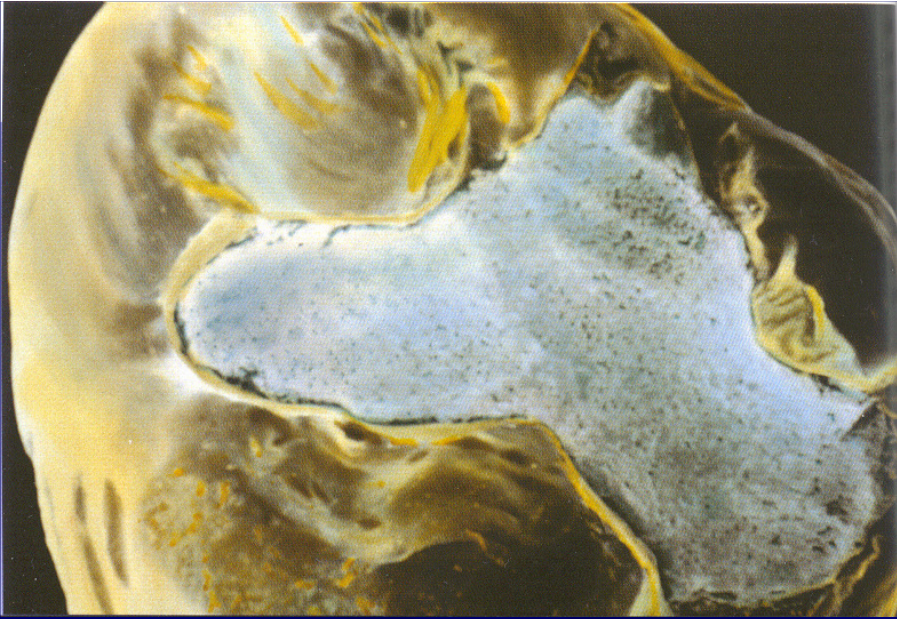


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Flaws in amalgam-studies which „proofs“ the safety of dental amalgam

Dr. Joachim Mutter



Understanding methodical failures

A. „The main sources of mercury (Hg) for humans are food (fish) and air“

(All Dental organisations, Halbach 2005, FDA 2006, LSRO 2004, BfArM 2003, Clarkson 2003, 2006)

„The main sources of Hg for humans are potatoes and fruits“

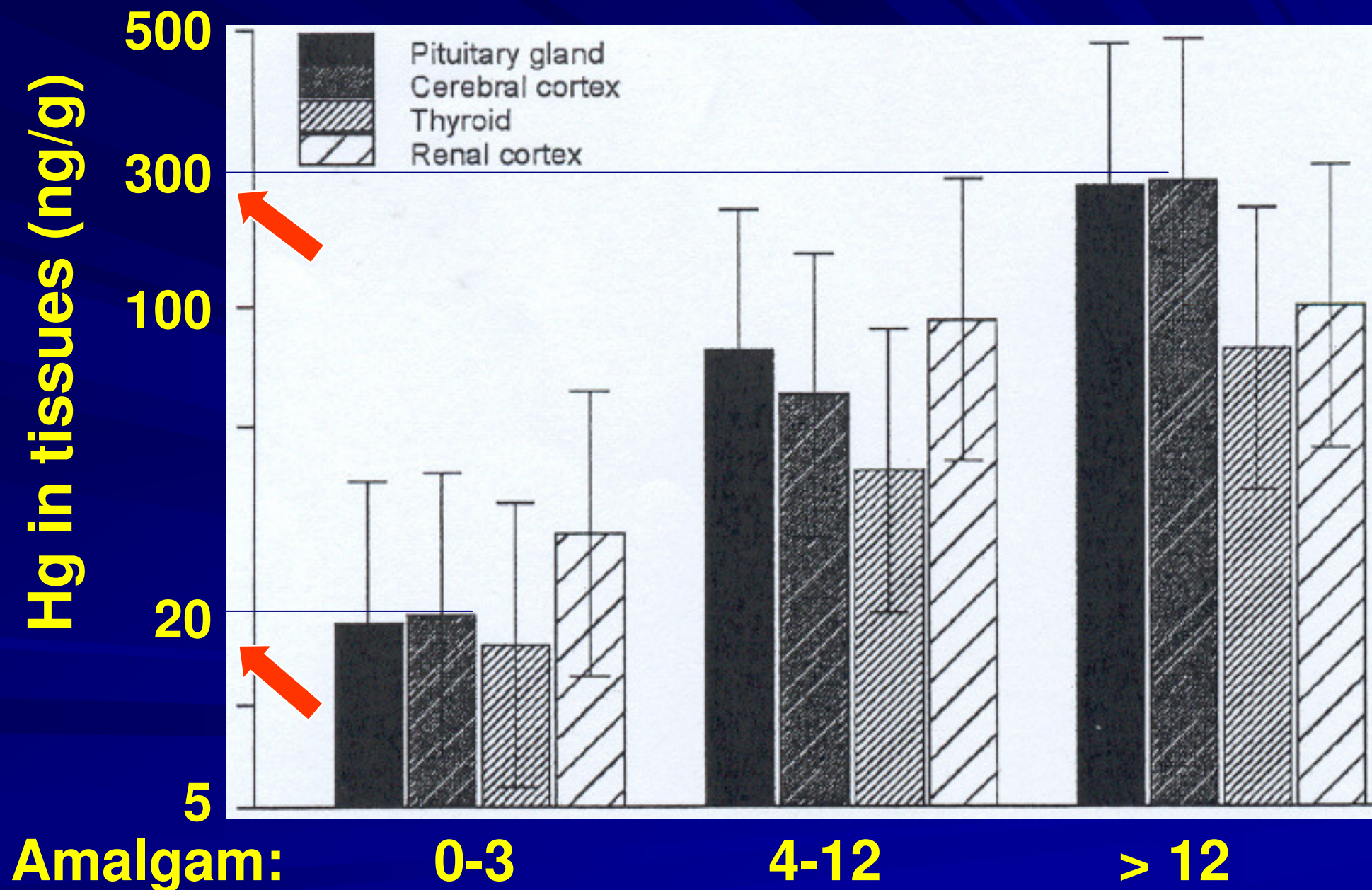
Prof. Dr. F. Reichl, before the german- RKI- Commision, 2005

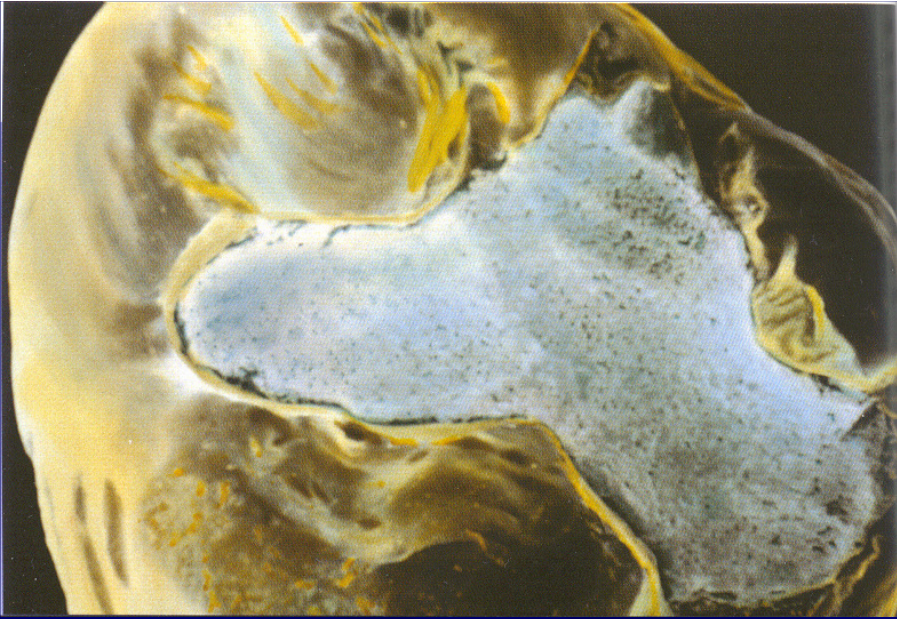
A: Deceased humans with dental amalgam:

