIL	MAY
Community Meetings	Fliers, Community Meetings	Presentations to medical providers	Property owners meetings RE: Abatement	- Press release RE: Selection of area for abatement - Community meetings Fliers	Day Care Center Poster Contest	Lead Awareness Week

STAFFING

Most of the activities described will be conducted by in-house staff of MDE and specific project staff. It is essential, however, that at least a part-time position be relegated to the coordination of this plan. We propose to hire a part-time (50%) public relations coordinator for an Administrative Officer who would start in August, 1988 and work for ten (10) months of the year. We are not requesting additional funding for this purpose which requires only a minor amendment to the budget. Since the individual selected is also a Community Health Nurse, this would obviate the need to hire and train nurses for the periods of biological sampling to assist the clinical coordinator. This would also reduce the problem of turnover and inexperience and assure continuity. The resume of the selected candidate is attached (Appendix II).

Other sources include: Charles Walker, Public Relations Director, MDE; Ray Feldman, Deputy Public Affairs Director, MDE; Bill Palm, Health Educator, Center for Environmental Health, MDE; and Rebecca Burner, Director, Governmental Relations, MDE.

APPENDIX I

Lead Poisoning Prevention Week (May 15-21, 1988) was organized for the first time in 1988. The majority of activities were centered this year in the Baltimore area, but promotional efforts took place across the state. The purpose of this week was to organize educational and awareness activities on the continued dangers of lead in our environment, and the importance of prevention. The ultimate goal of activities such as these is to help eliminate all but sporadic cases of lead poisoning in Maryland by the year 2000.

The original plans involved a very broad, multi-media, educational/awareness approach. Many excellent ideas were actualized because of insufficient time and resources. The plan that was put into place had three major components:

1. Production of a high visibility, positive media event to focus attention on the Baltimore Lead in Soil Project.
2. Development of a state-wide poster contest for day care children to focus in a positive way on prevention, target a key at-risk group, and give state-wide visibility to the Baltimore Lead in Soil Project and the general Lead Program.
3. Improvement of working relationships with local health departments state-wide.

Following a request from the Governor's Advisory Council on Lead, Governor Schaefer proclaimed May 15-21, 1988 as Lead Poisoning Prevention Week. An Official proclamation was received by the Center for Environmental Health in late March. Subsequent to this, organizing for Lead Poisoning Prevention Week (LPPW) took place in all three areas of the plan.

1. MEDIA EVENT

Intense planning and organizing began in March. The program staff decided that an appropriate media event would be the taking of the first soil sample on the EPA Grant by the Governor or Lieutenant Governor. Lt. Governor Melvin A. Steinberg agreed to participate in the "First Soil Sample," and Governor William

Donald Schaefer agreed to host the winners of the day care poster contest in a ceremony at the Statehouse in Annapolis. As the neighborhoods for the study had not yet been chosen, community groups in Baltimore were contacted about locations that could be used for this event. St. Ambrose Housing Aid Society volunteered a property in the Govans neighborhood that had been recently abated for lead, and was vacant. A date was set (May 19), and formal invitations were mailed to federal, state, and local politicians, EPA officials, community groups and individuals who had been involved with the issue of lead or the EPA grant. Because of the threat of inclement weather during this period, provisions were made in advance to accommodate the possibility of rain. Weather immediately prior to and following the scheduled event was rainy, necessitating that additional measures be taken: a tent, chairs and outdoor carpeting. Catering was arranged. Balloons in the Maryland State Colors were displayed on the house and in the tent. Inside the house, a display of the Old House Dollhouse highlighting lead hazards, literature from MDE and posters related to the grant and to lead paint abatement were displayed. Approximately two dozen colorful entries received in the Lead Busters Poster Contest were also on view. In addition, an information sheet was prepared about the abatement done by St. Ambrose Housing Aid and these abatements were showcased in a tour of the home following the groundbreaking ceremonies. More than thirty (30) media packets were prepared for media and the political delegation. In addition, a six page program was prepared for attendees and name tags, lead buster stickers and buttons were distributed to those in attendance. Lt Governor Steinberg EPA Regional Administrator James Seif, and Maryland Department of the Environment Secretary Martin W. Walsh took the first soil sample under the direction of project manager, Reginald Harris, and the principal investigator, Dr. Katherine Farrell. A team effort, involving 5 of the 9 members of 9 of the Lead Program Staff and other key MDE staff members, was responsible for the resounding

success of this event. Dr. Julian Chisolm received a citation from Governor Schaefer, lauding his contributions to the State of Maryland for 40 years of leadership and commitment to the prevention and treatment of childhood lead poisoning.

Feedback received outside and inside of MDE indicated that the event clearly was a success. Participation was high (estimated 100 people participated) and enthusiasim and interest was generated among those in attendance. This event gave us the opportunity to "kickoff" the lead in soil project and increase awareness of the project and related issues. Media coverage of the event itself included all three local T.V. stations, Maryland Public Television, and one popular Baltimore radio station. The event was also successful in bringing a high level of visibility for the project among those persons and organizations in Maryland with the greatest interest in this problem. It generated a positive image, and developed networks that will be essential in the success of the project.

(2) STATEWIDE DAY CARE POSTER CONTEST

The Lead Busters Poster Contest for Day Care Children was organized to target young families with children under the age of seven, the age group most vulnerable to lead poisoning. Day care families often have other young children not in organized centers. Day care centers are well-organized and able to respond quickly to requests, such as this poster contest. Staff felt that sponsoring a poster contest would help to accentuate prevention strategies in a positive way and provide increased visibility for the Department's Lead Poisoning Prevention Program and the Lead in Soil Project. The "Lead Busters Logo, chosen in an internal MDE contest on March 31, 1988 was established as a symbol of the Lead-in-Soil Project because of it's attractiveness to the under-six age group.

Two age groups (3 and 4 year olds, and 5 and 6 year olds) and three categories for poster submission (Lead Safe Housing and Soil; Good Nutrition; and Handwashing)

were established. A letter to day care center directors, flyers about the contest, labels for posters and a brochure about Lead Poisoning Prevention were sent to all licensed day care centers in the State of Maryland. Key personnel in local jurisdictions were also sent cover letters and copies of the packet. In addition, the Lead Program participated in Baby Fest, April 29-30 and May 1, with our Old House Dollhouse exhibit, display and contest flyers. Contest materials were also distributed at a meeting of the Maryland Child Care Association. Prizes were contributed by the National Aquarium, Maryland Science Center, Baltimore Zoo, Baltimore Orioles, a local McDonalds franchise and an educational supply store, minimizing the prizes that had to be purchased for the contest. Judges were recruited from the Baltimore Museum of Art, Maternal and Child Health Day Care Licensing Unit of DHMH, and internally within MDE.

Participation in the contest was good: two hundred thirty-five (235) entries were submitted by children in nineteen day care centers from across the state. Centers from nine local jurisdictions were represented. Nineteen winners were selected, and attended a ceremony in the State House in Annapolis where they were presented with citations by Governor Schaefer on June 22, 1988. The prize-winning posters were featured in a display in the lobby of 201 W. Preston Street May 23-31, and will be displayed throughout the State during the next 6-9 months.

The Lead Poisoning Prevention Program feels that this effort was very successful in reaching one of our target audiences and in increasing positive state-wide visibility for the Lead in Soil Project. the Lead Program and MDE We anticipate repeating this next year. Plans include and earlier start on publicity so we will have access to newsletters and day care organizations and provider networks and an attempt to makec sponsors to increase the value of prizes.

(3) IMPROVEMENT OF WORKING RELATIONSHIPS WITH LOCAL HEALTH

One oif the priorities of the Maryland Department of the Environment has been its efforts to strengthen State/local ties. Through a positive education and awareness campaign and good communication with local health, the Lead Program hoped to encourage local initiatives and consolidate the state-local health working relationships. Three mailings were made to all local health departments. The first on April 18, containing information about Lead Poisoning Prevention Week and a copy of the Governor's Proclamation. The second one on May 10, contained sample stories about lead to be used with local media contacts. The third on June 6, included follow-up information about the Lead Busters Poster Contest Winners. In addition, Dr. Farrell addressed the Health Officers and distributed Lead Poisoning Prevention Week resource packets at the Health Officers Round Table meeting on May 4, 1988. Copies of mailings to health officers were also sent to Nursing Directors, Environmental Health Directors, Health Educators and Day Care Coordinators in the local jurisdictions. Calls were placed to all local health educators and several requests for additional literature were filled.

The week of lead awareness events showcased not only the Lead in Soil Project but the contributions of local health departments. Baltimore City Health Department organized an event May 16 to kickoff Lead Poisoning Prevention Week and publicized their new pamphlet: "A Health Pregnancy - Things You Should Know About Lead", written and produced specifically for this week. Heart shaped large red balloons were displayed and distributed to all city clinics. In addition, Baltimore City Health Department sent out a mailing to all obstetricians and nurse midwives in Baltimore about prevention of lead exposure during pregnancy, including a copy of the new pamphlet. This is the first pamphlet we have seen that focuses on positive prevention of exposure during pregnancy. Follow-up calls to other counties across the state identified seven additional local health departments that were

participating in Lead Poisoning Prevention Week by working with news media and providing Lead Poisoning Prevention literature at their clinics. They were Caroline, Charles, Garrett, Prince George's, Montgomery, Howard, and Baltimore Counties. News articles appeared in many local papers.

In Baltimore, a number of community organizations also rose to the occasion and organized activities during this week. A coalition of groups including Parents Against Lead, St. Ambrose Housing Aid Society, Middle East Community Organization, South East Community Organization and the Kennedy Institute organized a Lead Awareness Day for May 20. Literature was distributed throughout a neighborhood in the Middle East Community and 52 kindergarten children at School 135 were screened for lead by a nurse from Kennedy Institute. Staff from Kennedy Institute collaborated with two staff members from the Lead Program to produce a new videotape about lead poisoning prevention, which enjoyed it's premier showing in the Wednesday lead clinic at Kennedy Institute on May 18. A tour of rental properties in Baltimore was hosted by the Property Owners Association of Greater Baltimore for the Lead Council on May 17. The tour helped to highlight some of the problems and issues associated with lead paint abatements in the City of Baltimore. A presentation was made by one of our program staff to the Science Council of Baltimore City Schools. A physician at University of Maryland organized a meeting between occupationally lead-exposed workers and the Commissioner of Labor and industry to hear the worker's perspective and to review progress the workers had made in compiling an informational pamphlet about prevention of occupational lead exposure in radiation shops. The response from community groups was quite enthusiastic. Most individuals and organizations indicated a willingness to do this again next year and to spend more time planning and organizating efforts.

Appendix D

Consent Forms

PAGE
Participant Informed Consent.....D-1
Property Owners Consent.....D-6

STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
2500 Broening Highway Baltimore, Maryland 21224
(301) 631-

William Donald Schaefer
Governor

Robert Perciasepe
Secretary

INFORMED CONSENT INFORMATION SHEET

This study will be done to find out whether lead from soil endangers children and whether we can protect them from lead poisoning by covering, removing or mixing the soil

Lead in soil comes from old paint and from the use of leaded gasoline. usually lead stays on the surface of soil and it can poison children who play around it and get their hands or toys dirty. It is also carried indoors on people's shoes where it becomes part of house dust. Children absorb lead during their normal activities when lead dust and dirt is carried on their hands, toys, or pacifiers to their mouths. Frequent washing helps, but if there is a lot of lead in the environment it is hard for parents to protect children from it. Some children eat paint chips or soil, or gnaw on painted surfaces. These children can develop lead poisoning very fast. Lead can damage the growing child's brain and it interferes with the making of red blood cells. It can also damage the kidneys and other organs. Lead causes behavior, hearing, growth, and learning problems and can cause seizures or even death. The effects on the brain can be permanent.

Lead also is dangerous to unborn children. If the lead in the mother's blood is high, it can reach the baby and may cause miscarriages, stillbirths, early labor, premature delivery, and low birth weight. Babies whose mothers had high lead levels are slower to learn and develop.

In this study, children under age six years and pregnant women will be tested in two neighborhoods of the City. Tests will be done at the end of summer when lead levels are usually at their highest and again in winter when they are usually lower. Soil and dust will be tested for lead also.

After these tests, soil from one of the neighborhoods will be removed, covered or turned over so that the lead level at the surface will be low wherever it was found high on the test. This will be done in spring. Tests will be done on the children after the soil removal to find out whether their lead levels have gone down. Tests will again be done in September and mid winter to see if there is a delayed effect of removing this source of lead.

If the soil removal helps to prevent lead poisoning, it will be done in the control neighborhoods too. The reason for using two neighborhoods is to compare the one where soil was cleaned up with the one where it was not. If you have lead paint in your home

we will advise as to how this can be managed. The soil study uses Environmental Protection Agency (EPA) federal funds and does not include correction of indoor paint hazards. However, there are state funds available for this which property owners can obtain from the Department of Economic and Community Development. Paint removal can be dangerous and must be done using safe practices. If you would like information on paint removal or the methods of cleaning that will make your home lead safe, this will be available from the staff conducting the study.

The testing will include blood lead and FEP tests. The FEP test looks for the effects of lead in blood and it helps find children with iron poor blood. If you or your doctor want other tests done such as sickle cell, the blood can be drawn at the same time. Anyone found to have high lead levels or low iron in their blood will be referred for medical follow-up. If the blood lead is high, the city will inspect the home for lead.

The blood sampling will involve taking blood from a vein in the arm or, in the case of the infants, from the heel. There will be some discomfort, but no danger involved in this procedure. Some individuals may have some bruising around the arm vein due to leaking of blood from the vein. This can be kept to minimum by pressing on the vein for a minute or so after the needlestick. If brusing occurs, it usually lasts only for a day or two and has no permanent effects.

A questionnaire will be filled out on each participant in the study to get some background information. This will take about 15 minutes. These will be no sensitive or embarrassing questions, but if you wish you may refuse to answer any questions that worry you. The information will be kept confidential and will not be shared with landlords, neighbors or anyone else without your express permission. If you want test results sent to your doctor a release form must be signed.

Each child's hands will be wiped with a non-allergenic cloth to determine the amount of lead on the child's skin at the time of the study. There will be no danger or discomfort involved in this procedure.

Transportation will be provided free to and from the testing place. All participation is voluntary and you may drop out of the study at any time. In addition to the health benefits of the study, there will be an incentive scheme with rewards for participation and a major prize for those who complete the whole program.

After the project, all soil that has been turned or removed will have sod or seed replacement and the lots will be attractively landscaped. Any trash will be hauled away. If there is old, peeling paint on the outside, this will be fixed and repainted.

Any fences or gates will be repaired if the need arises and the house will be rat proofed. The neighborhoods participating will also get priority for city neighborhood improvement programs such as parks, trees, and playgrounds.

The outcome will be a safer, healthier and more pleasant environment for families in the study and control areas.

We hope you will participate. If you have any questions, please call the Soil Lead Abatement Demonstration Project at 333-7471 or ask any of the study staff.

Consent Agreement

I have read or had explained to me the information above and I understand what it means for me and my child(ren).

Signed: _____

Date: _____

Witness: _____

Date: _____

Consent Form for Children

I give permission for _____ to participate in the lead poisoning study of the Maryland Department of the Environment and Baltimore City Health Department. The study is being done to find out whether lead in soil can endanger children and whether removing or covering soil can protect them from lead poisoning.

I understand that the following actions are planned in this project which will need my consent:

1. Medical and social information will be recorded concerning my child and the family.

2. Samples of blood will be taken from my child for laboratory tests.

3. Samples will be taken on several occasions according to the timetable attached.

4. If my child is found to have too much lead or too little iron in the blood, I will be advised and referred for proper medical management.

I understand that these actions will be performed by representatives of the Maryland Department of the Environment or the Baltimore City Health Department. I have been provided with information about the study and have had a chance to ask questions about it. All information concerning my child and the family will be kept confidential.

_____ Witness

_____ Signature of parent/guardian

_____ Relationship to child

_____ Date

_____ Date

OPTIONAL

I would like results of blood samples sent to my child's doctor or clinic. I authorize release of this confidential information to:

_____ _____

Physician or Clinic's Name Address

_____ _____

Signature of parent/guardian Date

Timetable for Children's Blood Samples

Sample 1	Late Summer/Early Fall	Year 1
Sample 2	Mid Winter	Year 1
Sample 3	Late Summer/Early Fall	Year 2
Sample 4	Mid Winter	Year 2
Sample 5	Late Summer/Early Fall	Year 3
Sample 6	Mid Winter	Year 3

Children must be aged less than six years at the time they enter the study will not have further sampling. the family must have lived in the area for at least three months.

STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
2500 Broening Highway Baltimore, Maryland 21224
(301) 631-

William Donald Schaefer
Governor

Robert Perciasepe
Secretary

PROPERTY OWNER'S CONSENT AGREEMENT

PROGRAM DESCRIPTION

The Soil Lead Abatement Demonstration Project (* Program*) is a three-year study of the effectiveness of lead contaminated soil removal or abatement in the reduction or abatement in the reduction of lead exposure in children. This study is being conducted in the Park Heights and Walbrook Junction/Rosemont communities. Evaluations will monitor the level of lead in dust, soil, exterior paint and water as well as children's blood. Treatments such as paint stabilization, landscaping and encapsulation of soil may be instituted, where deemed appropriate, as a means of abating lead.

CONSENT AGREEMENT

The Maryland Department of the Environment (*MDE*) and the undersigned property owner (*Owner*) hereby agree to the following terms as conditions governing participation int the Program described above:

1. MDE will be granted access to houses, apartments and all surrounding property during regular business hours throughout the course of this study.

2. the Owner will identify a person who may be contacted by MDE who will have authority to discuss landscaping and painting options. The name, address and phone number of that person is as follows:_____

_____

_____.

3. Upon request, an Owner may receive information concerning the results of MDE's study or environmental test results of his/her property. However, an Owner may not receive results of obtained by virtue of this study.

4. In the event that exterior paint is cracking chipping or peeling and contains lead, MDE may undertake a lead paint stabilization project in order to stabilize and reduce exterior lead levels. This will consist of surface preparation and re-painting.

5. In the event that surface soil lead contamination exceeds 500 parts per million, MDE may perform and finance a

5. In the event that surface soil lead contamination exceeds 500 parts per million, MDE may perform and finance a landscaping project to reduce lead levels in soil Appropriate sites for such treatment shall be selected based upon the level of contamination of the soil, its accessibility to children and factors pertinent to the environmental objectives of the project.

6. MDE will employ only licensed and bonded contractors in the performance of all lead abatements, stabilizations, landscaping, and encapsulation projects. The names of the contractor, his/her license number, bonding and insurance information will be provided to the owner.

7. MDE will consult with the owner or his/her designee concerning the terms of all stabilization, landscaping and encapsulation contract contracts. MDE will use reasonable efforts to accommodate desires of the owner concerning the color of paint to be used on exterior surfaces and landscaping options.

8. MDE reserves the right to remove a property from participation in this study in the event that: (1) an occupant refuses or fails for any reason to participate in the bi-annual blood lead screening program and/or (2) MDE is denied access to a property.

