Risk Population
Averaging Time
Role of Air Borne Pb
Primary & Secondary
Document → R&D → Air & Waste mgt
↳ Should not recommend a std.
" contain info for the decision

Smith

1000 Review copies
Short time for review
Publish 8/10
Revision complete 4/1

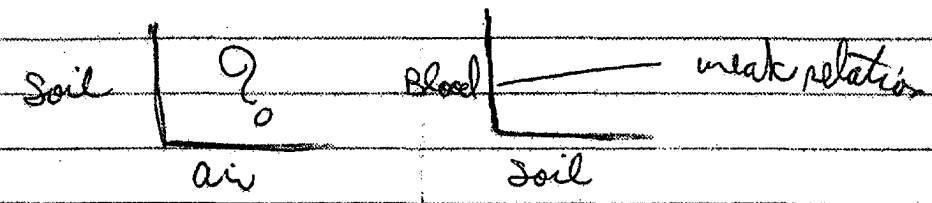
Pb in dust & dirt
Safe Blood Pb levels
" Air Pb levels
Air Pb - Blood Pb relations

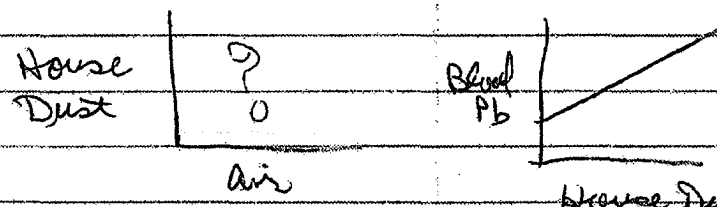
Dr Yand?

Yankel & Von Linden, 1977
Children Data
Children data n=1000 children
one sample

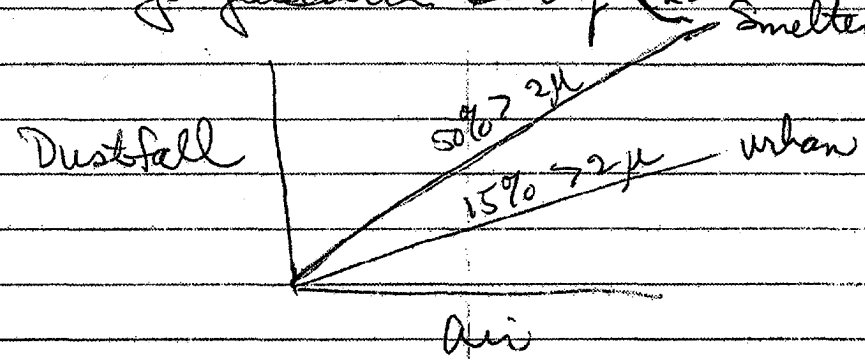
TEH 0470190

Air Pb - Blood Relation Ages 1-5 (2)





Yuagladanu Study (600,000 people a little smaller than BUS city)



Is particle size important Pb safe in one place but not in another?

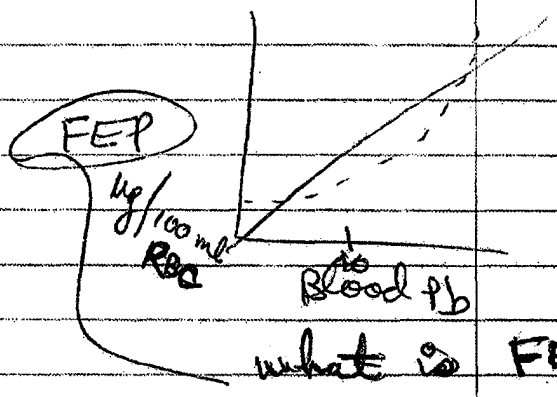
Dust Pb content will be more at a smelter ~~that~~ than in the ~~area of~~ urban area

Horsfall ⟹ Calcium is a problem

TEH 0470191

DUP050083009

Relation between Blood Pb & other body enzymes



what is FEP

3 Good studies Blood Pb → 60 Causes problems

HUD Comment on I-A Ethnic effect Blacks vs Puerto Rician is important

Dr Bath on History

EPA argued against std and may not be enthusastic about establishing std

NRDC (Schoenfeld) nonprofit Law group working on Pb problem for 4 yrs

3 Points

(1) Is a std necessary? Yes (4)
Does EPA believe this?
why - Level to protect health reasonable
- EPA should take action
- what should the std be (Train 2 ppm)
margin of safety

(2) Committee - Congress said such an organization was necessary
Vigorous outside review

(3) Document doesn't serve its function
protect against anticipated effects
Quality is poor - needs a rewriting
Protect children & pregnant

Needleman - Harvard

Pediatrician - children model
tooth Pb analysis ⇒ exposure
n = 960 (1972-73)
white children close to Pb possession
Dust Pb was high

Quality of Document is Poor

? Criticism

TEH 0470193

DUP050083011

mechanics don't solder

Police don't target practice

Rittenhouse – old Houses or air Pb

Pipes are encrusted ?