- **2- 12- times more Hg in body tissues**

(Bjorkman et al. 2007, Link et al. 2007, Leistevuo 2001, Drasch 1992,1994, 1997, Egglestone 1987, Nylander 1986, Nylander et al. 1987, Guzzi 2006, WHO 1991)

A: Amalgam and Hg in brain (Guzzi 2006)



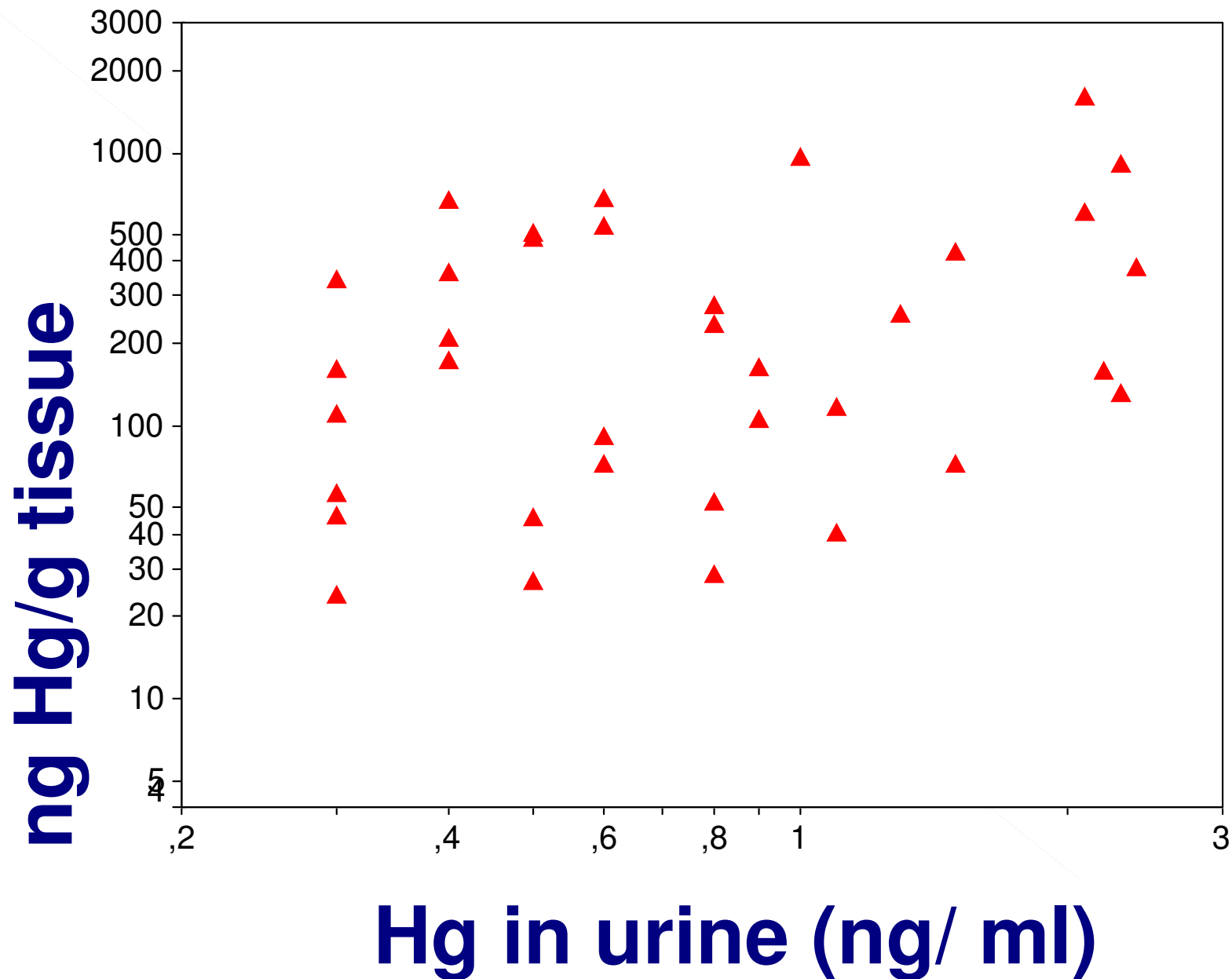


Understanding methodical failures

B. „Hg in urine reflect body burden of inorganic Hg“

(Clarkson & Magos 2006, Clarkson 2003, FDA 2006, LSRO 2004,
BfArM 2003)

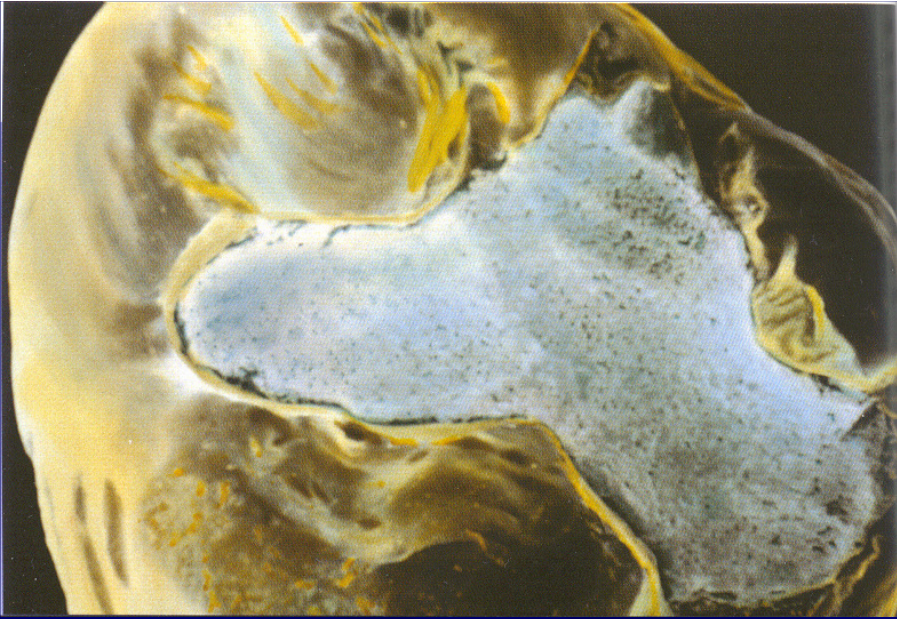
B: Hg level in urine versus tissue



Drasch et al. 1997

B: (WHO 1991, p 61)

„There are at present no suitable indicator media that will reflect concentrations of i- Hg in critical organs... One important consequence is that concentrations of Hg in urine or blood may be low quite soon after exposure ceased, despite the fact that concentrations in the critical organs may still be high“