Having read, understood and agreed to the terms and conditions stated herein, we the undersigned hereby agree that the property(ies) identified below will participate in the Soil Lead Abatement Demonstration Project described herein and that the Owner will employ good faith efforts to ensure the success of the project.

ADDRESS OF PARTICIPATING PROPERTY

_____

_____

_____

_____

_____ _____
DATE SIGNATURE OF OWNER

_____ _____
DATE Merrill Brophy
Project Manager
Soil Lead Abatement
Maryland Department of the Environment
2500 Broening Highway
Baltimore, Maryland 21224

Approved as to form and legal sufficiency on this 16th day of _____, 19_____.

_____
Neil F. Quinter
Assistant Attorney General
Maryland Department of the Environment
2500 Broening Highway
Baltimore, Maryland 21224

Appendix E

Questionnaires

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MARYLAND DEPARTMENT OF THE ENVIRONMENT

TOXICS OPERATIONS PROGRAM

Lead in Soil Abatement Demonstration Project

Administration - 1

Field Supervisor: Complete items 1 through 6 before giving questionnaire to interviewer.

1. City code. ___

2. Form number ___ ___

3. Address.

_____ Street Code __ __
Study Area __
_____ House No. __ __ __ __

4. Child ID. ___ ___ ___

5. Child's full name._____

6. Interviewer ID. ___ ____

Interviewer: Start completing questionnaire at item 7.

7. Date of interview. __ __ Month __ __ Day __ __ Year

8. Starting time of interview. __ __ : __ __ AM PM

Year ___ ___
Child Code ___ ___ ___
Form Number ___ ___

Introduction

Thank you for agreeing to participate in this project.

100 A. Are you the parent or guardian of _____?

1. Yes
2. No

B. relationship to child_____

C. Do you know how_____ spends (his/her) time?

1. Yes
2. No.... (Ask to talk to the parent or guardian who can best talk about how the child spends(his/Her) time. If that person is not available, reschedule the appointment and end here.)

101. What is your name? _____ _____
First Last

102. How long has _____ been living at this address?

___ ___ Years and ___ ___ Months
(If three months or less, stop the interview.)

103. Do you plan to move in the next three months? (If yes, ask where to and get change of address.)

1. Yes _____

_____

2. No
3. Unknown

104. Usual source of health care: _____

105. Physician or clinic name: _____

_____

106. Physician's phone number ( )_____

Census

200. What is the total number of persons aged 18 or over living in this household?

___ ____ persons

201. A. What is the total number of persons less than 18 years old living in this household? Be sure to include all young children and infants.

___ ____ persons

B. How many of these are under six years old?

____ ____ children under six years of age.

First I am going to ask you a couple of questions about_____. (Do each child in the family in a separate interview.) Then I will ask you questions about places (he/she) spends time.

300. A. What is _____'s date of birth?

___ ___ ___ ___ ___ ___
Month Day Year

B. How old is _____ today?

_____Years ____ ___ Months

301. What is _____ race?

1. Black
2. White
3. Asian
4. Hispanic
5. Other

302. What is _____'s sex?

1. Male
2. Female

Now I would like to ask how_____spent (his/her) daytime hours during a typical day. (Interviewer - a typical day is defined as "an average day in the last week")

303. About how many hours per day does_____play outdoors? (Code 99 for unknown)

__ ___ hours outdoors (if 0 or unknown go to questions 310)

304. On a typical day, where does _____spend most of (his/her) time outside?

1. Around your home
2. Around a baby sitter's, friend's, or relatives's home
3. Around a day care center or school
4. At a public park or playground
8. At some other location (Specify)_____
9. Unknown

305. About how many hours did (he/she) play outside around (his/her) home? (Code 99 for unknown)

___ ___ hours outdoors around home (If 0 or unknown go to question 310)

Year __ __
Child code __ __ __
Form number __ __

306. Where does _____ usually play outdoors around (his/her) home?

1 Back yard
2 Side yard
3 Front yard
4 Street
5 Alley
8 Other (Specify) _____
9 Unknown

307. Is the ground where (he/she) plays grassy, concrete, asphalt, plain dirt or soil, a sandbox, or some other surfaces?

1 Grassy
2 Concrete or asphalt
3 Dirt or soil
4 Sandbox
5 Painted porch or deck
8 Other (Specify) _____
9 Unknown

308. Did _____ often take some food or a bottle with (him/her) when (he/she) played outside?

1 Yes
2 No
9 Unknown

310. On a typical day, about how many hours does _____ play indoors at home? (Code 99 for unknown)

__ __ hours per day

311. On a typical day, about how many hours does _____ play indoors away from home? (Code 99 for unknown)

___ ___ hours per day

312. On a typical day, about how many hours does _____ spend sleeping? (Include naps and night time sleeping. Code 99 for unknown)

___ ___ hours per day

Year ___ ___
Child code ___ ___ ___
Form number ___ ___

Mouthing Behavior

400. Does _____ use a pacifier?

1 Yes
2 No
3 Unknown

401. How often does _____ put (his/her) fingers in (his/her) mouth?

1 A lot
2 Just once in a while
3 Almost never
9 Unknown

402. Many children put toys and things that are not food into their mouths. Would you say that _____ does this a lot, once in a while, or almost never?

1 A lot
2 Just once in a while
3 Almost never
9 Unknown

403. Many children cut their teeth on hard surfaces. How often have you seen _____ put (his/her) mouth on a window sill?

1 A lot
2 Just once in a while
3 Almost never
9 Unknown

404. Have you ever seen _____ put paint chips into (his/her) mouth?

1 A lot
2 Just once in a while
3 Almost never
9 Unknown

405. Have you ever seen _____ eat dirt or sand?

1 Yes
2 No
9 Unknown

Year ___ ___
Child code ___ ___ ___
Form number ___ ___

406. Are there any things that we have not mentioned that you have seen_____ put in (his/her) mouth? (List all mentioned.)

_____

_____

Now I would like to ask you about _____'s diet.

407. What is the main type of milk that (he/she) drinks?

1 Breast milk
2 Cow's milk
3 Formula
4 Canned (condensed) milk
8 Other (Specify)_____
9 Unknown

408. Does_____ take Feosol, Poly Vi Sol with Iron supplement?

1 Yes
2 No
3 Formula with iron
9 Unknown

409. Does (he/she) drink fruit juices everyday? (If yes, verify that juice is real juice.)

1 Yes
2 No
9 Unknown

410. Does (he/she) eat any table food (adult food)?

1 Yes
2 No.....(Go to question 413)
9 Unknown (Go to question 413)

411. Does (he/she) eat any vegetables from your garden or any other garden in your neighborhood?

1 Yes
2 No
9 Unknown

Year ___ ___
Child code ___ ___ ___
Form number ___ ___

412. If _____ eats table food, does (he/she) use fingers?

1 Yes
2 No
9 Unknown

413. Is the family's food or drinks ever served or stored in home-made or imported clay pottery?

1 Yes
2 No
9 Unknown

414. Is any of the family's food stored in the original cans after being opened, for example, canned fruit juice?

1 Yes
2 No
9 Unknown

415. On any given day, how many glasses or bottles of water (excluding canned or bottled juices and soft drinks, but including drinks mixed with tap water) does _____ drink?

_____ glasses or bottles of water

Year ___ ___
Child code ___ ___ ___
Form number ___ ___

Pets

500. Do you have any dogs or cats?

1 No dogs or cats.....(Go to question 505)
2 Dog(s) only
3 Cat(s) only
4 At least one dog and cat
9 Unknown.....(Go to question 505)

501. Does the dog stay inside, stay outside or go in and out of the house?

1 Inside most of the time
2 Outside most of the time
3 In and out all of the time
8 Not applicable - no dog in house
9 Unknown

502. Does the cat stay inside, stay outside, or go in and out of the house?

1 Inside most of the time
2 Outside most of the time
3 In and out all of the time
8 Not applicable - no cat in house
9 Unknown

Lead Work or Hobbies

505. Does anyone who lives in this household work in any of the following jobs?

a. Lead Working
b. Metal foundry
c. Oil refining
d. Painting
e. Demolition
f. Welding
g. Chemical processing
h. Plumbing
i. Sandblasting
j. Autobody working
k. Road stripe painting
l. Metal recycling
m. Radiator shop
n. Other lead processing

(Code "Yes" if respondent chooses any of the above jobs.)

1 Yes
2 No

9 Unknown

Year __ __
Child Code __ __ __
Form number __ __

506. I would like to ask about hobbies or other work that may have been done in this household. In the last three months, has anyone who lives here done any of the following activities at home?

a. Painted pictures with artists' paint.
b. Removed paint from parts of the house or furniture in the house.
c. Painted bicycles or cars.
d. Worked with stained glass.
e. Cast lead into fishing sinkers, bullets or anything else.
f. Soldered electronic parts.
g. Soldered pipes.
h. Made pottery.

(Code "Yes" if respondent chooses any of the above activities.)

1 Yes
2 No
9 Unknown

Year __ __
Child code __ __ _
Form number __ __

Health

The next few questions are about_____'s health.

600 A. Does_____ have any medical or developmental problems that you know of?

1 Yes (specify below)
2 No.....(Go to question 601)
9 Unknown.....(Go to question 601)

B. If yes, list and date:

_____

_____

_____

601. A. Has_____been tested for sickle cell?

1 Yes
2 No.....(Go to question 602)
3 Unknown...(Go to question 602)

B. If yes, what were the results?

1 Negative
2 Sickle cell trait
3 Sickle cell disease
4 Unknown

602. A. Has_____ever had anemia or low blood?

1 Yes
2 No.....(Go to question 603)
9 Unknown.....(Go to question 603)

B. If yes, what year was_____diagnosed as anemic?

____ ____

C. If yes, is (he/she) presently being treated?

1 Yes
2 No
9 Unknown

Year ___ ___
Child Code ___ ___ ___
Form number ___ ___

603. A. Has_____ ever been screened for lead before?

1 Yes
2 No....(Go to question 700)
9 Unknown.....(Go to question 700)

B. If yes, list year ___ ___

C. If yes, what were the results?

1 Normal
2 High
9 Unknown

604. A. Has_____ ever received medical care for lead poisoning?

1 Yes (Go on to 700)
2 No (Go on to 700)
9 Unknown

B. If yes, was this medical care:

1 Outpatient
2 Inpatient
9 Unknown

Year ___ ___
Child code ___ ___ ___
Form number ___ ___

Housing Characteristics

700 A. Was your house built before World War II?

1 Yes
2 No
9 Unknown (Go to question 701)

B. What year was it built?

___ ___ ___ ___ (If unknown, enter 9999)

701. Have you or has anyone else removed paint or sanded any painted part of your house in the last three months?

1 Yes
2 No
9 Unknown

702. Have you or anyone else ever removed paint or sanded any part of your house?

1 Yes
2 No
9 Unknown

Year ___ ___
Child code ___ ___ ___
Form Number ___ ___

Demographics

800. Do you own or rent your home?

1 Rent
2 Own
3 Staying in home for free
9 Unknown

801. What is your marital status?

1 Married
2 Divorced
3 Separated
5 Widowed
5 Single

802. A. Which of the following groups best describes your occupational status? (Read the following choices.)

1 Unemployed..(Go to question 803)
2 Homemaker...(Go to question 803)
3 Employed part time
4 Employed full time

B. What is your occupation?_____

803. What is the highest grade or year of school that you finished?

__ ___ Grade or year (Code 99 if unknown)

804. A. Is_____ supported by another person?

1 Yes
2 No...(Go to question 807)

B. Relationship of this person to_____

_____

Year ___ ___
Child Code ___ ___ ___
Form number ___ ___

805. A. What is the relationship of the head of household to_____.

B. Which of the following groups best describes the occupational status of the head of the household? (Read the following choices)

1 Unemployed...(Go to question 806)
2 Homemaker....(Go to question 806)
3 Employed part time
4 Employed full time

C. What is (his/her) occupation?_____

806. What is the highest grade or year of school that the head of household finished?

___ ___ Grade or year (Code 99 if unknown)

807. Does your family use the WIC program?

1 Yes
2 No
9 Unknown

808. What kind of medical insurance does your child have?

1 No medical insurance
2 Private medical insurance(for example Blue Cross/Blue Shield)
3 Medicaid
4 Other (Specify)_____
9 Unknown

809. What was the total income for this family before taxes in 1987?

1 Less than $5,000
2 $5,000 or more but less than $10,000
3 $10,000 or more but less than $15,000
4 $15,000 or more but less than $20,000
5 $20,000 or more but less than $25,000
6 $25,000 or more
8 Refused to answer
9 Unknown

This completes our interview. Is there anything else you want to add?

_____

Thank you for your cooperation.

Year __ __
Child code __ __ __
Form number __ __

Administration - 2

1001. Interviewer: Please sign below and fill in your ID number.

_____ __ __
Signature ID

1002. The quality of this interview is:

1 Reliable
2 Some doubt..
3 Unreliable.. Explain: _____

_____

Interviewer - check booklet to be sure all questions are answered and writing and numbers ar legible.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

TOXICS OPERATIONS PROGRAM

Lead in Soil Abatement Demonstration Project

Summer 1991 Screening

Administration - Follow up

Field Supervisor: Complete items 1 through 6 before giving questionnaire to interviewer.

1. Form number Q 4

2. Address.

_____ Street Code __ __

Study Area __

_____ House No. __ __ __ __

4. Child ID. ___ ___ ____

5. Child's full name._____

6. Interviewer ID. ___ ____

Interviewer: Start completing questionnaire at item 7.

7. Date of interview. __ __ Month __ __ Day 9 1 Year

Year 9 1
Child Code __ __ __
Form Number Q 6

Introduction

Thank you for agreeing to participate in this project.

100. A. Are you the parent or guardian of _____?

1. Yes
2. No

B. Relationship to child_____

C. Do you know how_____ spends (his/her) time?

1. Yes
2. No.... (Ask to talk to the parent or guardian who can best talk about how the child spends(his/Her) time. If that person is not available, reschedule the appointment and end here.)

101. What is your name? _____ _____
First Last

Census

200. What is the total number of persons aged 18 or over living in this household?

___ ____ persons

201. A. What is the total number of persons less than 18 years old living in this household? Be sure to include all young children and infants.

___ ____ persons

B. How many of these are under six years old?

____ ____ children under six years of age.

Year 9 1
Child Code ___ ___
Form number Q 6

First I am going to ask you a couple of questions about_____. (Do each child in the family in a separate interview.) Then I will ask you questions about places (he/she) spends time.

300. A. What is _____'s date of birth?

___ ___ ___ ___ ___ ___
Month Day Year

B. How old is _____ today?

_____Years _____ ___ Months

301. What is _____ race?

1. Black
2. White
3. Asian
4. Hispanic
5. Other

302. What is _____'s sex?

1. Male
2. Female

Year 9 1
Child Code __ __ __
Form number 0 6

Now I would like to ask how_____spent (his/her) daytime hours during a typical day. (Interviewer - a typical day is defined as "an average day in the last week")

303. About how many hours per day does_____play outdoors? (Code 99 for unknown)

__ ___ hours outdoors (if 0 or unknown go to questions 310)

304. On a typical day, where does _____spend most of (his/her) time outside?

1 Around your home
2 Around a baby sitter's, friend's, or relatives's home
3 Around a day care center or school
4 At a public park or playground
5 At some other location (Specify)_____
8 Not applicable
9 Unknown

305. About how many hours did (he/she) play outside around (his/her) home? (Code 99 for unknown)

___ ___ hours outdoors around home (If 0 or unknown go to question 310)

306. Where does_____usually play outdoors around (his/her) home?

Circle as many as stated:

1 Back yard
2 Side yard
3 Front yard
4 Street
5 Alley
8 Other (Specify)_____
9 Unknown

Year 9 1
Child Code __ __ __
Form number Q 6

307. Is the ground where (he/she) plays grassy, concrete, asphalt, plain dirt or soil, a sandbox, or some other surfaces?

Circle as many as stated:

1 Grassy
2 Concrete or asphalt
3 Dirt or soil
4 Sandbox
5 Painted porch or deck
8 Other (Specify)_____
9 Unknown

308. Did _____ often take some food or a bottle with (him/her) when (he/she) played outside?

1 Yes
2 No
9 Unknown

310. On a typical day, about how many hours does _____ play indoors at home? (Code 99 for unknown)

__ __ hours per day

311. On a typical day, about how many hours does _____ play indoors away from home? (Code 99 for unknown)

___ ___ hours per day

312. On a typical day, about how many hours does _____ spend sleeping? (Include naps and night time sleeping. Code 99 for unknown)

___ ___ hours per day

Year 9 1
Child code ___ ___ ___
Form number Q 6

Mouthing Behavior

400. Does _____ use a pacifier?

1 Yes
2 No
3 Unknown

401. How often does _____ put (his/her) fingers in (his/her) mouth?

1 A lot
2 Just once in a while
3 Almost never
9 Unknown

402. Many children put toys and things that are not food into their mouths. Would you say that _____ does this a lot, once in a while, or almost never?

1 A lot
2 Just once in a while
3 Almost never
9 Unknown

403. Many children cut their teeth on hard surfaces. How often have you seen _____ put (his/her) mouth on a window sill?

1 A lot
2 Just once in a while
3 Almost never
9 Unknown

404. Have you ever seen _____ put paint chips into (his/her) mouth?

1 A lot
2 Just once in a while
3 Almost never
9 Unknown

405. Have you ever seen _____ eat dirt or sand?

1 Yes
2 No
9 Unknown

Year 91
Child Code _____
Form Number Q6

Mouthing Behavior (Continued)

403a. Does your child put his/her mouth on the windowsill?

1 Yes
2 No
9 Unknown

403b. Does your child put his/her mouth the bannister or stair railing?

1 Yes
2 No
9 Unknown

403c. Does your child put his mouth on any furniture eg. bed railing?

1 Yes
2 No
9 Unknown

Year 9 1
Child code ___ ___ ___
Form number Q 6

Now I would like to ask you about _____'s diet.

407. What is the main type of milk that (he/she) drinks?

1 Breast milk
2 Cow's milk
3 Formula
4 Canned (condensed) milk
8 Other (Specify)_____
9 Unknown

408. Does_____ take Feosol, Poly Vi Sol with Iron, or any other iron supplement?

1 Yes
2 No
3 Formula with iron
9 Unknown

409. Does (he/she) drink fruit juices everyday? (If yes, verify that juice is real juice.)

1 Yes
2 No
9 Unknown

410. Does (he/she) eat any table food (adult food)?

1 Yes
2 No.....(Go to question 413)
9 Unknown (Go to question 413)

411. If _____eats table food, does (he/she) use fingers?

1 Yes
2 No
9 Unknown

412. How many glasses of water (including drinks mixed with water does _____ drink per day?

_____ glasses of water?

Year 9 1
Child code ___ ___
Form number Q 6

Pets

500. Do you have any dogs or cats?

1 No dogs or cats.....(Go to question 505)
2 Dog(s) only
3 Cat(s) only
4 At least one dog and cat
9 Unknown.....(Go to question 505)

501. Does the dog stay inside, stay outside or go in and out of the house?

1 Inside most of the time
2 Outside most of the time
3 In and out all of the time
8 Not applicable - no dog in house
9 Unknown

502. Does the cat stay inside, stay outside, or go in and out of the house?

1 Inside most of the time
2 Outside most of the time
3 In and out all of the time
8 Not applicable - no cat in house
9 Unknown

Year 9 1
Child code
Form number Q 6

Lead Work or Hobbies

505. Does anyone who lives in this household work in any of the following jobs?

a. Painting
b. Demolition
c. Welding
d. Plumbing
e. Sandblasting
f. Auto body work

(Code "Yes" if respondent chooses any of the above jobs.)