Dust fall needs more attention

Children FEP

Genetic

Dietary Habits

Anticipate effects are not taken into account

1973 EPA Position Paper

no rational for 5 μg std

b = 1 will not stand the light of day

AQS = 1.5 is about right

BARER – CDC

EL PASO STUDY

LANDIG-RAN

TEH 0470194

DUP050083012

Idaho Study Smelter ⑥

n=1000 Published in Dec 1976

Dust + air Pb

Air = .27(Blood) - 3.54

① B = 3.8 (A) + 3.54

② Slope = 2.3

Other Studies 2.3 - 5.1

Children 99% < 34 µg/100ml

Criteria = 30 or 40 ?
CDC other

Pinilli - N.Y. Piomelli

Quotes Michigan Study

① Blood Pb < 1 µg/dl

② ALAD TLV ≈ 15 Sweden

no difference for

TEH 0470195

DUP050083013

(7)

No normal population for DALA

Slope is too low

Lombardo:

Document is atrocious

in 1972 5 μg/m³ was too ~~to~~ high

Document ignores dust problem

5 μg/m³ ⟹ do nothing

7 Cities 1972 Hammond?

Report is terrible

Blasts

Blasts Mr. Linde

TEH 0470196

DUP050083014

Committee Comments

EPSTEIN – Can the document be salvaged?
no useful purpose
Diff from 1972 EPA position
Recommend it be scrapped
in 1972 AQS = 2 μgm/m³

Relationship is not 1:1 (prefer 1:2 or 1:3)

3 month Std ≡ effect peak excursion

Will std have any effect?

Safety Margin – no documentation

- Lowest level of adverse effect is not addressed

Toxicity data is horrible

no reference to reproductive effects

~~No~~ no problem from occupational not true

BIASED

TEH 0470197

∴ Cancer - no mention of effect of Pb in bone

Renal cancer should have been discussed

5 μgm = 20 μgm (40 Hr week Pb workers)

∴ Pb workers get additional exposure

Neglect of Pb in dust

Ref HEW document on Pb in gasoline

→ no study is perfect

Dr. Bingham

Literature Review is lacking

More emphasis on low level effects

~~More~~ More detailed analysis is needed

subset is the slope in children ?

TEH 0470198

DUP050083016

(10)

Dr. Levine

Poor scholarship & editorial

Diff to read

what is the contribution of airborne Pb to street & house dust

Ziehouis | OK provides

① Dose-response relation is available for all effects

②

③ Blood Pb is the correct response

Neurous system | ALAD

PbB not a measure of past exposure

Should protect ♀ & children

50%	< 17	" Revised "
90%	< 25	
98%	< 30	
100%		< 30

TEH 0470199

DUP050083017

(11)

Diff response curves depending on the effect PbB, PbU, DALA, ALAD

need extensive surveys of population

Develope tests for false positive but no false negatives

ie get away form blood sampling

finger ~~prick~~ prick vs saliva

Relation of external load to internal load

"Elderly have been ignored" - Pb stored in bone

5 is too high Albany Study 3.2 ⇒ Δ = 12

Rate of ~~int~~ intake VS absorbance

3 μgm (2 yrs) ⟶ 2 μg later

TEH 0470200

DUP050083018

Ferrand (12)

~~Freidlander~~

EPA should be more critical of studies - Good vs bad

Pb measurement is important - stable if a reference method

Pb is a good indicator of auto (ie like ~~Pb~~ CO)

High correlation between traffic, Pb, CO

poor correlation at roof top

3μg at roof

10μg at street

These problems have to be resolved

Freidlander

Inhalation

Ingestion A - Background

Ingestion B - local

Exposure related to particle size

Isokinetic sampling - Sampling rate vs wind speed is a problem in large size - value is too low - Dust problem

TEH 0470201

DUP050083019

Conducted a study of isokenetic

Sampling orange Report is available

Background is dominated by auto

Hi Vol sampler result adequate

Should be addressed

~~X~~ Particle size is important - Single

no require a much lower

Better to choose general Pb levels

Small Particles

Big "

fallout

Dr Walker

Peak Pb exposure should be paid more attention to

no Cancer & reproductive

Chisholm

Adult data

new Data

FEP ⇒ Children + Adults

Children < 2 yrs should not be eliminated

More on reproductive effects

Dr. Hammond

In a similar manner to WHO document

Can't solve all problems today

Air Pb - Blood Pb Relation

used by WHO (analysis is simplistic)