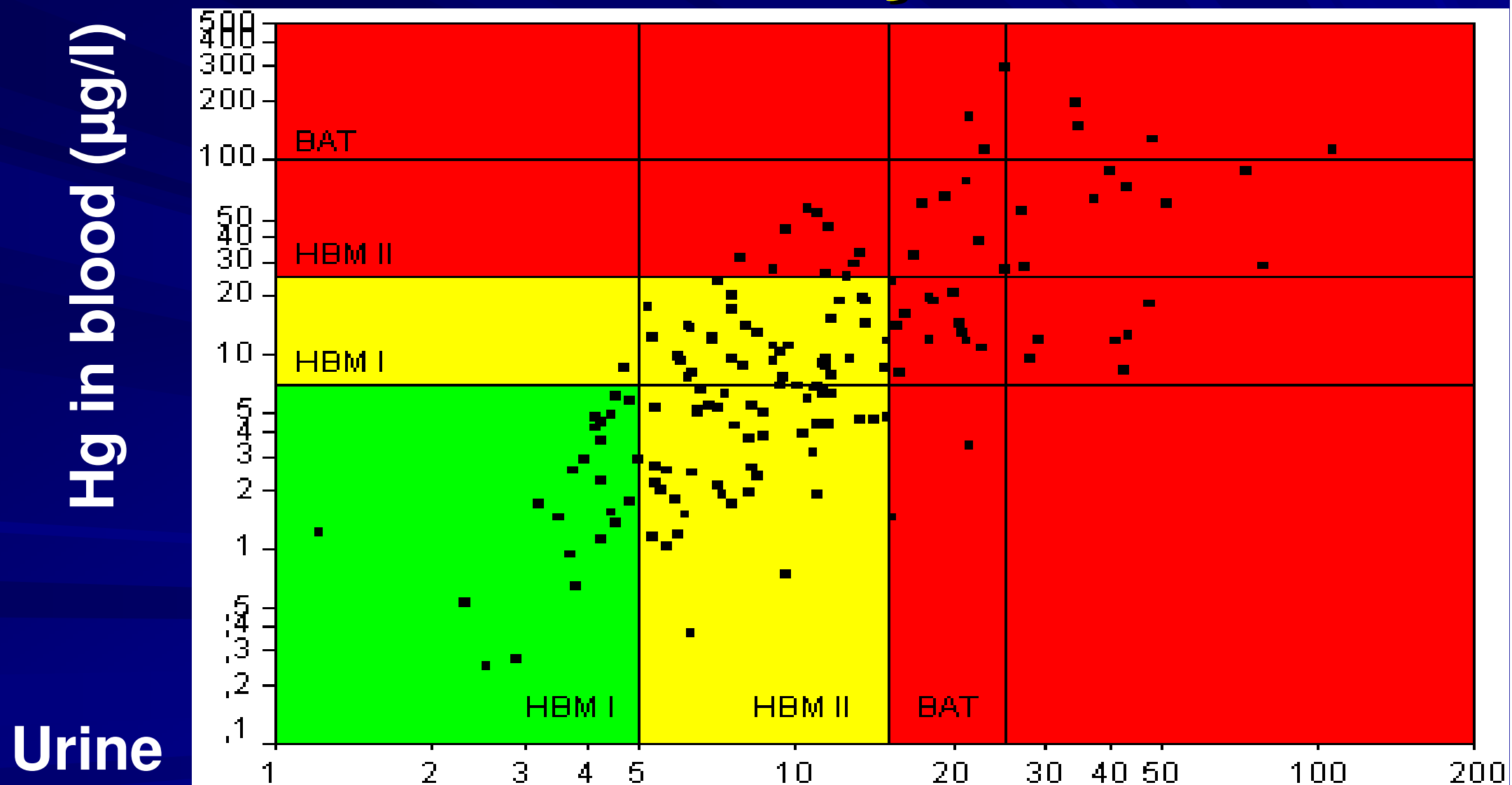


Understanding methodical failures

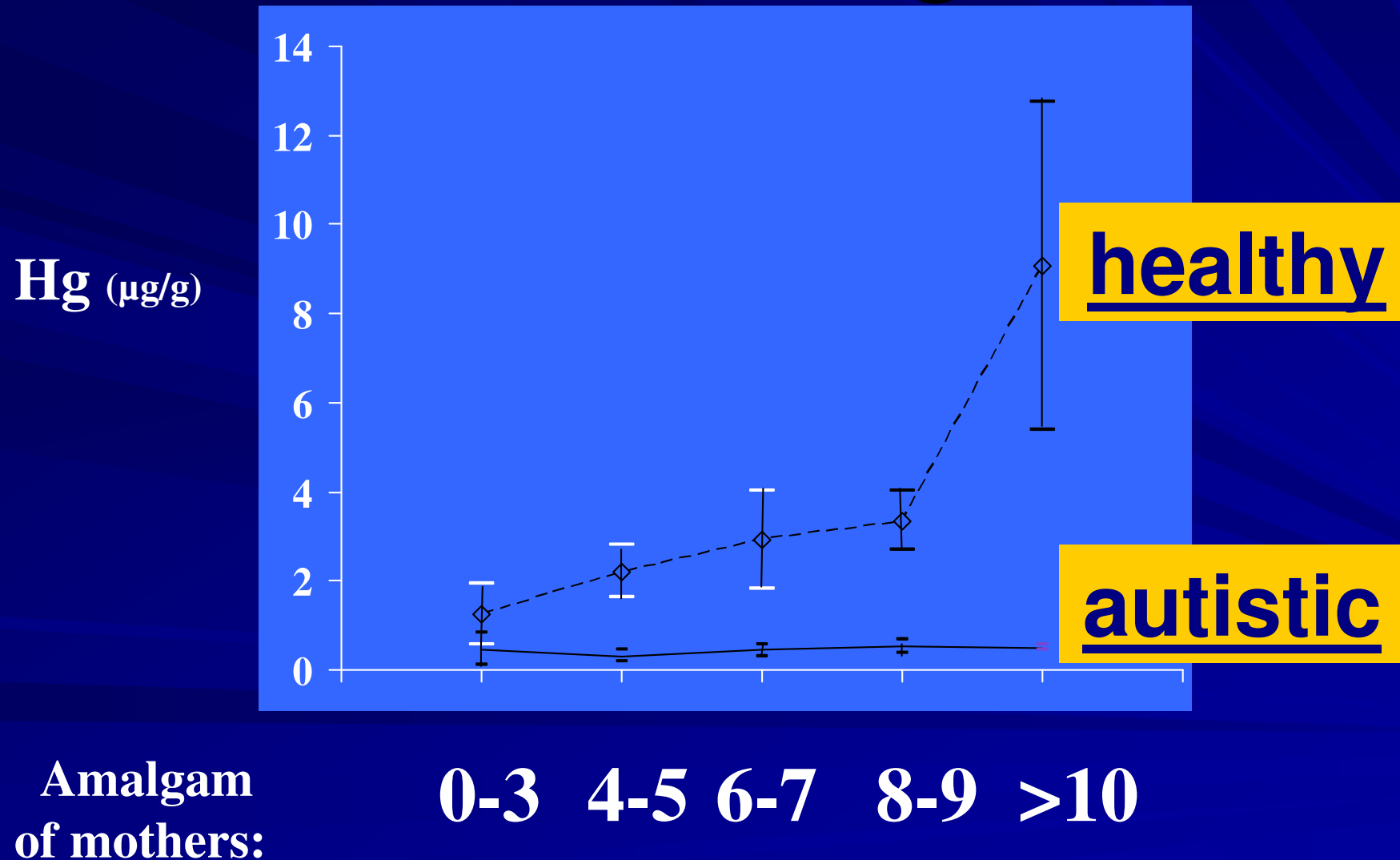
**C. „No adverse effects below safety
limits or with very low Hg-levels“**

(Clarkson 2006, FDA 2006, LSRO 2004, BfArM 2003, Swissmedic 2005)