1 Yes
2 No
9 Unknown

506. I would like to ask about hobbies or other work that may have been done in this household. In the last three months, has anyone who lives here done any of the following activities at home?

a. Painted pictures with artists' paint.
b. Removed paint from parts of the house or furniture in the house.
c. Painted bicycles or cars.
d. Worked with stained glass.
e. Soldered electronic parts.
g. Soldered pipes.

(Code "Yes" if respondent chooses any of the above activities.)

1 Yes
2 No
9 Unknown

Year 9 1
Child code __ __ __
Form number Q 6

Housing Characteristics

701. Have you or has anyone else removed paint or sanded any painted part of your house in the last three months?

1 Yes
2 No
9 Unknown

702. A. Since you have lived in this house, has anyone removed or sanded paint <u>inside</u> the house.

1 Yes
2 No
9 Unknown

B. If yes when_____

703. A. Since you have lived in this house, has anyone removed or sanded paint <u>outside</u> the house.

1 Yes
2 No
9 Unknown

B. If yes when_____

Year 9 1
Child code ___ ___ ___
Form Number 0 6

Demographics

800. Do you own or rent your home?

1 Rent
2 Own
3 Staying in home for free
9 Unknown

801. What is your marital status?

1 Married
2 Divorced
3 Separated
5 Widowed
5 Single

802. A. Which of the following groups best describes your occupational status? (Read the following choices.)

1 Unemployed..(Go to question 803)
2 Homemaker...(Go to question 803)
3 Employed part time
4 Employed full time
5 Retired

B. What is your occupation?_____

803. What is the highest grade or year of school that you finished?

__ ___ Grade or year (Code 99 if unknown)

804. What is the relationship of the head of household to _____.

B. Which of the following best describes the occupational status of the head of the household? (Read the choices)

1 Unemployed.....(Go to question 805)
2 Homemaker....(Go to question 805)
3 Employed part time
4 Employed full time
5 Retired

C. What is (his/her) occupation?_____

805. A. What is the highest grade or year of school that the head of household finished?

___ ___ Grade or year (Code 99 if unknown)

Year 9 1
Child code __ __ __
Form Number Q 6

806. Does your family use the WIC program?

1 Yes
2 No
9 Unknown

807. What kind of medical insurance does your child have?

1 No medical insurance
2 Private medical insurance(for example Blue Cross/Blue Shield)
3 Medicaid
4 Other (Specify)_____
9 Unknown

808. What was the total income for this family before taxes last year?

1 Less than $5,000
2 $5,000 or more but less than $10,000
3 $10,000 or more but less than $15,000
4 $15,000 or more but less than $20,000
5 $20,000 or more but less than $25,000
6 $25,000 or more
8 Refused to answer
9 Unknown

This completes our interview. Is there anything else you want to add?

_____

_____

1001. Interviewer: Please sign below and fill in your ID number.

_____ __ __
Signature ID

1002. The quality of this interview is:

1 Reliable
2 Some doubt..
3 Unreliable.. Explain: _____

_____

Interviewer - check booklet to be sure all questions are answered and writing and numbers ar legible.

Appendix F

Four Factor Index of Social Status

FOUR FACTOR INDEX OF SOCIAL STATUS

August B. Hollingshead
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Working Paper
June, 1975

I. Introduction

Characterization of the status structure of society is a general problem in sociology. For many years sociologists have discussed the issue of how to determine the positions individuals or nuclear families occupy in the status structure of a given society. Several measures have been devised to solve this problem, but consensus has not been reached on the methodological procedures that best estimate the positions individuals or nuclear families occupy in the status structure of complex industrial, urban societies.

In the early 1940s, I made a systematic examination of status in a middle-western community. In 1948 I began to study the social structure of the New Haven area. a highly urbanized, industrial community. Two years later, I constructed an index designed to measure social status in this community, based on the use of education, occupation, and area of residence taken from a cross-sectional sample of nuclear families living there. The procedures followed in the development of that index are described in Social Class and Mental Illness

In the following years I analyzed data from a five percent sample of nuclear families resident in the New Haven community and found that area of residence contributed very little to the estimated status position of a nuclear family: the multiple correlation between estimated status and education and occupation was .975. This correlation indicated that area of residence could be dropped as an indicator of status. In 1957 I published privately a pamphlet demonstrating that education and occupation could be used to construct an index of social status.

The Two Factor Index of Social Position has been widely used, but, with the social and cultural changes that have occurred since its publication, it stands in need of revision. The major points of criticism directed toward it are: it is now dated; the range of occupations used is too narrow; and the family's status position is based on data about the head of the household. The Four Factor Index of Social Status presented here is designed to meet these deficiencies.

II. The New Index

The new index takes into consideration the fact that social status is a multidimensional concept. It is premised upon three basic assumptions:

1. A differentiated, unequal status structure exists in our society.
2. The primary factors indicative of status are the occupation an individual engages in and the years of schooling he or she has completed; other salient factors

are sex and martial status.

3. These factors may be combined so that a researcher can quickly, reliably, and meaningfully estimate the status positions individuals and members of nuclear families occupy in our society.

The four factors used in the new index are: education, occupation, sex, and marital status. Education changes during childhood and youth, but it generally stabilizes in the adult years; the years of schooling an individual has completed are believed to be reflected in acquired knowledge and cultural tastes. Moreover, education is a prerequisite to entry into occupations that carry higher prestige in the social system. Occupation may change in the early years of adult life, but it too tends to become stable as a person grows into the late twenties and on into the thirties. It is presumed to be indicative of the skill and power individuals possess as they perform the maintenance functions in society.

The sex of an individual remains constant throughout the course of the life cycle, but it plays an important part in the roles individuals play in the performance of maintenance functions in the society. Marital status defines the relationship of an adult male or female to the family system; it may or may not be stable from the early adult years on into old age. Both males and females participate in the educational process, mainly during the childhood and adolescent years. Most adult males enter the labor force and fill occupational roles; in contemporary industrial society, more and more females are entering the labor force. Marital status is important in the calculation of social status because of differences in the ways adult family members participate in the economic system. One spouse may be a full-time participant in the labor force while the other is not gainfully employed outside the home. However, as the years, the proportion of intact nuclear families with both spouses gainfully employed increases. Other families may be headed by a single, widowed, separated, or divorced male or female who is now or in the past has been gainfully employed. This index takes into consideration the several categories.

III. Estimation of Social Status

Information on each of the four factors is easily gathered in an empirical study. The sex of a respondent is observable directly and is assumed to be what appearances indicate. The other factors require inquiry and evaluation. The use of each factor in the estimation of standards described in the following sections.

A. Marital Status

1. Married and Living with Spouse

a. One spouse, male, or female, gainfully employed; other spouse not employed. The estimated social position of this type of nuclear family is calculated on the basis of the employed member's education and occupation.

b. Both spouses gainfully employed. The education and occupation of each spouse is used to estimate the status position of the nuclear family.

It is assumed that the education and occupation of each spouse constitutes an equal proportion of the nuclear family's status. In the absence of theoretical and empirical evidence, a rule of thumb is followed, that is education and occupation scores for the husbands and wife are summed and divided by two. Research has indicated that the prestige of occupations is similar for males and females and that education is essentially the same for males and females in the same occupation. In accordance with this finding, the combined score for the two spouses is assigned as the status score of the family.

2. Family Without Spouse

Nuclear families or households may be headed by persons who have never married, divorced persons permanently separated from a spouse, or widowed persons. Households falling into this category present the researcher with various alternatives:

a. When the head has never been married, the status score is calculated by the use of the head's occupation and education.

b. When a divorced person is employed full time in a gainful occupation, the occupation and education of the present head of the household should be used to calculate the status score.

c. When a separated or divorced person is receiving support payments from a absent, present or former, spouse, but is not gainfully employed, the status score should be calculated from the education and occupation of the supporting spouse.

d. When a widow or widower who is not gainfully employed is living on the income from the deceased spouse's estate, the status score should be computed on the education and occupation of the deceased spouse during the time he or she was gainfully employed.

B. Retired Persons

For retired persons, the status score should be calculated from the education and occupation of the person before he, she, or

they retired. The factor of marital status should be handled in the same way that it is for nuclear families with one or both spouses active in the labor force.

C. The Educational Factor

The years of school a respondent has completed are scored on a seven-point scale, premised upon the assumption that men and women who possess different levels of education have different tastes and tend to exhibit different behavior patterns. The years of school and individual has completed are grouped in the same way as in the earlier Two Factor Index of Social Position. The amount of formal education a person has completed is scored as follows:

LEVEL OF SCHOOL COMPLETED	SCORE
Less than seventh grade	1
Junior high school (9th grade)	2
Partial high school (10th or 11th grade)	3
High school graduate (whether private, preparatory, parochial, trade or public)	4
Partial college (at least one year) or specialized training	5
Standard college or university graduation	6
Graduate professional training (graduate degree)	7

D. The Occupational Factor

The occupation a person ordinarily pursues during gainful employment is graded on a nine-step scale. Whenever possible, the scale has been keyed to the occupational titles used by the United States Census in 1970, and the three-digit code assigned by the census is given. However, the occupational titles assigned by the census are not precise enough to delineate several occupational categories, especially proprietors of businesses, the military, farmers, and persons dependent upon welfare. Therefore, the occupational scale has departed from the titles and codes used by the census for a number of occupations and occupational groups.

OCCUPATIONAL SCALE

SCORE 9 Higher Executives, Proprietors of Large Businesses, and Major Professionals

a. Higher Executives: chairpersons, presidents, vice-presidents, secretaries, treasurers;

b. Commissioned officers in the military: majors, lieutenant commanders, and above, or equivalent;

c. Government officials, federal, state, and local: members of the United States Congress, members of the state

legislatives, governors, state officials, mayor, city managers;

d. Proprietors of businesses valued at $250,000 and more:

e. Owners of farms valued at $250,000 and more:

f. Major professionals (census code list).

Occupational title	Census code
Actuaries	034
Aeronautical engineers	006
Architects	002
Astronautical engineers	006
Astronomers	053
Atmospheric scientists	043
Bank officers	202
Biologic scientists	044
Chemical engineers	010
Chemists	045
Civil engineers	010
Dentists	062
Economists	091
Electrical/electronic engineers	012
Engineers, not elsewhere classified	023
Financial managers	202
Geologists	051
Health administrators	212
Judges	030
Lawyers	031
Life scientists, n.e.c.	054
Marine scientists	052
Materials engineers	015
Mathematicians	035
Mechanical engineers	014
Metallurgical engineers	015
Mining engineers	020
Optometrists	063
Petroleum engineers	021
Physical scientists, n.e.c.	054
Physicians	065
Physicists	053
Political scientists	092
Psychologists	093
Social scientists, n.e.c.	096
Sociologists	094
Space scientists	043
Teachers, college/university, including coaches	102-140
Urban and regional planners	095
Veterinarians	072

SCORE 8 Administrators. Lesser Professionals, Proprietors of Medium-Sized Business

a. Administrative officers in large concerns: district managers, executive assistants, personnel managers, production managers;

b. Proprietors of businesses valued between $100,000 and $250,00

c. Owners and operators of farms valued between $100,000 and $250,000;

d. Commissioned officers in the military: lieutenants, captains, lieutenants, s.g. and j.g., or equivalent;

e. Lesser professional (census code list)

Occupational title	Census code
Accountants	001
Administrators, college	235
Administrators, elementary/secondary school	240
Administrators, public administration, n.e.c.	222
Archivists	033
Assessors, local public administration	201
Authors	181
Chiropractors	061
Clergyman	086
Computer specialists, n.e.c.	005
Computer systems analysts	004
Controllers, local public administration	201
Curators	033
Editors	184
Farm management advisors	024
Industrial engineers	013
Labor relations workers	056
Librarians	032
Musicians/composers	185
Nurses, registered	075
Officials, public administration,, n.e.c.	222
Personnel workers	056
Pharmacists	064
Pilots, airplane	163
Podiatrists	071
Sales engineers	022
Statisticians	036
Teachers, secondary school	144

Treasurers, local public administration, n.e.c 201

SCORE 7 Smaller Business Owners, Farm Owners, Managers, Minor Professionals

a. Owners of smaller businesses valued at $75,000 to $100,000;

b. Farm owners/operators with farms valued at $75,000 to $100,000;

c. Managers (census code list);

d. Minor professionals (census code list);

e. Entertainers and artists.

Occupational title	Census code
Actors	175
Agricultural scientists	042
Announcers, radio/television	193
Appraisers, real estate	363
Artists	194
Buyers, wholesale/retail trade	205
Computer programmers	003
Credit persons	210
Designers	183
Entertainers, n.e.c.	194
Funeral directors	211
Health practitioners, n.e.c.	073
Insurance adjusters, examiners, investigators	326
Insurance agents, brokers, underwriters	265
Managers, administration, n.e.c.	245
Managers, residential building	216
Managers, office, n.e.c.	220
Officer, lodges, societies, unions	223
Officers/pilots, pursers, shipping	221
Operations/systems researchers/analysts	055
Painters	190
Postmasters, mail supervisors	224
Public relations persons	192
Publicity writers	192
Purchasing agents, buyers, n.e.c.	225
Real estate brokers/agents	270
Reporters	184
Sales managers, except retail trade	233
Sales representatives, manufacturing industries	281
Sculptors	190
Social workers	100

Stock/bond salesmen	271
Surveyors	161
Teachers, except college/ university/secondary school	141-143
Teachers, except college/university, n.e.c	145
Vocational/educational counsellors	174
Writers, n.e.c.	194

SCORE 6 Technicians, Semiprofessionals, Small Business Owners

a. Technicians (census code list);

b. Semiprofessionals: army, m/sgt., navy, c.p.o., clergymen (not professionally trained), interpreters (court);

c. Owners of businesses valued at $50,000 to $75,000;

d. Farm owners/operators with farms valued at $50,000 to $75,000.

Occupational title	Census code
Administrators, except farm--allocated	246
Advertising agents/salesmen	260
Air traffic controllers	164
Athletes/kindred workers	180
Buyers, farm products	203
Computer/peripheral equipment operators	343
Conservationists	025
Dental hygienists	081
Dental laboratory technicians	426
Department heads, retail trade	231
Dietitians	074
Draftsmen	152
Embalmers	165
Flight engineers	170
Foremen, n.e.c.	441
Foresters	025
Home management advisors	026
Inspector, construction, public administration	213
Inspectors, except construction, public administration	215
Managers, except farm--allocated	246
Opticians, lens grinders/polishers	506
Payroll/timekeeping clerks	360
Photographers	191
Professional, technical, kindred workers--allocated	196
Religious workers, n.e.c.	090
Research workers, not specified	195
Sales managers, retail trade	231
Sales representatives, Wholesale trade	282
Secretaries, legal	370
Secretaries, medical	371
Secretaries, n.e.c.	372
Sheriffs/bailiffs	965
Shippers, farm products	203
Stenographers	376

Teacher aides, except school monitors	382
Technicians	150-162
Therapists	076
Tool programmers, numerical control	172

SCORE 5 Clerical and Sales Workers, Small Farm and Business Owners

a. Clerical workers (census code list);

b. Sales workers (census code list);

c. Owners of small business valued at $25,000 to $50,000;

d. Owners of small farms valued at $25,000 to $50,000.

Occupational title	Census code
Auctioneers	261
Bank tellers	301
Billing clerks	303
Bookkeepers	305
Bookkeeping/billing machine operators	341
Calculating machine operators	342
Cashiers	310
Clerical assistants, social welfare	311
Clerical workers, miscellaneous	394
Clerical/kindred workers--	396
Clerical supervisors, n.e.c.	312
Clerks, statistical	375
Collectors, bill/account	313
Dental assistants	921
Estimators, n.e.c.	321
Health trainees	923
Investigators n.e.c.	321
Key punch operators	345
Library assistants/attendants	330
Recreation workers	101
Tabulating machine operators	350
Telegraph operators	384
Telephone operators	385
Therapy assistants	084
Typists	391

Score 4 Smaller Business Owners, Skilled Manual Workers, Craftsmen, and Tenant Farmers

a. Owners of small businesses and farms valued at less than $25,000;

b. Tenant farmers owning farm machinery and livestock;

c. Skilled manual workers and craftsmen (census code list);

d. Noncommissioned officers in the military below the rank of master sergeant and C.P.O.