~~Quote~~ Quotes Ayer - used data from other studies

lo $b > 1$

hi $b < 1$

Prediction good for adults

TEH 0470203

(15)

Dec 1976 Arch of Env Health

Smelter model is different

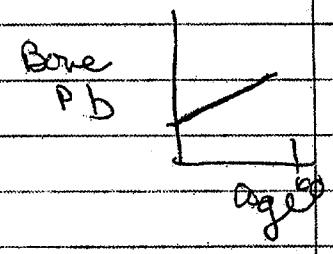
& effect is large

b=1 is to simple

Dose Response

Discussion of Toxic & Nontoxic effects is inadequate

Pb in aged — Document is inadequate



Watson

Good by EPA stds

no complex Statistical analyses

NOTHING

HORSFALL "JUST A COUNTRY BOY"

effect of Roads → plant → cattle

no known build up

This section is well done.

McClelland

where does different Pb sources

come into play - scattered

about the report

Occupational exposures a

problem

TEH 0470205

DUP050083023

(17)

BINGHAM — 2–5 in 5yrs?

Mr Smith — the 5# doesn't include a margin of safety

Dust ignored because of lack of data

EPSTEIN — More justification is needed

FERRAND — ? No comprende

Schoenfeld — Outraged at Smith's Comments

Hammond paid 2 man hr in 1972

Children { Salvador 50%
Retention 25%

LUNCH BREAK

TEH 0470206

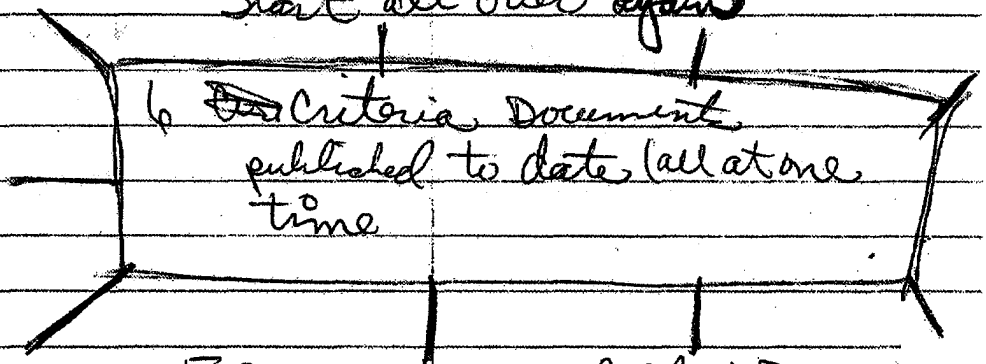
(18)

Suggestions for Task force

1. Analytical
- Sampling procedures
isokinetic
Soil
Dust fall
Analytical Chemistry
ie areas of Chapter 4

Epstein - Motion Document is invalid
Second Bingham
Start all over again

6 Criteria Document published to date (all at one time



FOR		AGAINST
*EPSTEIN	?	WATSON
BINGHAM		Freidlander
Yerim		Hosefall
Walker		McClelland

TEH 0470207

DUP050083025

Back to Analytical

Online Instrumentation Needed for Pb & other trace metals

Better methods for blood Pb analysis other Biological indicators

More on analysis of repeat samples Griffin et al

Hammond ≡ Interlab study in Europe

EXPOSURE

Pb enters from various routes

Integrate Environmental Exposure & mechanism of exposure

Take a variety of biological indicators into account

< 1 micron Pb

> 1 " Pb

Surface deposition

TEH 0470208

DUP050083026

People monitoring

Base criteria on worse possible situation

Job of administrator

Physiological Disposition

Absorption
Distribution within body
Biotransformation
Elimination

* Distinguish between dust fall and Pb in dust & soil

measurements are

Occupation & nonoccupation

A-B relation = f (age, Blood Pb level, etc sex)

TEH 0470209

DUP050083027

(21)

Task Force should
Consult with outside experts

Relation between average peak absorptions

Health Effects

Interpretation of safety Margins
age
Sex
Ethnic

Variation of individual responses

Dose response at low levels of
and other factors

Reproduction – Brain damage
is age dependent

Relate the rats & humans RDS
– aren't they the same PVN

TEH 0470210

DUP050083028

Neurotoxic & Neurobehavioral (22)

no Reference to EPA conference on Pb Brain damage in animals

Hematopetic
Hemesynthesis
RBC
Drug metabolism

Epstein - Lets extract the good points from each data set

Interrelationships with other elements such as cadium & Nutritic

TEH 0470211

DUP050083029