C: Hg-intoxicated goldminers: Levels below safety limits (Drasch 2001,2002)

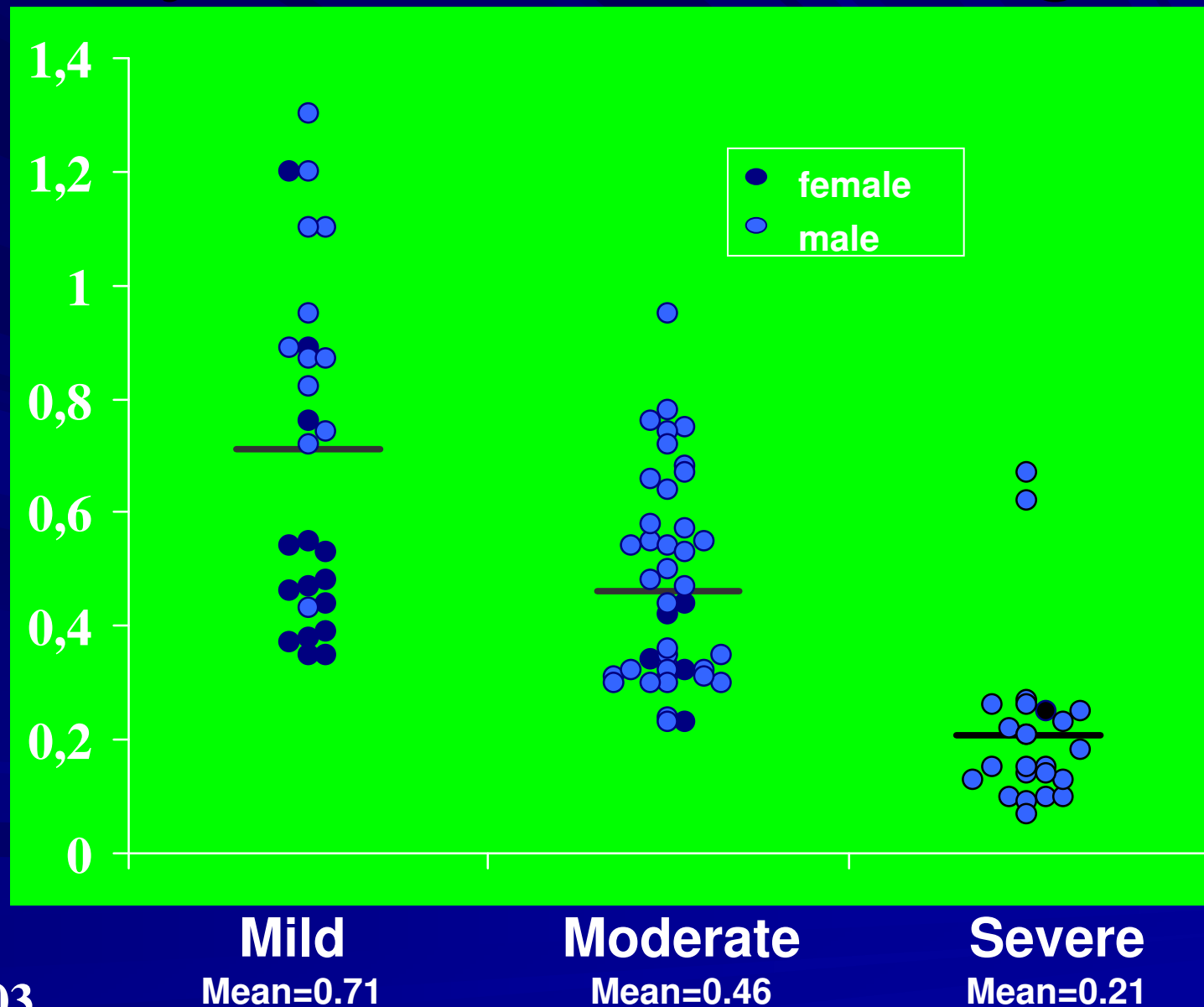


C: Hg in babies-hair (first haircut) and maternal amalgam counts



C: Severity of autism and Hg in hair

Hg level
($\mu\text{g/g}$)



Holmes et al. 2003

C: Hg in hair (first babies haircut) and babies teeth

Autistic (N=98)

0,47 $\mu\text{g/g}$

Healthy N=(45)

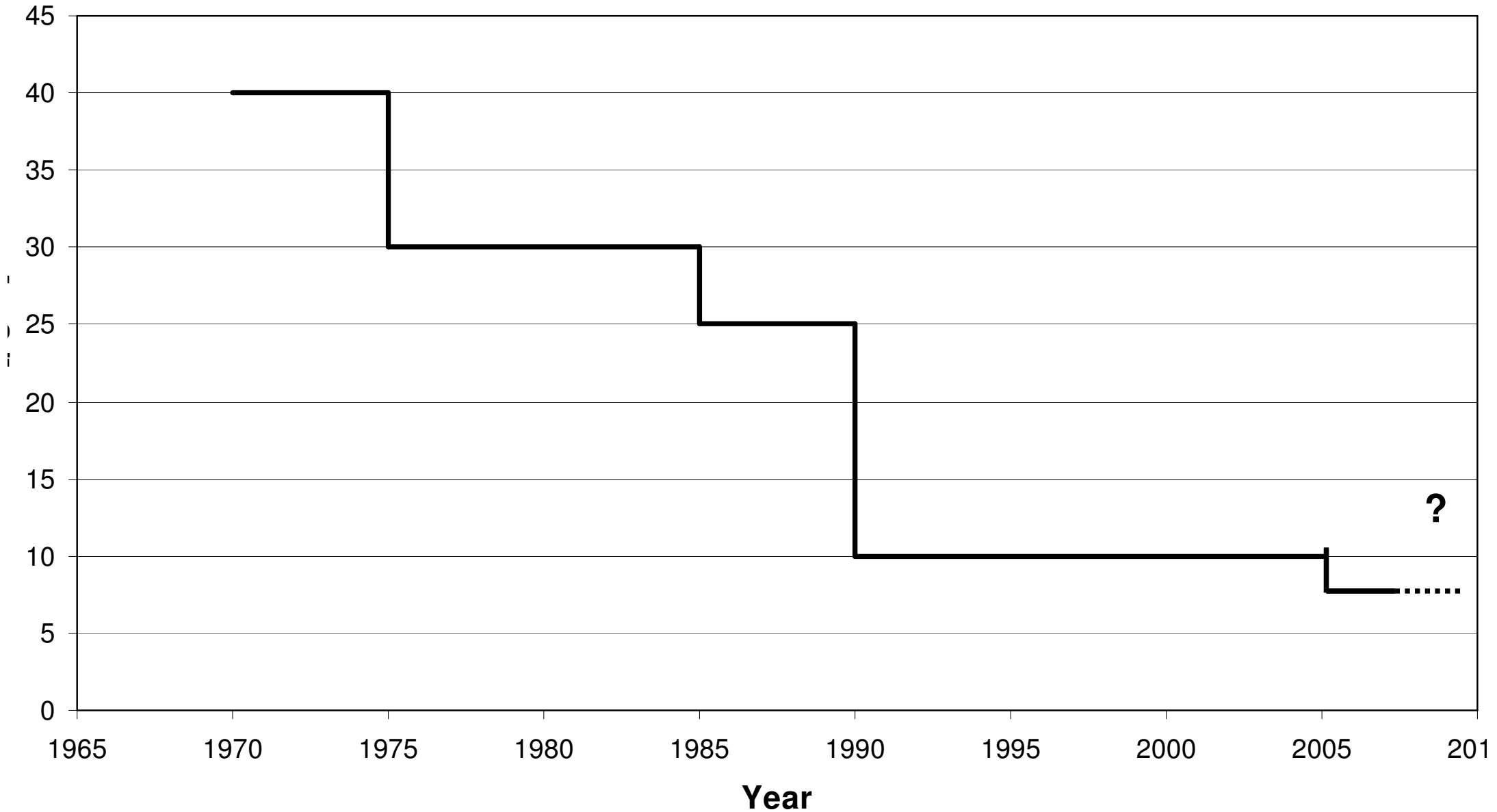
3,63 $\mu\text{g/g}$

(Holmes et al. 2003)