Occupational title	Census code
Airline cabin attendants	931
Automobile accessories installers	401
Bakers	402
Blacksmiths	403
Boilermakers	404
Bookbinders	405
Brakemen, railroad	712
Brickmasons/stonemasons	410
Brickmason/stonemason apprentices	411
Cabinetmakers	413
Carpenters	415
Carpenter apprentices	416
Carpet installers	420
Cement/concrete finishers	421
Checkers/examiners/inspectors, manufacturing	610
Clerks, shipping/receiving	374
Compositors/typesetters	422
Conductors, railroad	226
Constables	963
Counter Clerks, except food	314
Decorators/window dressers	425
Demonstrators	262
Detectives	964
Dispatchers/starters, vehicles	315
Drillers, earth	614
Dry wall installers/lathers	615
Duplicating machine operators, n.e.c.	344
Electricians	430
Electrician apprentices	431
Electric power linemen/cablemen	433
Electrotypers	434
Engineers, locomotive	455
Engineers, stationary	545
Engravers, except photoengravers	435
Enumerators	320
Expediters	323
Firemen, fore protection	961
Firemen, locomotive	456
Floor layers	440
Foremen, farm	821
Forgemen/hammermen	442
Furriers	444
Glaziers	445
Heat treaters/annealers/temperers	446
Heaters, metal	626
Housekeepers, except private household	950
Inspectors, n.e.c.	452
Inspectors/scalers/graders, log and lumber	450
Interviewers	331
Jewelers/watchmakers	453
Job and diesetters, metal	454
Lithographers	515
Loom fixers	483
Machinists	461
Machinist apprentices	462

Mail carriers, post office	331
Mail handlers, except post office	332
Managers, bar/restaurant/cafeteria	230
Marshals, law enforcement	963
Mechanics	470-495
Meter readers	334
Millers, grain/flour/feed	501
Millwrights	355
Molders, metal	503
Molder apprentices	504
Office machine operators, n.e.c.	514
Pattermakers/modlemakers	522
Photoengraver	515
Plasterers	520
Plasterer apprentices	521
Plumbers/pipefitters	522
Plumber/pipefitter apprentices	523
Power station operators	525
Postal clerks	361
Practical nurses	926
Piano/organ tuners/repairmen	516
Pressmen, plate printers, printing trade	530
Pressmen apprentices	531
Projectionists, motion picture	505
Printing trade apprentices, except pressmen	423
Proof readers	362
Radio operators	171
Receptionists	364
Repairmen	471-486
Rollers/finishers, metal	533
Sheetmetal workers	533
Sheetmetal worker apprentices	536
Stereotypers	434
Stock clerks/storekeepers	381
Stone cutter/carvers	546
Structural metal workers	550
Superintendents, building	216
Switchmen, railroad	713
Tailors	551
Telephone linemen/splicers	552
Telephone installers/repairmen	554
Ticket/station/express agents	390
Tile setters	560
Tool and diemakers	561
Tool and diemaker apprentices	562
Weighers	392
Welders/flame cutters	680

Score 3 Machine Operators and Semiskilled Workers (census code list)

Occupational title	Census code
Animal caretakers	740
Asbestos/insulation workers	601
Assemblers	602
Barbers	935

Blasters/powdermen	603
Boardinghouse/lodging housekeepers	940
Boatmen/canalmen	701
Bottling operatives	604
Bulldozer operators	412
Bus drivers	703
Canning operatives	604
Carding, lapping, combing operatives	670
Chauffeurs	714
Child care worker, except private household	942
Conductors/motormen, urban rail transit	704
Cranesmen/derrickmen/hoistmen	424
Cutting operatives	612
Deliverymen	704
Dressmakers/seamstresses, except factory	613
Drill press operatives	650
Dyers	620
Excavating/grading/road machine operators except bulldozer	436
Farm services laborers, self-employed	824
File clerks	325
Filers/polishers/sanders/buffers	621
Fishermen/oystermen	752
Forklift/tow motor operatives	706
Furnacemen/smelters/pourers	622
Furniture/wood finishers	443
Graders/sorters/manufacturing	623
Grinding machine operatives	651
Guards/watchmen	962
Hairdressers/cosmetologists	944
Health aides, except nursing	922
Housekeepers, private household	982
Knitters/loopers/toppers	671
Lathe/milling machine operatives	652Machine
Machine operatives, miscellaneous specified	690
Machine Operative, n.e.c.	692
Meat cutters/butchers, except manufacturing	631
Meat cutters, butchers, manufacturing	633
Metal platers	635
Midwives (lay)	924
Miliners	640
Mine operatives	640
Mixing operatives	710
Motormen, mine/factory/logging camp, etc.	710
Nursing aides/attendants	925
Oilers/greasers, except auto	642
Operatives, miscellaneous	694
Operatives, not specified	695
Operatives, except transport--allocated	696
Orderlies	925
Painter, construction/maintenance	510
Painter apprentices	511
Painters, manufactured article	644
Paperhangers	512
Photographic process workers	645
Precision machine operatives, n.e.c.	653
Pressers/ironers, clothing	611
Punch/stamping press operatives	656

Rivaters/fasteners	660
Roofers/slaters	534
Routemen	705
Sailors/deckhands	661
Sawyers	662
Service workers, except private household-allocated	
Sewers/stitchers	976
Shoemaking machine operatives	663
Shoe repairmen	664
Sign painters/letterers	542
Spinners/twisters/winders	543
Solderers	672
Stationary firemen	665
Surveying, chainmen/rodmen/axmen	666
Taxicab drivers	605
Textile operatives--allocated	714
Transport equipment operatives--allocated	674
Truck drivers	726
Upholsterers	715
Weavers	563
Welfare service aides	673
Enlisted members of the armed services (other than noncommissioned officers)	954

Score 2 Unskilled Workers (census code list)

Occupational title	Census code
Bartenders	910
Busboys	911
Carpenter's helpers	750
Child care workers, private household	980
Construction laborers, except carpenters' helpers	751
Cooks, private household	981
Cooks, except private household	912
Crossing guards/bridge tenders	960
Elevator operators	943
Food service, n.e.c., except private household	916
Freight/materials handlers	753
Garage workers/gas station attendants	623
Garbage collectors	754
Gardeners/groundskeepers, except farm	755
Hucksters/peddlers	264
Laborers, except farm--allocated	796
Laborers, miscellaneous	780
Laborers, not specified	785
Laundry/drycleaning operatives, n.e.c.	630
Lumbermen/raftsmen/woodchoppers	761
Meat wrappers, retail trade	634
Messengers	333
Office boys	333
Packers/wrappers, n.e.c.	643
Parking attendants	711
School monitors	952
Waiters	915
Warehousemen, n.e.c.	770

Score 1 Farm Laborers/Menial Service Workers (census code list)

Occupational title	Census code
Attendants, personal service, n.e.c.	933
Attendants, recreation/amusement	932
Baggage porters/bellhops	934
Bootblacks	941
Chambermaids, maids, except private household	901
Cleaners/charwomen	902
Dishwashers	913
Farm laborers, wage workers	931
Farm laborers/farm foremen/kindred workers-allocated	846
Janitors/sextons	903
Laundresses, private household	983
Maids/servants, private household	984
Newsboys	266
Personal service apprentices	945
Private household workers---allocated	986
Produce graders/sorter, except factory/farm	625
Stockhandlers	762
Teamsters	763
Vehicle washers/equipment cleaners	764
Ushers, recreation/amusement	953

Dependent upon welfare--no regular occupation-----

IV. The Estimation of Status

The status score of an individual or a nuclear family unit is estimated by combining information on sex, marital status, education, and occupation. The status score of an individual is calculated by multiplying the scale value for occupation by a weight of five (5) and the scale value for education by a weight of three (3)[16]. To calculate the status score for a nuclear family it is necessary to determine the education, occupation, and marital status of its head or heads and their relationship to the labor force in the present, or for retired persons in the past. Two examples illustrate this point:

A. John Smith lives with his spouse who is housewife.[17] He is the manager of a supermarket. He completed high school and one year of business college. His status is computed as follows

Peter Paul

Factor	Scale score	Factor weight	Score x Weight
occupation	6	5	30
education	5	3	15
		total score	45

B. The Peter Paul family's score is computed differently because both Peter and his wife are gainfully employed. Peter is an installer for the telephone company. His wife is employed as a clerk in an insurance company office. Peter completed high school. His wife completed high school and one year of business college. The scores for each are calculated as follows:

Factor	Scale score	Factor weight	Score x Weight
occupation	4	5	20
education	4	3	12
		total score	32

Mary Paul

Factor	Scale score	Factor weight	Score x Weight
occupation	5	5	25
education	5	3	15
		total score	40

To determine the Peter Paul family's social status, the scores for each spouse are summed and the total is divided by two:

Peter Paul	32	
Mary Paul	40	
total score	72	divided by 2=36.

The total score for the family is higher than that for Peter alone, but lower than for Mary alone. When two spouses are gainfully employed the husband's or the wife's education and occupation may raise or lower the calculated score for there family.

Computed scores range from a high of 66 to a low of 8. This range remains constant whether the computed score is base on the occupation of one or two members of a nuclear family or household. It is assumed that the higher score of a family or nuclear unit, the higher the status its members are accorded by other members of our society. This assumption is derived from the assignment of differential values to the amount and kind of education an adult has received and to the occupational functions individuals perform in society. Values assigned to the amount of education an adult has received are linked, in turn, to occupational functions. In contemporary American society, differential rewards are assigned to occupational functions. In a diffuse way, these values are social; in a specific sense, they are pecuniary. The most highly valued occupations are associated with financial, managerial, legal, and medical functions. Consequently, the banker, the corporation executive, the corporation lawyer, and the medical specialist are most highly rewarded for the functions they perform. Technical, clerical, and sales work carry lower rewards. Such functions as stoop agricultural labor in the fields of factory farms carry the lowest pecuniary and social rewards. There are many gradations between these examples. The important point about occupational

function is that the work an individual performs is what is evaluated. The pecuniary and social rewards associated with it are society's way of compensating the individual for the work he performs. Secondly, individuals are identified in society with their occupational pursuits. In this process, the invidious value associated with the occupational function is associated with the individual who performs it. Thirdly, for the mass of individuals, the income earned on the job is translated into goods and services. This is expressed in economic terms as a level of living. The general relationship between occupational pursuits, pecuniary rewards, and level of living results in the socioeconomic divisions so vividly recognized in our society.

V. Validation of the Index

To validate the scales used for education and occupation, we analyzed data gathered in the United States Census in 1970. The linkage between the years of school completed and occupational pursuits is shown in Tables 1 and 2 of the Appendix. The analysis summarized in Table 1 reveals a definite gradient between the years of school completed and the score assigned to a group of similar occupations. The gradient is similar for males and females in the labor force. The correlation between median years of school completed by sex and occupational score groups is summarized in Table 2. The coefficient of correlation, r, is essentially the same for both males and females.

Although I did not utilize data on income in this index, I have analyzed them for validation purposes. The linkage between the score assigned to occupational groups and earned income is summarized in Table 3. The mean dollars earned by each occupational code group, listed in the 1970 census, traces a distinct gradient from the highest to the lowest scored occupations with one exception: in both sexes persons engaged in skilled occupations, with a score of 4, earned on the average more than persons in the clerical and sales groups with a score of 5. This variation between the prestige scores assigned to the clerical and sales occupations may be attributed to the favorable view of white-collar clerical and sales work, in contrast to blue-collar skilled manual work in our society. Another important component in this variation between prestige scores and earned income is the high percentage of workers with the score of 4 who belong to craft unions. Sex is a factor also, since a high proportion of clerical and sales workers are females, whereas the majority of skilled manual workers are males. However, when sex is controlled, skilled manual workers earn more than clerical and sales workers.

The disparity between the mean earnings in each of the nine occupational group by sex is are reflection of the differential values assigned to occupational tasks performed by males in contrast to females. This disparity cannot be attributed to differences in years of school completed by the two sexes, as is demonstrated by the figures given in Table 1.

The National Opinion Research Center has been studying evaluation of occupations and occupational groups for some 30 years. As a criterion against which the scores assigned to occupations and occupational groups could be tested, I compared the

scores for occupational groups in this index with the prestige scores developed by the NORC for use in its General Social Survey.[18] The occupational titles used by the United States Bureau of the Census for the 1970 census and scored by the present index and the NORC were correlated. The Pearsonian Product Moment Coefficient of Correlation between the nine-step occupational scale and the NORC prestige scores is $r = .927$. The coefficient of determination is $r^2 = .860$.

The analyses reported here of interrelations between years of school completed, occupational pursuits, and earnings on the job demonstrate the existence of a status system in contemporary American society that is symbolized by the amount of education adults have received, the occupations they pursue, and the sex bestowed on them by the biological lottery we are all enmeshed in. Education tends to condition occupational opportunities, and the pecuniary value assigned to occupations, in turn, conditions the amount of income an individual earns on the job. In sum, the scores computed by the use of this index are a measure of inequality in the social system of the United States.

VI. Two Unfinished Tasks

Further research is indicated to determine the effects of marital status on social status. Preliminary studies indicate that when both spouses are gainfully employed, instead of just one, there is a distinct effect on the socioeconomic status of the individual and/or the nuclear family. A second incomplete research problem is the division of the continuum of scores based on education and occupation into meaningful groups. Tentatively, I believe computed scores for individuals or nuclear families can be aggregated into groups of scores that encompass the major strata symbolic of social standing in contemporary American society. I have found that meaningful groups of scores for estimating the position of an individual or a nuclear family in the status structure are as follows:

Social Strata	Range of computed scores
Major business and professional	66-55
Medium business, Minor professional, technical	54-40
Skilled craftsmen, clerical, sales workers	39-30
Machine operators, semiskilled workers	29-20
Unskilled laborers, menial service workers	19-8

When the scores are aggregated, individuals and nuclear families with scores that fall into a range of scores are presumed to be in the stratum.

SES

Class 1 = 55 to 66	Major business and professional
Class 2 = 40 to 54	Medium business, minor professional, technical
Class 3 = 30 to 39	Skilled craftsmen, clerical, sales workers
Class 4 = 20 to 29	Machine operators, semiskilled operators
Class 5 = 8 to 19	Unskilled laborers, menial service workers

SCHOOLING

1 = 7th grade

2 = 9th grade

3 = 10th or 11th grade

4 = high school, including vocational

5 = partial college (at least 1 year) or specialized training

6 = college or university degree

7 = graduate degree

Appendix G

Intercalibration Study

Interlaboratory Calibration Study for the Analysis of Lead in Dust and Soil Samples

One main focus in lead research today is to measure the association between lead in either dust or soil and children's blood lead concentrations. The results of these studies rely on the measurements of lead concentration in dust and soil samples gathered from the areas where children are exposed. Several different chemical techniques are available for measuring the lead concentration in environmental samples including x-ray fluorescence spectroscopy (XRF), atomic absorption spectrometry (AAS), and inductively coupled plasma / atomic emission spectroscopy (ICP). There are several questions that must be answered about these methods of measuring lead concentration in dust and soil:

1) Are these three different techniques for Soil and Dust analysis interchangeable?

2) How consistent are each of these techniques both within each individual laboratory, and between different labs?

To answer these questions, EPA designed a soil and dust round robin interlab calibration study. In this study, 15 soil and 5 dust samples were carefully prepared and homogenized by the EMSL lab in Las Vegas (these samples were not approved as NBS reference materials). These twenty samples were sent to five different labs, some of which were capable of performing more than one method of chemical analysis. Each lab was asked to run several replicates of each sample for each method of analysis, in an effort to measure the within lab variability. The lead concentration measurements from each sample, lab, and method would then be used to answer the questions listed above.

LAB	XRF	AAS	ICP
CIN	Y	Y	
BAL	Y	Y	
BOS	Y		Y
LV	Y		Y
RTP			Y

One approach to answering these two questions is to derive a consensus value of lead concentration for each of the twenty samples prepared by the lab in Las Vegas. The behavior of measurements from one particular city, or from one specific method of chemical analysis could then be compared to these consensus values. As an intermediate step, it was decided that a separate

set of consensus values should be calculated for each method of analysis.

This entails modeling each lead concentration measurement as a function of the sample and city for each method of analysis. A separate analysis was done for soil and dust samples, because there was evidence showing that these two mediums are different, and are treated differently in the lab. In exploring different models, one of the criterion was that there be no significant interaction between sample and city. A model which does include interaction effects makes it difficult to calculate a consensus value.

The data was set up so that the response variable (Y_{mijk}) denotes the lead concentration measurement using method (m) of analysis, of sample(i), in city(j), replicate number(k). Y_{mij} and s^2_{mij} were calculated - the mean and variance of the lead concentration measurement of sample(i), city(j), using method(m) of analysis. It appeared that the variance across replications increased as the concentration of lead in each sample increased. This effect was uniform for all three methods of analysis, for all cities involved, and for both dust and soil samples. This pattern suggests that the errors may be multiplicative instead of additive. An additive model suggests that the variances remain stable as the lead concentration measurements increase or decrease, while a multiplicative model indicates that the variances are linearly related to the mean.

A generalized linear model with a log link function was applied to the data in an effort to determine appropriate consensus values for the lead concentration of each sample. Two models were explored, one in which the response variable was weighted by the inverse of the within lab variance s^2_{mij}, and the other in which each response variable received equal weight. Both models appear as follows:

$$\log(\mu_{mij}) = \text{sample}(mi) + \text{city}(mj) + \text{error}$$

exp{sample(mi)} is interpreted as the consensus value for lead concentration in sample(i) using method(m) of analysis.

Measurements for city(j) using method(m) of analysis must be multiplied by exp{-city(mj)} in order to obtain the consensus values.

A standardized residual analysis of these models showed that the errors were normally distributed. These models suggest that there are differences between the cities when measuring lead in both dust and soil. The question of whether the three different methods of analysis are interchangeable may be answered by an analysis of covariance structures.

Multiplicative Model with Weight = "Within Lab" Variance

Consensus Values For Dust Samples

SAMPLE	XRF	AAS	ICP
1	92.8	54.2	81.7
2	342.7	221.9	283.4
3	1319.0	1492.2	1362.3
4	2943.4	2378.1	2133.4
5	228.3	232.4	206.2

Consensus Values For Soil Samples

SAMPLE	XRF	AAS	ICP
1	460.2	430.5	426.6
2	960.7	1002.1	909.6
3	1140.5	1106.2	1018.8
4	2493.5	2474.2	2342.1
5	4139.3	4164.1	3706.1
6	761.0	776.9	736.1
7	664.1	623.3	656.0
8	1062.3	1049.4	1005.4
9	2987.8	3272.6	3274.9
10	6175.2	6863.2	6411.5
11	13120.7	13645.4	13224.7
12	335.3	361.5	323.6
13	12498.5	13041.6	13080.0
14	941.3	949.5	923.3
15	1663.2	1744.1	1716.8

Multiplicative Model with Weight = 1

Consensus Values For Dust Samples

SAMPLE	XRF	AAS	ICP
1	99.1	44.8	80.2
2	366.3	217.8	293.9
3	1334.0	1468.7	1392.3
4	2932.8	2395.7	2232.2
5	242.4	207.5	211.0

Consensus Values For Soil Samples

SAMPLE	XRF	AAS	ICP
1	399.2	420.2	415.2
2	927.5	1005.9	895.3
3	1002.5	1109.3	1007.9
4	2285.5	2482.8	2305.5
5	3869.7	4151.1	3674.8
6	698.0	771.0	718.8
7	610.7	611.6	644.3
8	934.2	1049.3	990.2
9	2849.7	3318.4	3209.4
10	5758.8	6890.9	6335.7
11	13640.3	13583.0	13038.3
12	290.1	352.9	315.2
13	12375.7	13085.0	12757.8
14	836.1	934.6	911.9
15	1530.0	1748.4	1690.5

Multiplicative Model with Weight = "Within Lab" Variance

Constant for Adjusting Dust Samples

CITY	XRF	AAS	ICP
CIN	1.0074	0.9616	.
BAL	0.7803	1.0416	.
KEVEX - BOS	1.1527	.	1.0707
LV	1.1653	.	1.0707
RTP	.	.	0.8834
XMET - BOS	.	.	.

Constant for Adjusting Soil Samples

CITY	XRF	AAS	ICP
CIN	0.8698	0.9839	.
BAL	1.1909	1.0166	.
KEVEX - BOS	1.0733	.	1.0166
LV	0.8977	.	1.0166
RTP	.	.	0.9684
XMET - BOS	1.0370	.	.

Multiplicative Model with Weight = 1

Constant for Adjusting Dust Samples

	CITY	XRF	AAS	ICP
	CIN	1.0076	0.9620	.
	BAL	0.7804	1.0412	.
KEVEX -	BOS	1.1525	.	1.1118
	LV	1.1651	.	0.9892
	RTP	.	.	0.9177
XMET -	BOS	.	.	.

Constant for Adjusting Soil Samples

	CITY	XRF	AAS	ICP
	CIN	0.8690	0.9840	.
	BAL	1.1926	1.0166	.
KEVEX -	BOS	1.0760	.	0.9980
	LV	0.8955	.	1.0567
	RTP	.	.	0.9508
XMET -	BOS	1.0367	.	