■ **2 x more Hg in teeth of autistics**

(Kern et al. 2007)

C: “Safety limits” for Pb (children)



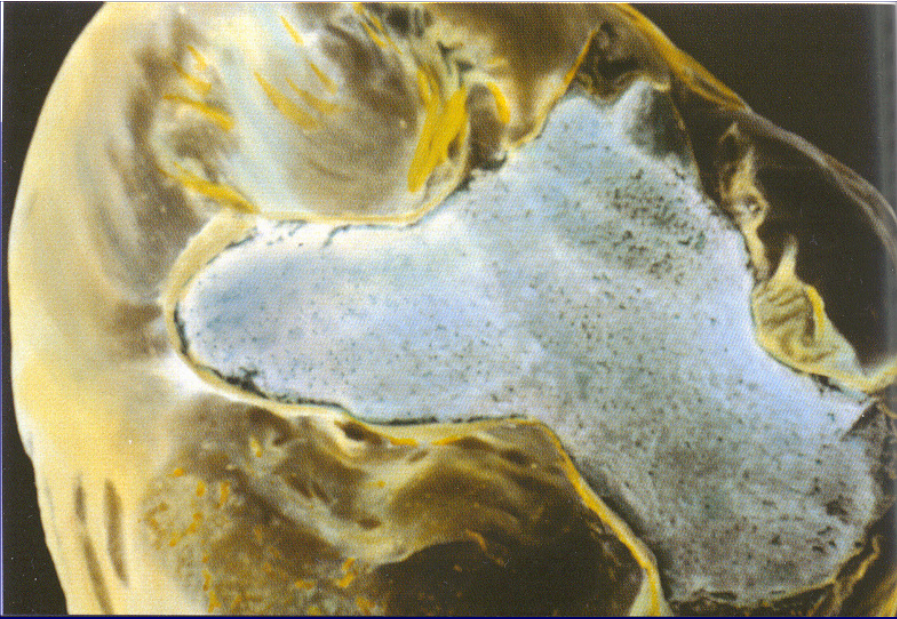
C: Lead (Pb): Safety limits?

- „Safety Limit“: 10 µg/ dl

- 2-10 µg/dl: Elevated mortality!!!
(myocardial infarction and stroke)

(Menke et al. 2006, Circulation 114; 1388)(Lustberg& Silbergeld 2002)

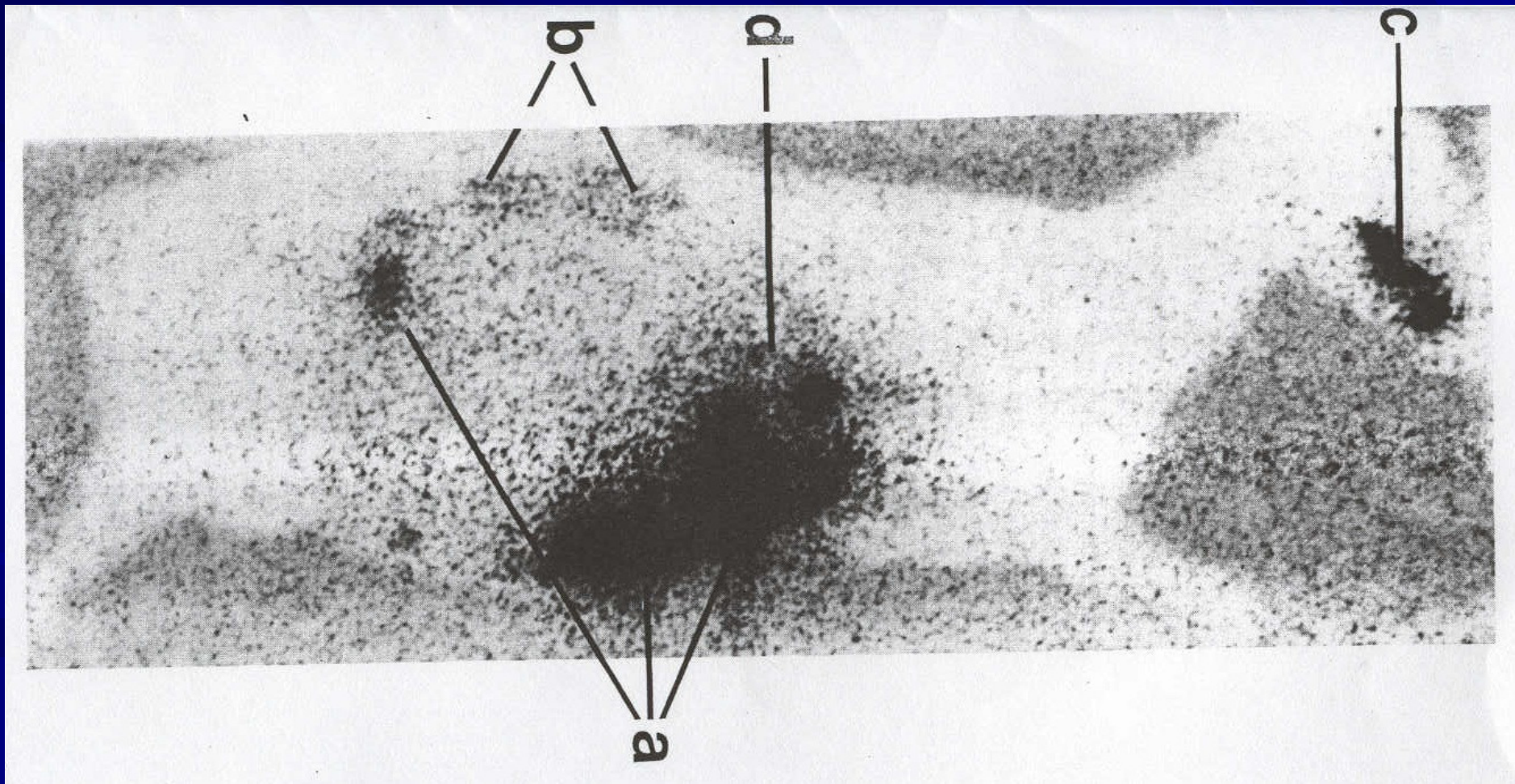
- 38 % of U.S. have blood Pb >2 µg/dl



Understanding methodical failures

D. „No accumulation of Hg in tissues“
(Halbach 2006)

**D: Mercury in sheep 28 days after insertion
and removal of dental amalgam traced with
radioactive mercury (^{203}Hg)**



Hahn et al. 1989

D:

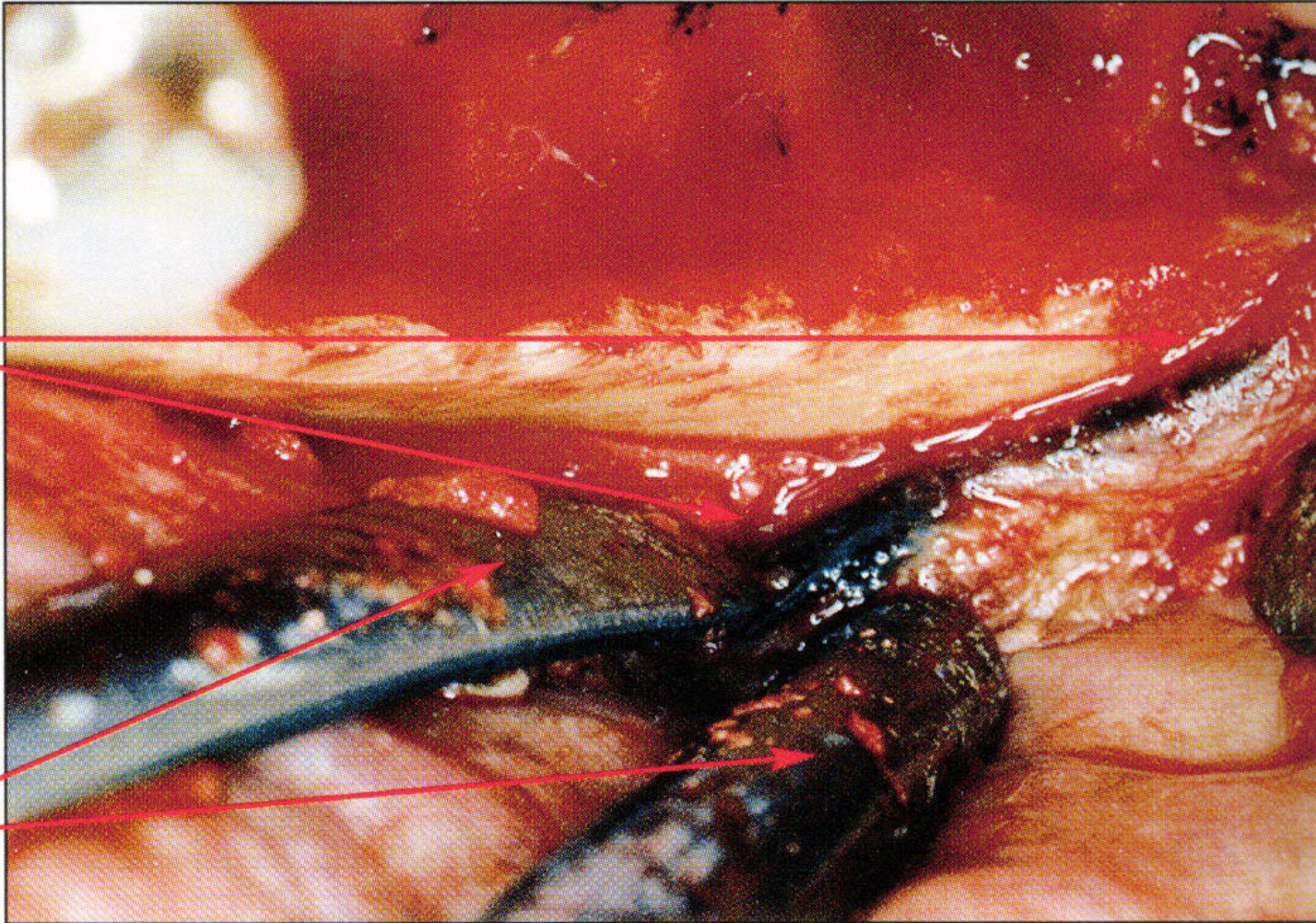
Hahn
et al.
1990

Tissue	ng Hg/g
Whole blood	5.8
Urine	17.7
Synovial membrane (knee joint)	31.6
Skeletal muscle (gluteus)	1.9
Fat (mesentery)	0.0
Tooth alveolar bone	7756.1
Oral mucosa	86.6
Gingivae	4190.4
Tongue	253.3
Parotid gland	1.6
Stomach	18.4
Small intestine	68.9
Large intestine	983.1
Colon	482.7
Bile	243.1
Feces	3490.2
Heart (ventricle)	6.6
Lung	15.0
Trachea	12.6
Kidney	3053.5

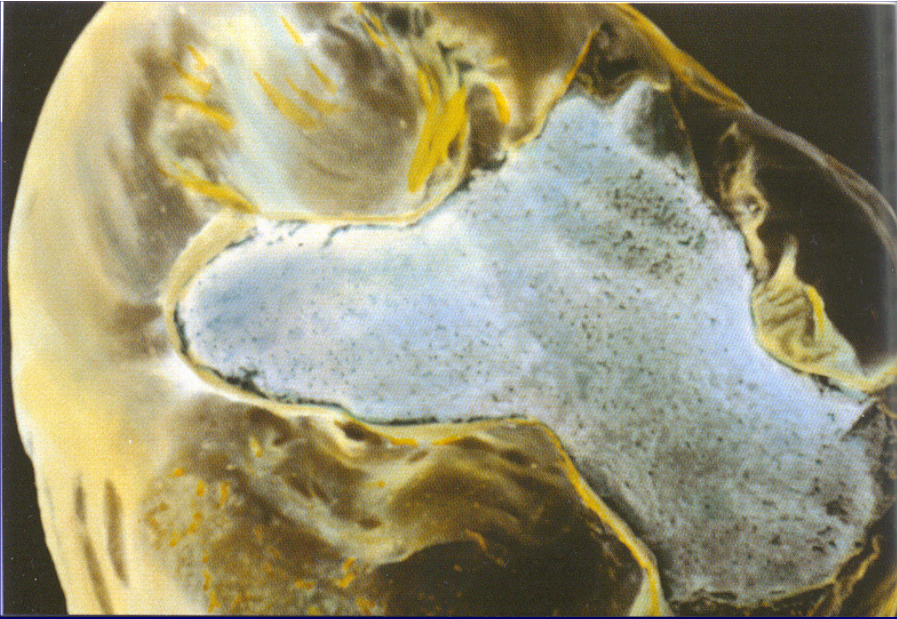
D:

Amalgam
tattoos

Raspatories



**Amalgam tattoos on the jaw bone.
Amalgam > 10 years ago removed**



Understanding methodical failures

**E: „The whole body half-time of
inorganic Hg is 58 days“ (Clarkson 2006)**

**„Therefore, after 1 year, 99% of Hg
is excreted from the body“ (Halbach 2006)**

E: „Half-time of Hg is 58 days“

■ Hg in tissues **17 years** after
accidental Hg- vapor exposure:

- brain: 1000-2190 ng Hg/g
- kidney: 1650 ng Hg /g
- lungs: 600 ng Hg /g
- urine: <„safety limits“

■ „Normal(?)“ brain levels: 0-150 ng/g

(Opitz et al. 1996)