Appendix H

Bid Schedule

SPECIAL FORM OF PROPOSAL

Department of General Services
STATE OF MARYLAND
Earl F. Seboda, Secretary
301 West Preston Street
Baltimore, Maryland 21201

Date:

DGS Project No: MDE-88-001-TESH-1
Contract #4

Gentlemen:

We hereby submit our proposal for

LEAD PAINT AND SOIL STABILIZATION PROJECT IN BALTIMORE COUNTY

Having carefully examined the "Instructions to Bidders", the "General Conditions", and the Specifications and Plans for the subject construction

Specifications numbered _____
Addenda numbered _____

and having received clarification on all items of conflict or upon which any doubt arose, the undersigned proposes to furnish all labor, materials and equipment called for by the said documents for the following unit prices or lump sum in accordance with the Contract Documents.

BID SCHEDULE

NOTE: BIDS shall include sales tax and all other applicable taxes and fees.

NO.	ITEM	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
1.	General Requirements: Bonds and Mobilization LUMP SUM COST				$ _____
2.	Window & Frame Complete Preparation and Painting	Each	1,990	$ _____	$ _____
3.	Window & Frame Minimum Preparation and Painting	Each	37	$ _____	$ _____
4.	Door & Frame Complete Preparation and Painting	Each	317	$ _____	$ _____

5. Door & Frame Minimum Preparation and Painting	Each	65	$	$
6. Porch Column, Complete Preparation and Painting	LF	4,532	$	$
7. Porch Column, Minimum Preparation and Painting	LF	106	$	$
8. Porch Railing Complete Preparation and Painting	LF	2,489	$	$
9. Porch Railing Minimum Preparation and Painting	LF	188	$	$
10. Porch Fascia & Trim Complete Preparation and Painting	SF	13,771	$	$
11. Porch Fascia & Trim Minimum Preparation and Painting	SF	401	$	$
12. Porch Ceiling Complete Preparation and Painting	SF	16,226	$	$
13. Porch Floor, Complete Preparation and Painting	SF	14,763	$	$
14. Front Cornice Complete Preparation and Painting	SF	8,754	$	$
15. Bow Window Units, Complete Preparation and Painting (Contingency item)	Each	1	$	$
16. Gutter & Downspout Complete Preparation and Painting	LF	4,306	$	$
17. Sun Room (Window Enclosed Porch) Comp. Preparation and Painting	Each	1	$	$

18. Steps, Complete Preparation and Painting	SF	3,715	$	$
19. Stair Handrail Complete Preparation and Painting	LF	1,171	$	$
20. Painted Masonry Wall, Complete Preparation and Painting	SF	38,660	$	$
21. Wood or Metal Siding Complete Preparation and Painting	SF	5,931	$	$
22. Scuttle Type Basement Door, Complete Preparation and Painting	Each	25	$	$
23. Garage, Complete Preparation & Painting	LF	1,200	$	$
24. Oil Tanks, Complete Preparation & Painting	Each	9	$	$
25. Metals - Trim, Complete Preparation & Painting	LF	519	$	$
26. Metals - Trim, Minimum Preparation & Painting	LF	111	$	$
27. Metal Roof Preparation & Painting	SF	2,147	$	$
28. Misc. Surfaces, Complete Preparation & Painting	SF	2,724	$	$
29. Misc. Surfaces, Minimum Preparation & Painting	SF	1,083	$	$
30. Remove Storm Windows No ladder required	Each	556	$	$
31. Remove Storm Window Use of ladder required	Each	246	$	$
32. Locate and delineate soil removal work areas at each site	Each	51	$	$
33. Remove and dispose of non-toxic soil and debris	Ton	750	$	$

34. Remove and dispose of toxic soil and debris	Ton	90	$	$
35. Furnish, place and compact clean earth	CY	440	$	$
36. Furnish and place clean topsoil	CY	230	$	$
37. Furnish and place sod	SY	4,000	$	$
38. Seed and mulch bare areas as directed	SY	1,900	$	$
39. Remove and re-erect existing fence	LF	300	$	$

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS, PLANS AND SPECIFICATIONS for the following price:

Total Bid Price_____

_____

_____ ($ _____)

Submitted with this proposal is a fully executed Bid Bond in the amount of 5% of the bid when the total bid is $50,000 or more.

It is understood that the bid price will be firm for a time period of ninety (90) calendar days from the bid opening date and that if the undersigned be notified of acceptance of this proposal within this time period, the firm shall execute a contract for the above stated compensation and shall complete the work within (60) calendar days from the date the firm has executed the contract and agrees that if the work is not completed within the time period specified, the Contractor will be liable for Liquidated Damages of $300 per calendar day as specified in the "General Conditions", Section 7, Article 14. Also, it is agreed that on or before the date the firm has executed the contract, the firm will have and submit to the State an Affirmative Action Plan as specified in Section 9.02 of the "General Conditions".

_____

(Sign for Identification)

Bid Bonds, except those of three low bidders will be returned after the bid opening. Other bid bonds will be returned after the related contract has been executed. If no bid has been accepted within ninety (90) days after the bid opening, then any bond may be returned upon demand of the bidder.

Failure to property and completely fill in all blanks may be cause for

rejection of this proposal.

All alternates called for in the Contract Documents must be submitted herewith.

_____	_____	_____
(Construction Firm License No.)	(Date Issued)	(Place of Issuance)

_____
Federal Employer Identification No.
(or Social Security No. if no F.E.I.N.)

INDIVIDUAL PRINCIPAL

In Presence of
Witness: _____

FIRM NAME _____

SIGNED _____

ADDRESS _____

TELEPHONE NO. _____

CO-PARTNERSHIP PRINCIPAL

In Presence of
Witness: _____

_____
(Name of Co-Partnership)

ADDRESS _____

TELEPHONE _____

_____ as to BY _____
(Partner)

_____ as to BY _____
(Partner)

_____ as to BY _____
(Partner)

CORPORATE PRINCIPAL

_____
(Name of Corporation)

Attest:

ADDRESS _____

_____
(Corporate Secretary)

TELEPHONE NUMBER _____

BY _____

(Affix Corporate Seal)

_____

_____
(Sign for Identification)

The bidder represents, and it is a condition precedent to acceptance of this bid, that the bidder has not been a party to any agreement to bid a fixed or uniform price.

WITNESS:

_____ _____ (SEAL)
Signature of Office and Title

SUBSCRIBED AND SWORN TO before me, a Notary Public of the State of _____, County or City of _____ this _____ day of _____, 19 _____.

_____
Notary Public

(Please submit in duplicate)

Appendix I

Models For Baltimore Data

Introduction..... 2-3

Log Transformed Response Variable
in Linear Regression Model..... 4-15

Untransformed Response in GLM
with Normal Error and Log Link..... 16-27

Models for Comparison with
Boston and Cincinatti Projects..... 28-30

The material presented in this appendix are the statistical output from the GLIM software package of models used to understand the Baltimore data. The models are an attempt of explaining how the experimental treatment of soil abatement has influenced the blood lead and hand lead of children involved in the study. These are primarily linear regression models using a measure of blood lead or hand lead as the response variable. The response variables in the Baltimore study were typically distributed log-normal. In each set of models, the direct effect of group assignment is measured, and then an appropriate covariate adjusted analysis was performed. The models presented are cross sectional by round of sampling, and represent each of three statistical approaches:

1) Apply a natural log transformation to the response variable and model the data through multiple linear regression with additive errors. This was the approach selected for presentation in the main report. It is possible to transform the regression coefficients back to the original scale of measurement, but the interpretation of their effects becomes multiplicative instead of addditive.

2) Use the untransformed response variable in a generalized linear model with normal error structure and a log link function. The errors associated with this set of models have multiplicative effects.

3) In the rounds of sampling following the intervention, use the log transformed response variable in a linear model with group assignment, and a summary of the pre intervention response (log scale) as covariates. This model was developed by the Boston Lead Free Kids Study, and can be used to compare and contrast the results found among the three participating cities.

These three sets of models were applied to two seperate populations within the Baltimore study. One population represented children who were sampled in all six rounds of the experiment, while the other population consisted of every child for whom we had complete data. The models were applied to both populations to demonstrate that there were no apparent biases introduced by the attrition suffered throughout the experiment.

The response variables and covariates used in these models are described in detail in the Variable Selection section of the main report, and the statistical models are explained in the section labels Statistical Models for Blood Lead and Hand Lead.

Following is a list of Variable abbreviations and definitions used in the GLIM output:

1	lpb	Log Blood Lead
2	pb	Blood Lead
3	lhw	Log Hand Lead
4	hw	Hand Lead
5	ABAT	Treatment Group - Indicator that child lived in a property that received soil abatement
6	CONT	Control Group - Indicator that child lived in a property that did not receive soil abatement
7	AGE0	Indicator that child is between the ages of 0 and 1
8	AGE1	Indicator that child is between the ages of 1 and 2
9	AGE2	Indicator that child is between the ages of 2 and 3
10	AGE3	If child is older than three, AGE3 is a linear term which represents the Child's age - 3
11	SES	Socio Economic Status (Hollingshead Index)
12	SEAS	Indicator that sample was taken between the months of March and November (When Children are Outdoors)
13	MOUT(1)	Indicator of Weak Mouthing Behavior
14	MOUT(2)	Indicator of Strong Mouthing Behavior
15	FEMA	Indicator that Child is Female
16	DUST	Measure of Dust Lead
17	SEX(1)	Indicator that Child is Male
18	SEX(2)	Indicator that Child is Female
19	SOIL	Measure of Soil Lead
20	BLPB	Mean of Pre Intervention Log Blood Lead
21	BLHW	Mean of Pre Intervention Log Hand Lead