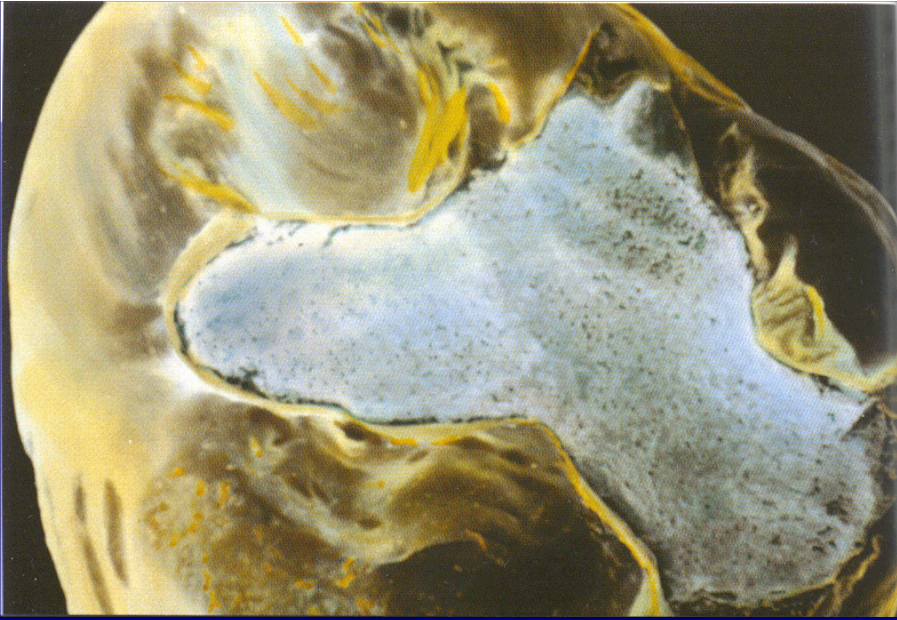
D: „Half-time of Hg is 58 days“

- **“After the accident, he suffered from severe fatigue, irritability, burning stomach, diabetes and was never able to work again. He died of lung cancer **17 years** after Hg exposure.”**
- **„Several experts diagnosed a „organic psycho syndrome“ because Hg levels in urine was < safety limits“**

D: Hg

■ Half- life in brain: 1-18(-30) years

(Sugita 1978, Opitz et al. 1996, Hargreaves et al. 1988, Takahata 1970, Kishi 1994, He 1984, Kobal 2004, Letz 2000)



Understanding methodical failures

**F. Neglegence of genetical
susceptibilities and sensitivities**

F. Frequency of amalgam sensible individuals in the population

**15% Prof. Lutz, former Chairman,
Dental Hospital, University Zürich**

25% Richardson 1995

**1- 4% Commision of human-
biomonitoring, Germany 1999**

**1% Prof. Berlin for swedish
Government 2003**

F: Increased Hg- susceptibility through polymorphism of:

- **Apo E4** (Stewart et al. 2002, Godfrey et al. 2003, Wojizek et al 2006)
- **Hypomethylation** (Waly et al. 2004)
- **Coproporphyrin oxidase (CPOX4)**
(Echeverria 2006, Woods 2005, Heyer 2006)
- **Glutathion-production** (Custodio 2004, 2005)
- **Brain derived neurotropic factor (BDNF)**
(Echeverria 2005, Heyer 2004)
- **MTHFR-677-Mutation** (Boris 2004)

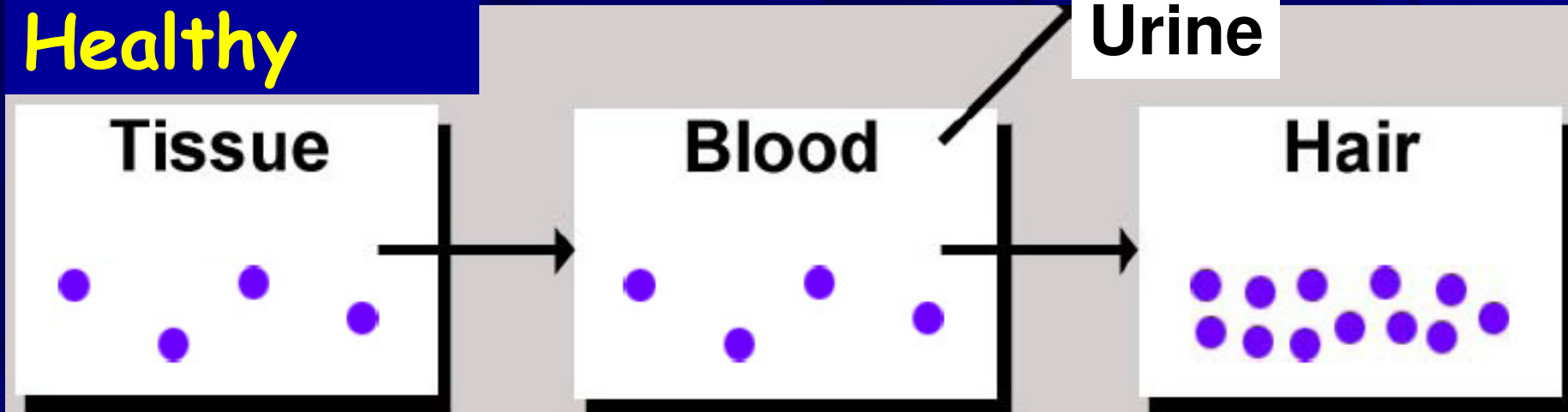
F: AD- risk in dependence of Apo-E-type: Number of Hg- detoxifying SH-groups