In the GLIM output, the deviance is a measure of the variation left unexplained by the model. Dividing the deviance by the degrees of freedom will result in the mean squared error (represented by the scale parameter).

```
[i] !    ROUND 1 - CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !    RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !    MODEL 1
[i] !
[i] $yvar lpb$err nS
[i] $fit %gm$
[o] deviance =  32.622
[o]    d.f. = 139
[o]
[i] $fit +abate + control - %gm$dis eS
[o] deviance =  32.556 (change = -0.06565)
[o]    d.f. = 138    (change = -1     )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.473    0.06491     ABAT
[o]    2     2.428    0.05300     CONT
[o]    scale parameter taken as  0.2359
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses + season + mouth/lhw - mouth$dis eS
[o] deviance =  25.102 (change =  -7.454)
[o]    d.f. = 130    (change =  -8    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.319    0.1947     ABAT
[o]    2     2.341    0.1832     CONT
[o]    3   -0.4681    0.1772     AGE0
[o]    4    0.1189    0.1328     AGE1
[o]    5    0.1309    0.1246     AGE2
[o]    6   0.02635   0.05892     AGE3
[o]    7  -0.009112  0.003973     SES
[o]    8    0.1370   0.08284     SEAS
[o]    9   0.06375   0.06111     MOUT(1).LHW
[o]   10    0.1450   0.05798     MOUT(2).LHW
[o]    scale parameter taken as  0.1931
[o]
[i] !    RESPONSE VARIABLE - LOG HAND LEAD
[i] !
[i] !    MODEL 3
[i] $yvar lhw$err nS
[w] -- model changed
[i] $fit %gm$
[o] deviance =  72.218
[o]    d.f. = 139
[o]
[i] $fit +abate + control - %gm$dis eS
[o] deviance =  72.089 (change = -0.1292)
[o]    d.f. = 138    (change = -1     )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.198    0.09658     ABAT
[o]    2     2.136    0.07886     CONT
[o]    scale parameter taken as  0.5224
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + season + dust$dis eS
[o] deviance =  59.531 (change =  -12.56)
[o]    d.f. = 131    (change =  -7    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.498    0.1937     ABAT
[o]    2     2.394    0.1739     CONT
[o]    3    -1.102    0.2513     AGE0
[o]    4   -0.3354    0.1994     AGE1
[o]    5  0.006739    0.1932     AGE2
[o]    6  -0.03076   0.09023     AGE3
[o]    7   -0.1454    0.1149     FEMA
[o]    8   -0.1191    0.1261     SEAS
[o]    9  7.162e-06  0.00003667   DUST
[o]    scale parameter taken as  0.4544
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +season +dust +soil - %gm$dis eS
[o] deviance =  59.845
[o]    d.f. = 131
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.424    0.1928     SEX(1)
[o]    2     2.277    0.1889     SEX(2)
[o]    3    -1.106    0.2521     AGE0
[o]    4   -0.3397    0.2015     AGE1
[o]    5  -0.01190    0.1925     AGE2
[o]    6  -0.03152   0.09115     AGE3
[o]    7   -0.08192    0.1183     SEAS
[o]    8  7.295e-06  0.00003677   DUST
[o]    9 -5.049e-06  0.0002036    SOIL
[o]    scale parameter taken as  0.4568
```

```
[i] !    ROUND 1 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !
[i] !    MODEL 1
[i] $vvar lpb$err n$
[i] $fit %gm$
[o] deviance =  70.374
[o]    d.f. = 272
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  70.271 (change = -0.1031)
[o]    d.f. = 271    (change = -1    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.405    0.06001     ABAT
[o]    2     2.361    0.03592     CONT
[o]    scale parameter taken as  0.2593
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses + season + mouth/lhw - mouth$dis e$
[o] deviance =  49.535 (change =  -20.74)
[o]    d.f. = 263    (change =  -8   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.333    0.1306     ABAT
[o]    2     2.327    0.1265     CONT
[o]    3   -0.6558    0.1245     AGE0
[o]    4  -0.01758   0.09485     AGE1
[o]    5   0.03895   0.09171     AGE2
[o]    6  -0.04762   0.03830     AGE3
[o]    7 -0.009923  0.002417      SES
[o]    8    0.1391   0.05343     SEAS
[o]    9    0.1139   0.04152     MOUT(1).LHW
[o]   10    0.1650   0.03896     MOUT(2).LHW
[o]    scale parameter taken as  0.1883
[o]
[i] !    RESPONSE VARIABLE - LOG HAND LEAD
[i] !
[i] !    MODEL 3
[i] $vvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 162.73
[o]    d.f. = 272
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 162.73 (change = -0.001083)
[o]    d.f. = 271    (change = -1     )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.095    0.09132     ABAT
[o]    2     2.090    0.05466     CONT
[o]    scale parameter taken as  0.6005
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + season + dust$dis e$
[o] deviance = 128.37 (change =  -34.36)
[o]    d.f. = 264    (change =  -7   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.298    0.1451     ABAT
[o]    2     2.259    0.1313     CONT
[o]    3    -1.214    0.1840     AGE0
[o]    4   -0.4166    0.1485     AGE1
[o]    5  -0.07236    0.1481     AGE2
[o]    6   0.01890   0.06098     AGE3
[o]    7    -0.1462   0.08502    FEMA
[o]    8   0.02264   0.08617     SEAS
[o]    9 0.00003876 0.00003166   DUST
[o]    scale parameter taken as  0.4862
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +season +dust +soil - %gm$dis e$
[o] deviance = 128.42
[o]    d.f. = 264
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.281    0.1372     SEX(1)
[o]    2     2.135    0.1370     SEX(2)
[o]    3    -1.212    0.1850     AGE0
[o]    4   -0.4159    0.1495     AGE1
[o]    5  -0.07558    0.1480     AGE2
[o]    6   0.01779   0.06142     AGE3
[o]    7   0.02684   0.08542     SEAS
[o]    8 0.00004023 0.00003176   DUST
[o]    9 -2.797e-05 0.0001307    SOIL
[o]    scale parameter taken as  0.4864
```

```
[i] !    ROUND 2 - CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !    RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !
[i] !    MODEL 1
[i] $vvar lpb$err n$
[i] $fit %gm$
[o] deviance =  27.579
[o]    d.f. = 135
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  27.480 (change = -0.09952)
[o]    d.f. = 134    (change = -1     )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.383    0.06220    ABAT
[o]    2     2.327    0.04971    CONT
[o]    scale parameter taken as  0.2051
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses + season + mouth/lhw - mouth$dis e$
[o] deviance =  24.672 (change =  -2.808)
[o]    d.f. = 127    (change =  -7   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.388    0.1562    ABAT
[o]    2     2.361    0.1590    CONT
[o]    3     0.000    aliased   AGE0
[o]    4   0.007542    0.1389   AGE1
[o]    5    0.2174     0.1272   AGE2
[o]    6   0.02353    0.05385   AGE3
[o]    7  -0.009250   0.004070   SES
[o]    8   0.03492    0.07738   SEAS
[o]    9   0.02039    0.04701   MOUT(1).LHW
[o]   10   0.07505    0.04542   MOUT(2).LHW
[o]    scale parameter taken as  0.1943
[o]
[i] !    RESPONSE VARIABLE - LOG HAND LEAD
[i] !
[i] !    MODEL 3
[i] $vvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 110.59
[o]    d.f. = 135
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 110.59 (change = -0.0004272)
[o]    d.f. = 134    (change = -1      )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.187    0.1248    ABAT
[o]    2     2.191    0.09972   CONT
[o]    scale parameter taken as  0.8253
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + season + dust$dis e$
[o] deviance =  93.688 (change =  -16.90)
[o]    d.f. = 128    (change =  -6  )
[o]
[o]        estimate      s.e.    parameter
[o]    1     1.933    0.2311    ABAT
[o]    2     1.979    0.2214    CONT
[o]    3     0.000    aliased   AGE0
[o]    4   -0.1505    0.2673    AGE1
[o]    5    0.1670    0.2498    AGE2
[o]    6    0.2038    0.1015    AGE3
[o]    7   -0.3607    0.1487    FEMA
[o]    8   0.05406    0.1494    SEAS
[o]    9  0.0001485  0.00004625  DUST
[o]    scale parameter taken as  0.7319
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +season +dust +soil - %gm$dis e$
[o] deviance =  92.279
[o]    d.f. = 128
[o]
[o]        estimate      s.e.    parameter
[o]    1     1.792    0.2417    SEX(1)
[o]    2     1.441    0.2434    SEX(2)
[o]    3     0.000    aliased   AGE0
[o]    4   -0.1925    0.2670    AGE1
[o]    5    0.1494    0.2482    AGE2
[o]    6    0.1848    0.1016    AGE3
[o]    7   0.08260    0.1496    SEAS
[o]    8  0.0001484  0.00004587  DUST
[o]    9  0.0003678  0.0002570   SOIL
[o]    scale parameter taken as  0.7209
```

```
[i] !    ROUND 2 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !
[i] !    MODEL 1
[i] $vvar lpb$err n$
[i] $fit %gm$
[o] deviance =  54.716
[o]    d.f. = 254
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  54.687 (change = -0.02920)
[o]    d.f. = 253    (change = -1     )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.338    0.05857     ABAT
[o]    2     2.313    0.03355     CONT
[o]    scale parameter taken as  0.2162
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses + season + mouth/lhw - mouth$dis e$
[o] deviance =  47.428 (change =  -7.258)
[o]    d.f. = 245    (change =  -8    )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.441     0.1209     ABAT
[o]    2     2.431     0.1197     CONT
[o]    3   -0.5121     0.2670     AGE0
[o]    4   -0.1468     0.1014     AGE1
[o]    5   0.05951    0.09507     AGE2
[o]    6  -0.03420    0.03748     AGE3
[o]    7  -0.01082   0.002662     SES
[o]    8   0.004144    0.05630     SEAS
[o]    9    0.06129    0.03494     MOUT(1).LHW
[o]   10     0.1027    0.03445     MOUT(2).LHW
[o]    scale parameter taken as  0.1936
[o]
[i] !    RESPONSE VARIABLE - LOG HAND LEAD
[i] !
[i] !    MODEL 3
[i] $vvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 203.52
[o]    d.f. = 254
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 202.83 (change = -0.6901)
[o]    d.f. = 253    (change = -1     )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.157     0.1128     ABAT
[o]    2     2.278    0.06462     CONT
[o]    scale parameter taken as  0.8017
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + season + dust$dis e$
[o] deviance = 171.67 (change =  -31.16)
[o]    d.f. = 246    (change =  -7    )
[o]
[o]        estimate       s.e.    parameter
[o]    1     1.794     0.1794     ABAT
[o]    2     1.902     0.1611     CONT
[o]    3   -0.7262     0.5074     AGE0
[o]    4   -0.1154     0.1924     AGE1
[o]    5   0.06398     0.1819     AGE2
[o]    6    0.2154    0.06869     AGE3
[o]    7   -0.1378     0.1060     FEMA
[o]    8    0.1209     0.1057     SEAS
[o]    9  0.0001509  0.00003866    DUST
[o]    scale parameter taken as  0.6978
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +season +dust +soil - %gm$dis e$
[o] deviance = 170.57
[o]    d.f. = 246
[o]
[o]        estimate       s.e.    parameter
[o]    1     1.762     0.1717     SEX(1)
[o]    2     1.626     0.1750     SEX(2)
[o]    3   -0.7244     0.5057     AGE0
[o]    4   -0.1266     0.1919     AGE1
[o]    5   0.06258     0.1810     AGE2
[o]    6    0.2083    0.06867     AGE3
[o]    7    0.1303     0.1056     SEAS
[o]    8  0.0001435  0.00003862    DUST
[o]    9  0.0002419  0.0001573     SOIL
[o]    scale parameter taken as  0.6934
```

```
[i] !    ROUND 3 - CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !    RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !
[i] !    MODEL 1
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  30.528
[o]    d.f. = 129
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  30.518 (change = -0.009666)
[o]    d.f. = 128    (change = -1      )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.245     0.06584    ABAT
[o]    2     2.228     0.05638    CONT
[o]    scale parameter taken as  0.2384
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance =  24.639 (change =  -5.880)
[o]    d.f. = 122    (change =  -6   )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.069     0.1728    ABAT
[o]    2     2.073     0.1712    CONT
[o]    3     0.000     aliased   AGE0
[o]    4    -0.4918    0.4613    AGE1
[o]    5    0.03714    0.1362    AGE2
[o]    6   -0.04629   0.04060    AGE3
[o]    7  -0.006410  0.004198    SES
[o]    8    0.1565    0.05300    MOUT(1).LHW
[o]    9    0.2352    0.05273    MOUT(2).LHW
[o]    scale parameter taken as  0.2020
[o]
[i] !    RESPONSE VARIABLE - LOG HAND LEAD
[i] !    MODEL 3
[i] !
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  84.805
[o]    d.f. = 129
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  84.773 (change = -0.03214)
[o]    d.f. = 128    (change = -1      )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.053     0.1097    ABAT
[o]    2     2.021    0.09397    CONT
[o]    scale parameter taken as  0.6623
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance =  73.596 (change =  -11.18)
[o]    d.f. = 123    (change =  -5   )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.239     0.1974    ABAT
[o]    2     2.267     0.1870    CONT
[o]    3     0.000     aliased   AGE0
[o]    4    -0.7902    0.7946    AGE1
[o]    5    -0.3175    0.2314    AGE2
[o]    6   -0.004791   0.06893   AGE3
[o]    7    -0.4888    0.1374    FEMA
[o]    8  0.00008436  0.00004288  DUST
[o]    scale parameter taken as  0.5983
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance =  73.586
[o]    d.f. = 123
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.224     0.2230    SEX(1)
[o]    2     1.741     0.2160    SEX(2)
[o]    3     0.000     aliased   AGE0
[o]    4    -0.7747    0.7926    AGE1
[o]    5    -0.3193    0.2309    AGE2
[o]    6   -0.005672   0.06877   AGE3
[o]    7  0.00008422  0.00004286  DUST
[o]    8  0.00006254  0.0002586   SOIL
[o]    scale parameter taken as  0.5983
```

```
[i] !    ROUND 3 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !
[i] !    MODEL 1
[i] $vvar lpb$err n$
[i] $fit %gm$
[o] deviance =  58.313
[o]    d.f. = 228
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  58.313 (change = -0.0004959)
[o]    d.f. = 227    (change = -1      )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.257    0.05313     ABAT
[o]    2     2.254    0.04314     CONT
[o]    scale parameter taken as  0.2569
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance =  48.880 (change =  -9.432)
[o]    d.f. = 220    (change =  -7   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.202    0.1378     ABAT
[o]    2     2.213    0.1349     CONT
[o]    3   -0.1843    0.1772     AGE0
[o]    4   0.07009    0.1396     AGE1
[o]    5    0.1218    0.1079     AGE2
[o]    6  -0.04249   0.03370     AGE3
[o]    7 -0.007053  0.003221      SES
[o]    8   0.08384   0.04169   MOUT(1).LHW
[o]    9    0.1815   0.04068   MOUT(2).LHW
[o]    scale parameter taken as  0.2222
[o]
[i] !    RESPONSE VARIABLE - LOG HAND LEAD
[i] !
[i] !    MODEL 3
[i] $vvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 164.52
[o]    d.f. = 228
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 164.33 (change = -0.1912)
[o]    d.f. = 227    (change = -1    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     1.899   0.08919     ABAT
[o]    2     1.958   0.07243     CONT
[o]    scale parameter taken as  0.7239
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance = 138.27 (change =  -26.06)
[o]    d.f. = 221    (change =  -6  )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.141    0.1643     ABAT
[o]    2     2.187    0.1516     CONT
[o]    3   -0.6854    0.2933     AGE0
[o]    4   -0.4594    0.2292     AGE1
[o]    5   -0.2158    0.1798     AGE2
[o]    6   0.01716   0.05653     AGE3
[o]    7   -0.4666    0.1053     FEMA
[o]    8 0.00008175 0.00003749    DUST
[o]    scale parameter taken as  0.6256
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance = 138.34
[o]    d.f. = 221
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.199    0.1782     SEX(1)
[o]    2     1.730    0.1648     SEX(2)
[o]    3   -0.6916    0.2941     AGE0
[o]    4   -0.4787    0.2267     AGE1
[o]    5   -0.2170    0.1799     AGE2
[o]    6   0.01706   0.05657     AGE3
[o]    7 0.00008190 0.00003760    DUST
[o]    8 -5.640e-05 0.0002096     SOIL
[o]    scale parameter taken as  0.6260
```

```
[i] !    ROUND 4 - CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !    RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !
[i] !    MODEL 1
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  34.477
[o]    d.f. = 132
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  34.222 (change = -0.2553)
[o]    d.f. = 131    (change = -1    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.117    0.06830    ABAT
[o]    2     2.028    0.05825    CONT
[o]    scale parameter taken as  0.2612
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance =  27.450 (change =  -6.772)
[o]    d.f. = 126    (change =  -5    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     1.977    0.1669    ABAT
[o]    2     1.998    0.1623    CONT
[o]    3     0.000    aliased   AGE0
[o]    4     0.000    aliased   AGE1
[o]    5   -0.1321    0.3431    AGE2
[o]    6  -0.05259   0.02992    AGE3
[o]    7  -0.007688  0.004291   SES
[o]    8    0.1903   0.05733    MOUT(1).LHW
[o]    9    0.2824   0.05888    MOUT(2).LHW
[o]    scale parameter taken as  0.2179
[o]
[i] !    RESPONSE VARIABLE - LOG HAND LEAD
[i] !
[i] !    MODEL 3
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  80.971
[o]    d.f. = 132
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  77.777 (change =  -3.193)
[o]    d.f. = 131    (change =  -1    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     1.878    0.1030    ABAT
[o]    2     1.565   0.08781    CONT
[o]    scale parameter taken as  0.5937
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance =  71.979 (change =  -5.798)
[o]    d.f. = 127    (change =  -4    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     1.789    0.1752    ABAT
[o]    2     1.531    0.1692    CONT
[o]    3     0.000    aliased   AGE0
[o]    4     0.000    aliased   AGE1
[o]    5   -0.1383    0.5524    AGE2
[o]    6   0.04095   0.04757    AGE3
[o]    7   -0.2887    0.1318    FEMA
[o]    8 0.00008650. 0.00004040   DUST
[o]    scale parameter taken as  0.5668
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance =  73.943
[o]    d.f. = 127
[o]
[o]        estimate      s.e.    parameter
[o]    1     1.672    0.1716    SEX(1)
[o]    2     1.360    0.1835    SEX(2)
[o]    3     0.000    aliased   AGE0
[o]    4     0.000    aliased   AGE1
[o]    5   -0.2204    0.5586    AGE2
[o]    6   0.04482   0.04817    AGE3
[o]    7 0.00008800 0.00004094   DUST
[o]    8 -0.0001079 0.0002379    SOIL
[o]    scale parameter taken as  0.5822
```

```
[i] !    ROUND 4 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !
[i] !    MODEL 1
[i] $vvar lpb$err n$
[i] $fit %gm$
[o] deviance =  43.688
[o]    d.f. = 174
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  42.911 (change = -0.7770)
[o]    d.f. = 173     (change = -1    )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.169     0.05309    ABAT
[o]    2     2.036     0.05339    CONT
[o]    scale parameter taken as  0.2480
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance =  31.497 (change =  -11.41)
[o]    d.f. = 167     (change =  -6   )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.094     0.1304     ABAT
[o]    2     2.094     0.1283     CONT
[o]    3     0.000     aliased    AGE0
[o]    4   0.02029     0.2110     AGE1
[o]    5  -0.06191     0.1504     AGE2
[o]    6  -0.07006     0.02446    AGE3
[o]    7  -0.008668    0.003405   SES
[o]    8    0.1647     0.04659    MOUT(1).LHW
[o]    9    0.2719     0.04401    MOUT(2).LHW
[o]    scale parameter taken as  0.1886
[o]
[i] !    RESPONSE VARIABLE - LOG HAND LEAD
[i] !
[i] !    MODEL 3
[i] $vvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 118.88
[o]    d.f. = 174
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 114.55 (change =  -4.329)
[o]    d.f. = 173     (change =  -1   )
[o]
[o]        estimate       s.e.    parameter
[o]    1     1.859     0.08674    ABAT
[o]    2     1.544     0.08724    CONT
[o]    scale parameter taken as  0.6621
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance = 106.97 (change =  -7.573)
[o]    d.f. = 168     (change =  -5   )
[o]
[o]        estimate       s.e.    parameter
[o]    1     1.691     0.1560     ABAT
[o]    2     1.444     0.1574     CONT
[o]    3     0.000     aliased    AGE0
[o]    4    0.8300     0.3799     AGE1
[o]    5    0.3536     0.2751     AGE2
[o]    6   0.04633     0.04440    AGE3
[o]    7   -0.1999     0.1220     FEMA
[o]    8 0.00008103 0.00003922    DUST
[o]    scale parameter taken as  0.6368
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance = 109.13
[o]    d.f. = 168
[o]
[o]        estimate       s.e.    parameter
[o]    1     1.609     0.1539     SEX(1)
[o]    2     1.399     0.1595     SEX(2)
[o]    3     0.000     aliased    AGE0
[o]    4    0.8780     0.3838     AGE1
[o]    5    0.4144     0.2763     AGE2
[o]    6   0.04575     0.04488    AGE3
[o]    7 0.00008444 0.00003958    DUST
[o]    8 -0.0001730 0.0002306     SOIL
[o]    scale parameter taken as  0.6496
```

```
[i] !   ROUND 5 - CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !   RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !
[i] !   MODEL 1
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  36.226
[o]    d.f. = 135
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  35.952 (change = -0.2743)
[o]    d.f. = 134    (change = -1    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.179    0.06743    ABAT
[o]    2     2.088    0.05903    CONT
[o]    scale parameter taken as  0.2683
[o]
[i] !   MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance =  24.510 (change =  -11.44)
[o]    d.f. = 130    (change =  -4  )
[o]
[o]        estimate      s.e.    parameter
[o]    1     1.710    0.1743    ABAT
[o]    2     1.549    0.1879    CONT
[o]    3     0.000    aliased   AGE0
[o]    4     0.000    aliased   AGE1
[o]    5     0.000    aliased   AGE2
[o]    6   -0.04856   0.02675   AGE3
[o]    7  -0.004526  0.003968   SES
[o]    8    0.2538    0.04902   MOUT(1).LHW
[o]    9    0.3887    0.05584   MOUT(2).LHW
[o]    scale parameter taken as  0.1885
[o]
[i] !   RESPONSE VARIABLE - LOG HAND LEAD
[i] !
[i] !   MODEL 3
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  84.115
[o]    d.f. = 135
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  82.355 (change =  -1.760)
[o]    d.f. = 134    (change =  -1   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.387    0.1021    ABAT
[o]    2     2.616    0.08934   CONT
[o]    scale parameter taken as  0.6146
[o]
[i] !   MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance =  75.083 (change =  -7.272)
[o]    d.f. = 131    (change =  -3   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.192    0.1764    ABAT
[o]    2     2.456    0.1704    CONT
[o]    3     0.000    aliased   AGE0
[o]    4     0.000    aliased   AGE1
[o]    5     0.000    aliased   AGE2
[o]    6   0.08735   0.04513    AGE3
[o]    7   -0.3327    0.1311    FEMA
[o]    8 0.00007582 0.00004064   DUST
[o]    scale parameter taken as  0.5732
[o]
[i] !   MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance =  77.037
[o]    d.f. = 131
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.293    0.1729    SEX(1)
[o]    2     1.969    0.1903    SEX(2)
[o]    3     0.000    aliased   AGE0
[o]    4     0.000    aliased   AGE1
[o]    5     0.000    aliased   AGE2
[o]    6   0.08537   0.04570    AGE3
[o]    7 0.00007411 0.00004116   DUST
[o]    8  0.0001907  0.0002413   SOIL
[o]    scale parameter taken as  0.5881
```

```
i| !    ROUND 5 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
i| !    RESPONSE VARIABLE - LOG BLOOD LEAD
i| !
i| !    MODEL 1
i| $yvar lpb$err n$
i| $fit %gm$
o| deviance =  47.942
o|    d.f. = 172
o|
i| $fit +abate + control - %gm$dis e$
o| deviance =  46.923 (change =  -1.019)
o|    d.f. = 171    (change =  -1   )
o|
o|        estimate      s.e.    parameter
o|    1      2.259    0.05682    ABAT
o|    2      2.106    0.05584    CONT
o|    scale parameter taken as  0.2744
o|
i| !    MODEL 2
i| $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
o| deviance =  30.736 (change =  -16.19)
o|    d.f. = 165    (change =  -6   )
o|
o|        estimate      s.e.    parameter
o|    1      1.874    0.1512    ABAT
o|    2      1.665    0.1662    CONT
o|    3      0.000    aliased   AGE0
o|    4    -0.02518    0.2648   AGE1
o|    5     0.08798    0.1534   AGE2
o|    6    -0.06385   0.02378   AGE3
o|    7   -0.007217  0.003319   SES
o|    8      0.2453   0.04527   MOUT(1).LHW
o|    9      0.3715   0.05017   MOUT(2).LHW
o|    scale parameter taken as  0.1863
o|
i| !    RESPONSE VARIABLE - LOG HAND LEAD
i| !
i| !    MODEL 3
i| $yvar lhw$err n$
w| -- model changed
i| $fit %gm$
o| deviance =  99.500
o|    d.f. = 172
o|
i| $fit +abate + control - %gm$dis e$
o| deviance =  96.106 (change =  -3.394)
o|    d.f. = 171    (change =  -1   )
o|
o|        estimate      s.e.    parameter
o|    1      2.347    0.08131    ABAT
o|    2      2.627    0.07992    CONT
o|    scale parameter taken as  0.5620
o|
i| !    MODEL 4
i| $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
o| deviance =  87.873 (change =  -8.233)
o|    d.f. = 166    (change =  -5   )
o|
o|        estimate      s.e.    parameter
o|    1      2.232    0.1428    ABAT
o|    2      2.521    0.1464    CONT
o|    3      0.000    aliased   AGE0
o|    4     0.8780    0.4368   AGE1
o|    5    0.01320    0.2588   AGE2
o|    6    0.06734   0.03758   AGE3
o|    7    -0.2834    0.1111   FEMA
o|    8  0.00006544 0.00003703  DUST
o|    scale parameter taken as  0.5294
o|
i| !    MODEL 5
i| $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
o| deviance =  90.756
o|    d.f. = 166
o|
o|        estimate      s.e.    parameter
o|    1      2.316    0.1425    SEX(1)
o|    2      2.037    0.1489    SEX(2)
o|    3      0.000    aliased   AGE0
o|    4     0.8673    0.4446   AGE1
o|    5   -0.01182    0.2634   AGE2
o|    6    0.07011   0.03820   AGE3
o|    7  0.00006301 0.00003762  DUST
o|    8  0.0002400  0.0002168   SOIL
o|    scale parameter taken as  0.5467
```

```
i| !    ROUND 6 - CHILDREN PRESENT IN ALL SIX ROUNDS
i| !    RESPONSE VARIABLE - LOG BLOOD LEAD
i| !
i| !    MODEL 1
i| $vvar lpb$err n$
i| $fit %gm$
o| deviance =  35.245
o|    d.f. = 132
o|
i| $fit +abate + control - %gm$dis e$
o| deviance =  34.832 (change = -0.4132)
o|    d.f. = 131    (change = -1    )
o|
o|        estimate      s.e.    parameter
o|    1     2.234    0.06549    ABAT
o|    2     2.123    0.06120    CONT
o|    scale parameter taken as  0.2659
o|
i| !    MODEL 2
i| $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
o| deviance =  26.414 (change =  -8.418)
o|    d.f. = 127    (change =  -4   )
o|
o|        estimate      s.e.    parameter
o|    1     1.956    0.2066    ABAT
o|    2     1.854    0.2186    CONT
o|    3     0.000    aliased   AGE0
o|    4     0.000    aliased   AGE1
o|    5     0.000    aliased   AGE2
o|    6   -0.04667   0.02956    AGE3
o|    7   -0.01269   0.004315   SES
o|    8    0.2609    0.06144   MOUT(1).LHW
o|    9    0.3580    0.07089   MOUT(2).LHW
o|    scale parameter taken as  0.2080
o|
i| !    RESPONSE VARIABLE - LOG HAND LEAD
i| !
i| !    MODEL 3
i| $vvar lhw$err n$
w| – model changed
i| $fit %gm$
o| deviance =  55.742
o|    d.f. = 132
o|
i| $fit +abate + control - %gm$dis e$
o| deviance =  55.414 (change = -0.3289)
o|    d.f. = 131    (change = -1    )
o|
o|        estimate      s.e.    parameter
o|    1     2.352    0.08260    ABAT
o|    2     2.451    0.07719    CONT
o|    scale parameter taken as  0.4230
o|
i| !    MODEL 4
i| $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
o| deviance =  49.940 (change =  -5.474)
o|    d.f. = 128    (change =  -3   )
o|
o|        estimate      s.e.    parameter
o|    1     2.422    0.1567    ABAT
o|    2     2.556    0.1557    CONT
o|    3     0.000    aliased   AGE0
o|    4     0.000    aliased   AGE1
o|    5     0.000    aliased   AGE2
o|    6   0.03363   0.03881    AGE3
o|    7   -0.4055    0.1093    FEMA
o|    8  5.035e-06  0.00003345  DUST
o|    scale parameter taken as  0.3902
o|
i| !    MODEL 5
i| $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
o| deviance =  49.443
o|    d.f. = 128
o|
o|        estimate      s.e.    parameter
o|    1     2.414    0.1527    SEX(1)
o|    2     1.997    0.1657    SEX(2)
o|    3     0.000    aliased   AGE0
o|    4     0.000    aliased   AGE1
o|    5     0.000    aliased   AGE2
o|    6   0.03344   0.03862    AGE3
o|    7  3.985e-06  0.00003329  DUST
o|    8  0.0003307  0.0001967   SOIL
o|    scale parameter taken as  0.3863
```

```
[i] !   ROUND 6 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !   RESPONSE VARIABLE - LOG BLOOD LEAD
[i] !
[i] !   MODEL 1
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  42.745
[o]    d.f. = 169
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  41.507 (change =  -1.238)
[o]    d.f. = 168    (change =  -1   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.305    0.05360    ABAT
[o]    2     2.134    0.05423    CONT
[o]    scale parameter taken as  0.2471
[o]
[i] !   MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance =  28.871 (change =  -12.64)
[o]    d.f. = 163    (change =  -5   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.095    0.1631    ABAT
[o]    2     1.954    0.1736    CONT
[o]    3     0.000    aliased   AGE0
[o]    4     0.000    aliased   AGE1
[o]    5   -0.1074     0.1594   AGE2
[o]    6   -0.06745    0.02294  AGE3
[o]    7   -0.01229   0.003347  SES
[o]    8    0.2412    0.04998   MOUT(1).LHW
[o]    9    0.3301    0.05402   MOUT(2).LHW
[o]    scale parameter taken as  0.1771
[o]
[i] !   RESPONSE VARIABLE - LOG HAND LEAD
[i] !
[i] !   MODEL 3
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  73.843
[o]    d.f. = 169
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  73.605 (change = -0.2377)
[o]    d.f. = 168    (change = -1    )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.374    0.07138   ABAT
[o]    2     2.448    0.07222   CONT
[o]    scale parameter taken as  0.4381
[o]
[i] !   MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance =  67.919 (change =  -5.685)
[o]    d.f. = 164    (change =  -4   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.402    0.1313    ABAT
[o]    2     2.505    0.1362    CONT
[o]    3     0.000    aliased   AGE0
[o]    4     0.000    aliased   AGE1
[o]    5    0.3945    0.2426    AGE2
[o]    6   0.03421   0.03335    AGE3
[o]    7   -0.3392    0.09927   FEMA
[o]    8 0.00001513 0.00003226  DUST
[o]    scale parameter taken as  0.4141
[o]
[i] !   MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance =  67.587
[o]    d.f. = 164
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.400    0.1283    SEX(1)
[o]    2     2.053    0.1344    SEX(2)
[o]    3     0.000    aliased   AGE0
[o]    4     0.000    aliased   AGE1
[o]    5    0.3945    0.2415    AGE2
[o]    6   0.03247   0.03332    AGE3
[o]    7 0.00001454 0.00003216  DUST
[o]    8  0.0002598  0.0001899  SOIL
[o]    scale parameter taken as  0.4121
```

```
[i] !    ROUND 1 OF SAMPLING
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 5047.2 at cycle  4
[o]    d.f. =  139
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 5046.5 (change =     -1.) at cycle  4
[o]    d.f. =  138   (change =     -1 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.562    0.06230     ABAT
[o]    2     2.551    0.05139     CONT
[o]    scale parameter taken as  36.57
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses + season + mouth/lhw - mouth$dis e$
[o] deviance = 3896.4 (change = -1150.2) at cycle  4
[o]    d.f. =  130   (change =    -8 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.297    0.1890     ABAT
[o]    2     2.369    0.1801     CONT
[o]    3    -0.3734   0.2558     AGE0
[o]    4     0.2514   0.1145     AGE1
[o]    5     0.1199   0.1163     AGE2
[o]    6    0.06698   0.05667    AGE3
[o]    7   -0.009623  0.003841   SES
[o]    8     0.1054   0.07939    SEAS
[o]    9    0.08822   0.05904    MOUT(1).LHW
[o]   10     0.1656   0.05266    MOUT(2).LHW
[o]    scale parameter taken as  29.97
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 11860. at cycle  5
[o]    d.f. =  139
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 11816. (change =     -44.) at cycle  5
[o]    d.f. =  138  (change =     -1 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.478    0.1037     ABAT
[o]    2     2.378   0.09362     CONT
[o]    scale parameter taken as  85.62
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + season + dust$dis e$
[o] deviance = 10617. (change =   -1199.) at cycle  5
[o]    d.f. =  131  (change =     -7 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.913    0.2078     ABAT
[o]    2     2.689    0.1879     CONT
[o]    3    -1.318    0.8109     AGE0
[o]    4    -0.3739   0.2641     AGE1
[o]    5    0.09106   0.1932     AGE2
[o]    6   -0.08359   0.1012     AGE3
[o]    7    -0.1460   0.1333     FEMA
[o]    8    -0.2370   0.1471     SEAS
[o]    9  -2.512e-05  0.00004897   DUST
[o]    scale parameter taken as  81.05
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +season +dust +soil - %gm$dis e$
[o] deviance = 10807. at cycle  5
[o]    d.f. =  131
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.713    0.2143     SEX(1)
[o]    2     2.566    0.2170     SEX(2)
[o]    3    -1.303    0.8230     AGE0
[o]    4    -0.3114   0.2611     AGE1
[o]    5    0.08808   0.1969     AGE2
[o]    6   -0.07207   0.1037     AGE3
[o]    7    -0.1546   0.1377     SEAS
[o]    8  -1.487e-05  0.00004717   DUST
[o]    9   7.726e-06  0.0002429   SOIL
[o]    scale parameter taken as  82.49
```

```
[i] !    ROUND 1 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  9921. at cycle  4
[o]    d.f. =   272
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  9918. (change =     -2.) at cycle  4
[o]    d.f. =   271  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.507     0.05812     ABAT
[o]    2     2.489     0.03536     CONT
[o]    scale parameter taken as  36.60
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses + season + mouth/lhw - mouth$dis e$
[o] deviance =  7667. (change =  -2252.) at cycle  4
[o]    d.f. =   263  (change =     -8 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.403     0.1265     ABAT
[o]    2     2.455     0.1229     CONT
[o]    3    -0.5905     0.2028     AGE0
[o]    4    0.02206    0.08816     AGE1
[o]    5   -0.01211    0.08626     AGE2
[o]    6   -0.04609    0.03812     AGE3
[o]    7   -0.01077   0.002584     SES
[o]    8     0.1169    0.05460     SEAS
[o]    9     0.1192    0.04020     MOUT(1).LHW
[o]   10     0.1650    0.03575     MOUT(2).LHW
[o]    scale parameter taken as  29.15
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  45120. at cycle  5
[o]    d.f. =   272
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  45107. (change =    -13.) at cycle  6
[o]    d.f. =   271  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.382     0.1404     ABAT
[o]    2     2.427    0.08033     CONT
[o]    scale parameter taken as  166.4
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + season + dust$dis e$
[o] deviance =  41853. (change =  -3255.) at cycle  6
[o]    d.f. =   264  (change =     -7 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.584     0.2208     ABAT
[o]    2     2.597     0.1952     CONT
[o]    3    -1.414     0.8912     AGE0
[o]    4   -0.4871     0.2897     AGE1
[o]    5    0.1322     0.1995     AGE2
[o]    6   -0.01514   0.09106     AGE3
[o]    7   -0.2893     0.1372     FEMA
[o]    8    0.1326     0.1352     SEAS
[o]    9  -5.225e-06 0.00005156    DUST
[o]    scale parameter taken as  158.5
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +season +dust +soil - %gm$dis e$
[o] deviance =  41850. at cycle  6
[o]    d.f. =   264
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.586     0.2042     SEX(1)
[o]    2     2.297     0.2161     SEX(2)
[o]    3    -1.420     0.8941     AGE0
[o]    4   -0.4960     0.2922     AGE1
[o]    5    0.1285     0.1994     AGE2
[o]    6   -0.01784   0.09149     AGE3
[o]    7    0.1310     0.1342     SEAS
[o]    8  -6.751e-06 0.00005194    DUST
[o]    9  0.00002605  0.0001907    SOIL
[o]    scale parameter taken as  158.5
```

```
[i] !    ROUND 2 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  7928. at cycle  4
[o]    d.f. =   254
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  7924. (change =     -5.) at cycle  4
[o]    d.f. =   253  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.447     0.06093     ABAT
[o]    2     2.420     0.03587     CONT
[o]    scale parameter taken as  31.32
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses + season + mouth/lhw - mouth$dis e$
[o] deviance =  7033. (change =   -890.) at cycle  5
[o]    d.f. =   245  (change =     -8 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.536     0.1276     ABAT
[o]    2     2.533     0.1263     CONT
[o]    3    -0.5039    0.4675     AGE0
[o]    4    -0.1698    0.1150     AGE1
[o]    5    0.06810    0.09525    AGE2
[o]    6   -0.02168    0.03954    AGE3
[o]    7   -0.01058   0.002984    SES
[o]    8    0.03776    0.05973    SEAS
[o]    9    0.03721    0.03733    MOUT(1).LHW
[o]   10    0.09119    0.03465    MOUT(2).LHW
[o]    scale parameter taken as  28.71
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  98177. at cycle  6
[o]    d.f. =   254
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  98154. (change =    -23.) at cycle  6
[o]    d.f. =   253  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.645     0.1754     ABAT
[o]    2     2.693    0.09620     CONT
[o]    scale parameter taken as  388.0
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + season + dust$dis e$
[o] deviance =  92406. (change =   -5749.) at cycle  7
[o]    d.f. =   246  (change =     -7 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.024     0.3319     ABAT
[o]    2     2.017     0.3047     CONT
[o]    3    -0.6411     2.740     AGE0
[o]    4     0.3496    0.3914     AGE1
[o]    5     0.7973    0.3226     AGE2
[o]    6     0.3531    0.1116     AGE3
[o]    7    -0.1736    0.1623     FEMA
[o]    8   -0.01348    0.1599     SEAS
[o]    9  0.00009842  0.00004482   DUST
[o]    scale parameter taken as  375.6
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +season +dust +soil - %gm$dis e$
[o] deviance =  92259. at cycle  7
[o]    d.f. =   246
[o]
[o]        estimate       s.e.    parameter
[o]    1     1.970     0.3062     SEX(1)
[o]    2     1.802     0.3275     SEX(2)
[o]    3    -0.6517     2.749     AGE0
[o]    4     0.3371    0.3876     AGE1
[o]    5     0.7734    0.3219     AGE2
[o]    6     0.3406    0.1117     AGE3
[o]    7   -0.002061    0.1597    SEAS
[o]    8  0.00009893  0.00004401   DUST
[o]    9   0.0001184   0.0002005   SOIL
[o]    scale parameter taken as  375.0
```

```
[i] !    ROUND 3 - CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 4041.7 at cycle  4
[o]    d.f. =  129
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 4038.1 (change =     -4.) at cycle  4
[o]    d.f. =  128   (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.374    0.07043     ABAT
[o]    2      2.342    0.06225     CONT
[o]    scale parameter taken as  31.55
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance = 3079.0 (change =  -959.0) at cycle  4
[o]    d.f. =  122   (change =     -6 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      1.933     0.1954     ABAT
[o]    2      1.940     0.1928     CONT
[o]    3      0.000    aliased     AGE0
[o]    4    -0.4762     0.9040     AGE1
[o]    5    0.09891     0.1328     AGE2
[o]    6   -0.02235    0.04355     AGE3
[o]    7  -0.005615   0.004524     SES
[o]    8     0.2220    0.06017     MOUT(1).LHW
[o]    9     0.3169    0.05424     MOUT(2).LHW
[o]    scale parameter taken as  25.24
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  8901. at cycle  5
[o]    d.f. =  129
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  8899. (change =     -2.) at cycle  5
[o]    d.f. =  128  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.343     0.1080     ABAT
[o]    2      2.317    0.09485     CONT
[o]    scale parameter taken as  69.52
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance =  7800. (change =  -1099.) at cycle  5
[o]    d.f. =  123  (change =     -5 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.525     0.1833     ABAT
[o]    2      2.561     0.1710     CONT
[o]    3      0.000    aliased     AGE0
[o]    4     -1.070      1.633     AGE1
[o]    5    -0.1829     0.2315     AGE2
[o]    6   -0.02870    0.06871     AGE3
[o]    7    -0.5050     0.1470     FEMA
[o]    8 0.00007434 0.00002718     DUST
[o]    scale parameter taken as  63.42
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance =  7798. at cycle  5
[o]    d.f. =  123
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.504     0.2080     SEX(1)
[o]    2      1.999     0.2301     SEX(2)
[o]    3      0.000    aliased     AGE0
[o]    4     -1.050      1.633     AGE1
[o]    5    -0.1690     0.2305     AGE2
[o]    6   -0.02924    0.06868     AGE3
[o]    7 0.00007559 0.00002738     DUST
[o]    8 0.00007818  0.0002437     SOIL
[o]    scale parameter taken as  63.40
```

```
[i] !    ROUND 3 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  9068. at cycle  4
[o]    d.f. =   228
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  9067. (change =     -2.) at cycle  4
[o]    d.f. =   227  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.398    0.06011     ABAT
[o]    2      2.382    0.04946     CONT
[o]    scale parameter taken as  39.94
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance =  7630. (change =  -1437.) at cycle  5
[o]    d.f. =   220  (change =     -7 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.279     0.1619     ABAT
[o]    2      2.284     0.1603     CONT
[o]    3   -0.08295     0.2330     AGE0
[o]    4     0.1394     0.1440     AGE1
[o]    5     0.1437     0.1133     AGE2
[o]    6   -0.04056    0.04059     AGE3
[o]    7  -0.007242   0.003742     SES
[o]    8    0.08969    0.05073     MOUT(1).LHW
[o]    9     0.1982    0.04411     MOUT(2).LHW
[o]    scale parameter taken as  34.68
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 15719. at cycle  5
[o]    d.f. =   228
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 15686. (change =     -33.) at cycle  5
[o]    d.f. =   227  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.215    0.09509     ABAT
[o]    2      2.297    0.07116     CONT
[o]    scale parameter taken as  69.10
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance = 13532. (change =   -2154.) at cycle  5
[o]    d.f. =   221  (change =     -6 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.444     0.1545     ABAT
[o]    2      2.514     0.1397     CONT
[o]    3    -0.8175     0.6195     AGE0
[o]    4    -0.5363     0.3320     AGE1
[o]    5    -0.1403     0.1803     AGE2
[o]    6  -0.001810    0.05403     AGE3
[o]    7    -0.4892     0.1143     FEMA
[o]    8  0.00007141  0.00002510   DUST
[o]    scale parameter taken as  61.23
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance = 13550. at cycle  5
[o]    d.f. =   221
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.528     0.1624     SEX(1)
[o]    2      2.034     0.1682     SEX(2)
[o]    3    -0.8501     0.6289     AGE0
[o]    4    -0.5576     0.3323     AGE1
[o]    5    -0.1414     0.1816     AGE2
[o]    6  -0.001366    0.05455     AGE3
[o]    7  0.00007020  0.00002490   DUST
[o]    8  -7.530e-05  0.0002004    SOIL
[o]    scale parameter taken as  61.31
```

```
[i] !    ROUND 4 - CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 3666.1 at cycle  4
[o]    d.f. =  132
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 3646.1 (change =    -20.) at cycle  4
[o]    d.f. =  131   (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.250     0.07410    ABAT
[o]    2     2.164     0.06877    CONT
[o]    scale parameter taken as  27.83
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance = 2924.2 (change =    -722.) at cycle  4
[o]    d.f. =  126   (change =     -5 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     1.951     0.1878    ABAT
[o]    2     2.010     0.1790    CONT
[o]    3     0.000    aliased    AGE0
[o]    4     0.000    aliased    AGE1
[o]    5   -0.2920     0.4930    AGE2
[o]    6   -0.05242    0.03254   AGE3
[o]    7  -0.004553   0.004846   SES
[o]    8    0.2063    0.06053    MOUT(1).LHW
[o]    9    0.3181    0.05760    MOUT(2).LHW
[o]    scale parameter taken as  23.21
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 11344. at cycle  6
[o]    d.f. =  132
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 11087. (change =    -257.) at cycle  6
[o]    d.f. =  131  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.234     0.1317    ABAT
[o]    2     1.875     0.1608    CONT
[o]    scale parameter taken as  84.63
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance = 10847. (change =    -240.) at cycle  6
[o]    d.f. =  127  (change =     -4 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.128     0.2723    ABAT
[o]    2     1.806     0.2852    CONT
[o]    3     0.000    aliased    AGE0
[o]    4     0.000    aliased    AGE1
[o]    5   0.05572      1.148    AGE2
[o]    6   0.07056    0.07651    AGE3
[o]    7   -0.2873     0.2166    FEMA
[o]    8 0.00002508 0.00005435   DUST
[o]    scale parameter taken as  85.41
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance = 11051. at cycle  6
[o]    d.f. =  127
[o]
[o]        estimate       s.e.    parameter
[o]    1     1.966     0.2837    SEX(1)
[o]    2     1.670     0.3288    SEX(2)
[o]    3     0.000    aliased    AGE0
[o]    4     0.000    aliased    AGE1
[o]    5   -0.06426     1.149    AGE2
[o]    6   0.07684    0.07769    AGE3
[o]    7 0.00003270 0.00005458   DUST
[o]    8 -9.563e-05  0.0003937   SOIL
[o]    scale parameter taken as  87.02
```

```
[i] !    ROUND 4 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 4812.0 at cycle 4
[o]    d.f. = 174
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 4757.0 (change =    -55.) at cycle 4
[o]    d.f. = 173   (change =    -1 )
[o]
[o]        estimate      s.e.   parameter
[o]    1     2.291    0.05645    ABAT
[o]    2     2.171    0.06388    CONT
[o]    scale parameter taken as 27.50
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance = 3451.4 (change = -1305.6) at cycle 4
[o]    d.f. = 167   (change =    -6 )
[o]
[o]        estimate      s.e.   parameter
[o]    1     2.089    0.1486    ABAT
[o]    2     2.147    0.1419    CONT
[o]    3     0.000   aliased    AGE0
[o]    4   0.01229    0.1562    AGE1
[o]    5  -0.07677    0.1418    AGE2
[o]    6  -0.06590   0.02756    AGE3
[o]    7 -0.007680  0.003837    SES
[o]    8    0.1819   0.05093    MOUT(1).LHW
[o]    9    0.2991   0.04308    MOUT(2).LHW
[o]    scale parameter taken as 20.67
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 15495. at cycle 5
[o]    d.f. = 174
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 15094. (change =    -401.) at cycle 5
[o]    d.f. = 173  (change =    -1 )
[o]
[o]        estimate      s.e.   parameter
[o]    1     2.248    0.1039    ABAT
[o]    2     1.863    0.1552    CONT
[o]    scale parameter taken as 87.25
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance = 14686. (change =    -408.) at cycle 6
[o]    d.f. = 168  (change =    -5 )
[o]
[o]        estimate      s.e.   parameter
[o]    1     2.066    0.2301    ABAT
[o]    2     1.763    0.2538    CONT
[o]    3     0.000   aliased    AGE0
[o]    4    0.8035    0.3219    AGE1
[o]    5    0.2068    0.3624    AGE2
[o]    6   0.03784   0.06821    AGE3
[o]    7  -0.01816    0.1745    FEMA
[o]    8 0.00002509 0.00004828   DUST
[o]    scale parameter taken as 87.42
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance = 14890. at cycle 6
[o]    d.f. = 168
[o]
[o]        estimate      s.e.   parameter
[o]    1     1.956    0.2405    SEX(1)
[o]    2     1.929    0.2526    SEX(2)
[o]    3     0.000   aliased    AGE0
[o]    4    0.8948    0.3253    AGE1
[o]    5    0.2846    0.3681    AGE2
[o]    6   0.04194   0.06973    AGE3
[o]    7 0.00003205 0.00004883   DUST
[o]    8 -0.0002164 0.0003756    SOIL
[o]    scale parameter taken as 88.63
```

```
[i] !    ROUND 5 - CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 4338.9 at cycle  4
[o]    d.f. =  135
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 4304.0 (change =    -35.) at cycle  4
[o]    d.f. =  134   (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.324    0.07189     ABAT
[o]    2      2.219    0.07007     CONT
[o]    scale parameter taken as  32.12
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance = 2923.7 (change =  -1380.3) at cycle  4
[o]    d.f. =  130   (change =     -4 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      1.666    0.2027     ABAT
[o]    2      1.453    0.2229     CONT
[o]    3      0.000    aliased    AGE0
[o]    4      0.000    aliased    AGE1
[o]    5      0.000    aliased    AGE2
[o]    6   -0.05008    0.03033    AGE3
[o]    7  -6.182e-05   0.004533   SES
[o]    8     0.2765    0.05560    MOUT(1).LHW
[o]    9     0.4192    0.05588    MOUT(2).LHW
[o]    scale parameter taken as  22.49
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 26111. at cycle  5
[o]    d.f. =  135
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 25563. (change =    -547.) at cycle  5
[o]    d.f. =  134  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.668    0.1248     ABAT
[o]    2      2.915    0.08526    CONT
[o]    scale parameter taken as  190.8
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance = 24543. (change =   -1020.) at cycle  5
[o]    d.f. =  131  (change =     -3 )
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.562    0.2052     ABAT
[o]    2      2.841    0.1806     CONT
[o]    3      0.000    aliased    AGE0
[o]    4      0.000    aliased    AGE1
[o]    5      0.000    aliased    AGE2
[o]    6    0.04982    0.04866    AGE3
[o]    7    -0.2415    0.1427     FEMA
[o]    8  0.00004501  0.00003501  DUST
[o]    scale parameter taken as  187.4
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance = 25123. at cycle  5
[o]    d.f. =  131
[o]
[o]        estimate       s.e.    parameter
[o]    1      2.695    0.1899     SEX(1)
[o]    2      2.444    0.2244     SEX(2)
[o]    3      0.000    aliased    AGE0
[o]    4      0.000    aliased    AGE1
[o]    5      0.000    aliased    AGE2
[o]    6    0.04697    0.04960    AGE3
[o]    7  0.00004013  0.00003609  DUST
[o]    8   0.0001875   0.0002432  SOIL
[o]    scale parameter taken as  191.8
```

```
[i] !    ROUND 5 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  6069. at cycle  4
[o]    d.f. =   172
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance =  5951. (change =   -118.) at cycle  4
[o]    d.f. =   171  (change =    -1 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.402    0.05775    ABAT
[o]    2     2.240    0.06674    CONT
[o]    scale parameter taken as  34.80
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance = 3886.5 (change =-2064.35) at cycle  4
[o]    d.f. =  165   (change =   -6   )
[o]
[o]        estimate      s.e.    parameter
[o]    1     1.948    0.1676    ABAT
[o]    2     1.692    0.1888    CONT
[o]    3     0.000   aliased    AGE0
[o]    4   -0.1224    0.1807    AGE1
[o]    5   0.05580    0.1328    AGE2
[o]    6   -0.07039   0.02710   AGE3
[o]    7  -0.005773  0.003639   SES
[o]    8    0.2505   0.05088   MOUT(1).LHW
[o]    9    0.3866   0.04965   MOUT(2).LHW
[o]    scale parameter taken as  23.55
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 30104. at cycle  5
[o]    d.f. =   172
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 29005. (change =   -1099.) at cycle  5
[o]    d.f. =   171  (change =    -1 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.599    0.1050    ABAT
[o]    2     2.917   0.07507    CONT
[o]    scale parameter taken as  169.6
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance = 27286. (change =   -1719.) at cycle  5
[o]    d.f. =   166  (change =    -5 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.456    0.1718    ABAT
[o]    2     2.827    0.1568    CONT
[o]    3     0.000   aliased    AGE0
[o]    4    0.8396    0.2917   AGE1
[o]    5   -0.03772   0.3525   AGE2
[o]    6   0.04899   0.04127   AGE3
[o]    7   -0.1868    0.1203   FEMA
[o]    8 0.00005162 0.00003131   DUST
[o]    scale parameter taken as  164.4
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance = 28434. at cycle  5
[o]    d.f. =   166
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.626    0.1598    SEX(1)
[o]    2     2.424    0.1797    SEX(2)
[o]    3     0.000   aliased    AGE0
[o]    4    0.7185    0.3203   AGE1
[o]    5   -0.1258    0.3766   AGE2
[o]    6   0.04822   0.04215   AGE3
[o]    7 0.00004338 0.00003301   DUST
[o]    8  0.0002567  0.0002150   SOIL
[o]    scale parameter taken as  171.3
```

```
[i] !    ROUND 6 - CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 3810.1 at cycle  4
[o]    d.f. =  132
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 3790.3 (change =    -20.) at cycle  4
[o]    d.f. =  131   (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.346     0.06535     ABAT
[o]    2     2.269     0.06582     CONT
[o]    scale parameter taken as  28.93
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance = 2839.6 (change =  -950.7) at cycle  4
[o]    d.f. =  127   (change =     -4 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.038     0.2091     ABAT
[o]    2     2.006     0.2245     CONT
[o]    3     0.000    aliased     AGE0
[o]    4     0.000    aliased     AGE1
[o]    5     0.000    aliased     AGE2
[o]    6   -0.07551    0.02968    AGE3
[o]    7   -0.01181   0.004674    SES
[o]    8    0.2811    0.05477    MOUT(1).LHW
[o]    9    0.3726    0.06666    MOUT(2).LHW
[o]    scale parameter taken as  22.36
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 21997. at cycle  5
[o]    d.f. =  132
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 21989. (change =     -8.) at cycle  5
[o]    d.f. =  131  (change =     -1 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.630     0.1182     ABAT
[o]    2     2.664     0.1071     CONT
[o]    scale parameter taken as  167.9
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance = 20440. (change =  -1549.) at cycle  6
[o]    d.f. =  128  (change =     -3 )
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.878     0.2143     ABAT
[o]    2     2.912     0.2117     CONT
[o]    3     0.000    aliased     AGE0
[o]    4     0.000    aliased     AGE1
[o]    5     0.000    aliased     AGE2
[o]    6   0.002931    0.05356    AGE3
[o]    7    -0.4941     0.1711    FEMA
[o]    8  -3.877e-05  0.00006039   DUST
[o]    scale parameter taken as  159.7
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance = 20381. at cycle  6
[o]    d.f. =  128
[o]
[o]        estimate       s.e.    parameter
[o]    1     2.843     0.2115     SEX(1)
[o]    2     2.349     0.2568     SEX(2)
[o]    3     0.000    aliased     AGE0
[o]    4     0.000    aliased     AGE1
[o]    5     0.000    aliased     AGE2
[o]    6   0.003599    0.05332    AGE3
[o]    7  -3.433e-05  0.00005942   DUST
[o]    8   0.0001802  0.0002738   SOIL
[o]    scale parameter taken as  159.2
```

```
[i] !    ROUND 6 - ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !    RESPONSE VARIABLE - BLOOD LEAD - LOG LINK
[i] !
[i] !    MODEL 1
[i] $yvar pb$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 4797.8 at cycle 4
[o]    d.f. = 169
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 4727.6 (change =    -70.) at cycle 4
[o]    d.f. = 168  (change =    -1 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.403    0.05173     ABAT
[o]    2     2.279    0.05910     CONT
[o]    scale parameter taken as 28.14
[o]
[i] !    MODEL 2
[i] $fit + age0 +age1 + age2 +age3 + ses +  mouth/lhw - mouth$dis e$
[o] deviance = 3135.6 (change = -1592.0) at cycle 4
[o]    d.f. = 163  (change =    -5 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.106    0.1535     ABAT
[o]    2     2.054    0.1598     CONT
[o]    3     0.000    aliased    AGE0
[o]    4     0.000    aliased    AGE1
[o]    5   -0.2047    0.1267     AGE2
[o]    6  -0.08500    0.02330    AGE3
[o]    7  -0.01106    0.003403   SES
[o]    8    0.2628    0.04184    MOUT(1).LHW
[o]    9    0.3485    0.04418    MOUT(2).LHW
[o]    scale parameter taken as 19.24
[o]
[i] !    RESPONSE VARIABLE - HAND LEAD - LOG LINK
[i] !
[i] !    MODEL 3
[i] $yvar hw$err n$link l$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 30454. at cycle 5
[o]    d.f. =   169
[o]
[i] $fit +abate + control - %gm$dis e$
[o] deviance = 30453. (change =     -1.) at cycle 5
[o]    d.f. =   168  (change =    -1 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.660    0.1013     ABAT
[o]    2     2.671    0.1016     CONT
[o]    scale parameter taken as 181.3
[o]
[i] !    MODEL 4
[i] $fit + age0 + age1 + age2 +age3 + female + dust$dis e$
[o] deviance = 29031. (change =  -1422.) at cycle 5
[o]    d.f. =   164  (change =    -4 )
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.743    0.1876     ABAT
[o]    2     2.765    0.1940     CONT
[o]    3     0.000    aliased    AGE0
[o]    4     0.000    aliased    AGE1
[o]    5    0.3241    0.3086     AGE2
[o]    6   0.03419    0.04758    AGE3
[o]    7   -0.3817    0.1483     FEMA
[o]    8 -2.185e-05  0.00005357   DUST
[o]    scale parameter taken as 177.0
[o]
[i] !    MODEL 5
[i] $fit sex +age0 +age1 +age2 +age3 +dust +soil - %gm$dis e$
[o] deviance = 28976. at cycle 5
[o]    d.f. =   164
[o]
[o]        estimate      s.e.    parameter
[o]    1     2.718    0.1849     SEX(1)
[o]    2     2.333    0.2134     SEX(2)
[o]    3     0.000    aliased    AGE0
[o]    4     0.000    aliased    AGE1
[o]    5    0.3229    0.3089     AGE2
[o]    6   0.03328    0.04755    AGE3
[o]    7 -1.891e-05  0.00005309   DUST
[o]    8  0.0001546  0.0002639   SOIL
[o]    scale parameter taken as 176.7
```

```
[i] !   MODELS USING BASELINE MEASUREMENT AS A COVARIATE
[i] !
[i] !   CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !
[i] !   RESPONSE VARIABLE - ROUND 4 LOG BLOOD LEAD
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  34.477
[o]    d.f. = 132
[o]
[i] $fit blpb +abate + control - %gm$dis e$
[o] deviance =   9.8278
[o]    d.f. = 130
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.9802   0.05457     BLPB
[o]    2    -0.2169    0.1350     ABAT
[o]    3    -0.2303    0.1296     CONT
[o]    scale parameter taken as  0.07560
[o]
[i] !   RESPONSE VARIABLE - ROUND 4 LOG HAND LEAD
[i] !
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  80.971
[o]    d.f. = 132
[o]
[i] $fit blhw +abate + control - %gm$dis e$
[o] deviance =  67.157
[o]    d.f. = 130
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.4771    0.1052     BLHW
[o]    2     0.8403    0.2483     ABAT
[o]    3     0.5512    0.2381     CONT
[o]    scale parameter taken as  0.5166
[i] !
[i] !
[i] !
[i] !   ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !
[i] !   RESPONSE VARIABLE - ROUND 4 LOG BLOOD LEAD
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  43.665
[o]    d.f. = 174
[o]
[i] $fit blpb +abate + control - %gm$dis e$
[o] deviance =  17.846
[o]    d.f. = 172
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.8487   0.05477     BLPB
[o]    2     0.1663    0.1337     ABAT
[o]    3     0.1021    0.1295     CONT
[o]    scale parameter taken as  0.1044
[o]
[i] !   RESPONSE VARIABLE - ROUND 4 LOG HAND LEAD
[i] !
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance = 118.88
[o]    d.f. = 174
[o]
[i] $fit blhw +abate + control - %gm$dis e$
[o] deviance = 102.87
[o]    d.f. = 172
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.4027   0.09151     BLHW
[o]    2      1.059    0.2002     ABAT
[o]    3     0.6968    0.2097     CONT
[o]    scale parameter taken as  0.6016
```

```
[i] !   MODELS USING BASELINE MEASUREMENT AS A COVARIATE
[i] !
[i] !   CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !
[i] !   RESPONSE VARIABLE - ROUND 5 LOG BLOOD LEAD
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  36.226
[o]    d.f. = 135
[o]
[i] $fit blpb +abate + control - %gm$dis e$
[o] deviance =  11.341
[o]    d.f. = 133
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.9728   0.05726      BLPB
[o]    2    -0.1332    0.1413      ABAT
[o]    3    -0.1620    0.1366      CONT
[o]    scale parameter taken as  0.08527
[o]
[i] !   RESPONSE VARIABLE - ROUND 5 LOG HAND LEAD
[i] !
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  84.115
[o]    d.f. = 135
[o]
[i] $fit blhw +abate + control - %gm$dis e$
[o] deviance =  67.340
[o]    d.f. = 133
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.5527    0.1015      BLHW
[o]    2      1.178    0.2406      ABAT
[o]    3      1.447    0.2296      CONT
[o]    scale parameter taken as  0.5063
[o]
[i] !
[i] !
[i] !
[i] !   ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !
[i] !   RESPONSE VARIABLE - ROUND 5 LOG BLOOD LEAD
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  47.901
[o]    d.f. = 172
[o]
[i] $fit blpb +abate + control - %gm$dis e$
[o] deviance =  20.120
[o]    d.f. = 170
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.8853   0.05922      BLPB
[o]    2     0.1570    0.1457      ABAT
[o]    3    0.07810    0.1405      CONT
[o]    scale parameter taken as  0.1198
[o]
[i] !   RESPONSE VARIABLE - ROUND 5 LOG HAND LEAD
[i] !
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  98.275
[o]    d.f. = 172
[o]
[i] $fit blhw +abate + control - %gm$dis e$
[o] deviance =  82.300
[o]    d.f. = 170
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.4167   0.08135      BLHW
[o]    2      1.509    0.1825      ABAT
[o]    3      1.749    0.1870      CONT
[o]    scale parameter taken as  0.4899
```

```
[i] !   MODELS USING BASELINE MEASUREMENT AS A COVARIATE
[i] !
[i] !   CHILDREN PRESENT IN ALL SIX ROUNDS
[i] !
[i] !   RESPONSE VARIABLE - ROUND 6 LOG BLOOD LEAD
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  35.245
[o]    d.f. = 132
[o]
[i] $fit blpb +abate + control - %gm$dis e$
[o] deviance =  12.538
[o]    d.f. = 130
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.9297   0.06115      BLPB
[o]    2   -0.004740    0.1525      ABAT
[o]    3   -0.04171     0.1471      CONT
[o]    scale parameter taken as  0.09645
[o]
[i] !   RESPONSE VARIABLE - ROUND 6 LOG HAND LEAD
[i] !
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  55.742
[o]    d.f. = 132
[o]
[i] $fit blhw +abate + control - %gm$dis e$
[o] deviance =  53.108
[o]    d.f. = 130
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.2249   0.09465      BLHW
[o]    2     1.867    0.2197      ABAT
[o]    3     1.972    0.2154      CONT
[o]    scale parameter taken as  0.4085
[o]
[i] !
[i] !
[i] !
[i] !   ALL CHILDREN SAMPLED THROUGHOUT EXPERIMENT
[i] !
[i] !   RESPONSE VARIABLE - ROUND 6 LOG BLOOD LEAD
[i] $yvar lpb$err n$
[i] $fit %gm$
[o] deviance =  42.698
[o]    d.f. = 169
[o]
[i] $fit blpb +abate + control - %gm$dis e$
[o] deviance =  20.472
[o]    d.f. = 167
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.7966   0.06122      BLPB
[o]    2     0.4007    0.1513      ABAT
[o]    3     0.3090    0.1455      CONT
[o]    scale parameter taken as  0.1241
[o]
[i] !   RESPONSE VARIABLE - ROUND 6 LOG HAND LEAD
[i] !
[i] $yvar lhw$err n$
[w] -- model changed
[i] $fit %gm$
[o] deviance =  73.196
[o]    d.f. = 169
[o]
[i] $fit blhw +abate + control - %gm$dis e$
[o] deviance =  69.832
[o]    d.f. = 167
[o]
[o]        estimate      s.e.   parameter
[o]    1     0.2118   0.07726      BLHW
[o]    2     1.959    0.1699      ABAT
[o]    3     2.003    0.1774      CONT
[o]    scale parameter taken as  0.4232
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