ApoE- Genotyp	risk	SH-groups
2/2	0,6	4
3/3	1,0	2
3/4	3,2	1
4/4	14,9	0

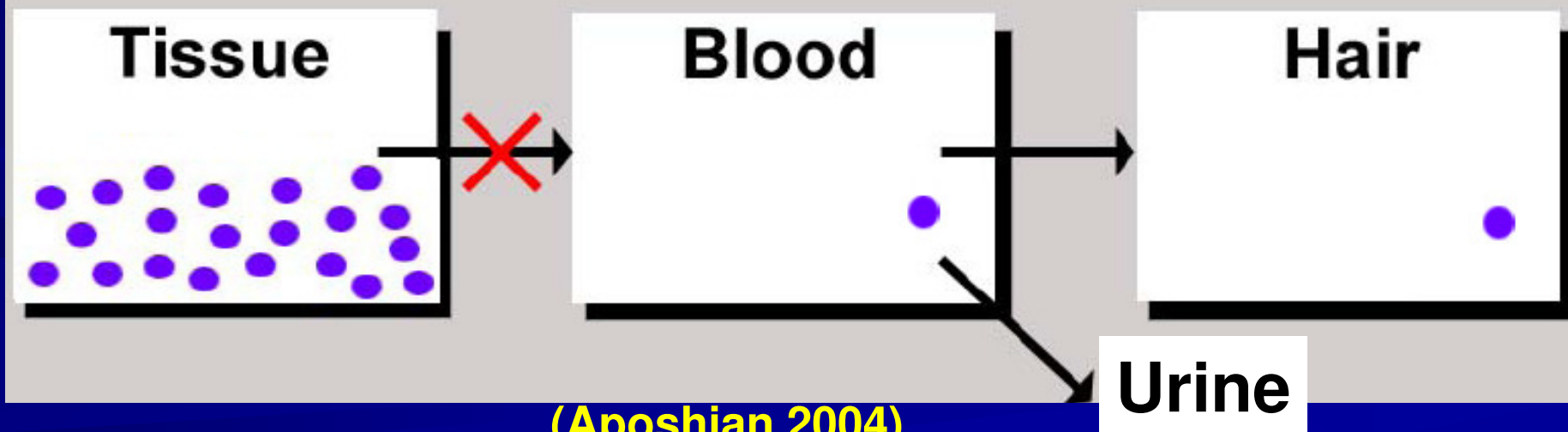
Farrer et al. JAMA 1997

F: Sensitivity: Decreased Efflux of Hg

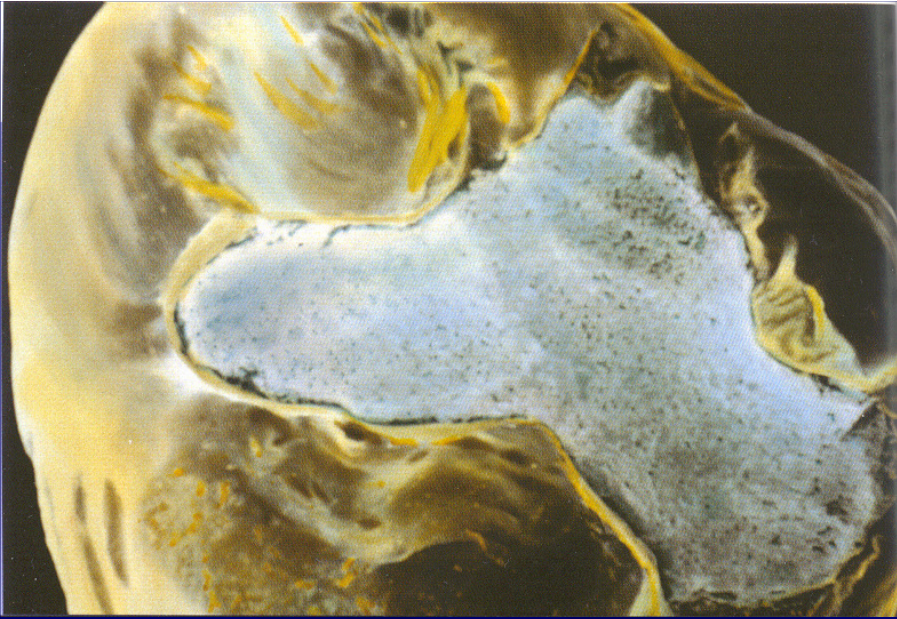
Healthy



III



(Aposhian 2004)



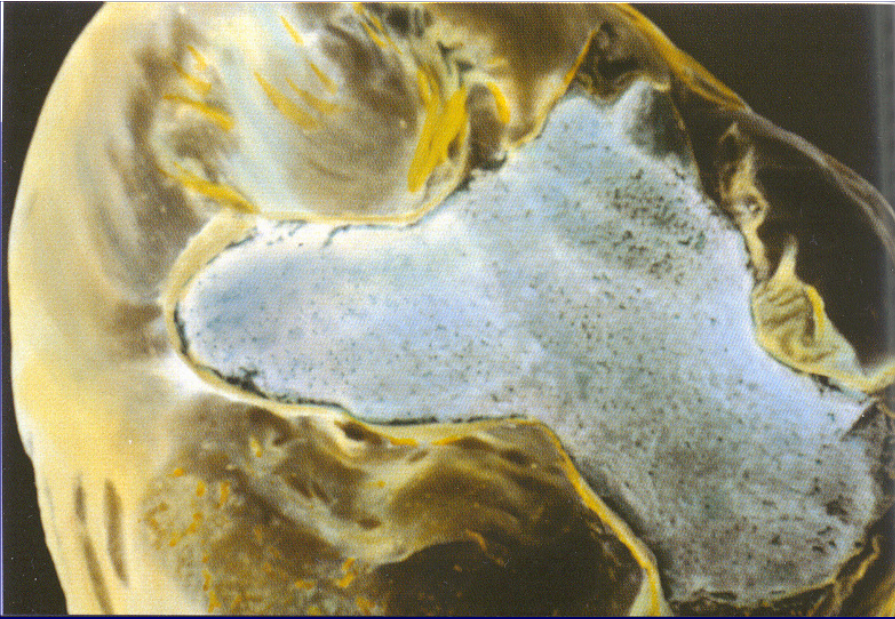
Understanding methodical failures

**G. „Composites are more toxic than
amalgam“** (organized dentistry, health authorities)

„Gold is more toxic than amalgam“
(Prof. Drexler, University Erlangen, Occupational Medicine,
Member of the german RKI- Commision for Environmental
Medicin)

G: „Amalgam is the less toxic dental material“

- **Amalgam is 800-fold more toxic than composites in vitro** (Reichl et al. 2006, 2007)
- **Hg is the most toxic metal**

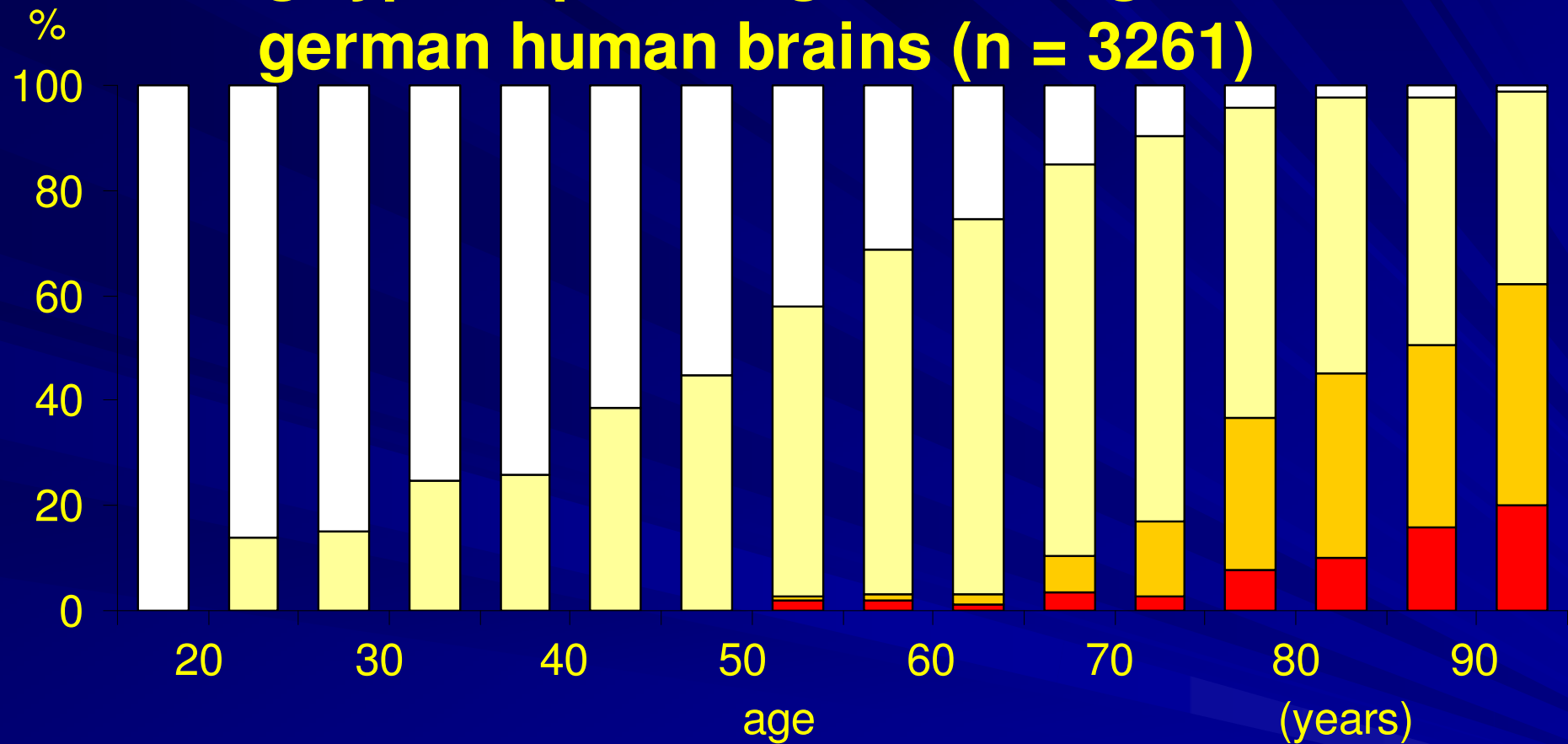


Understanding methodical failures

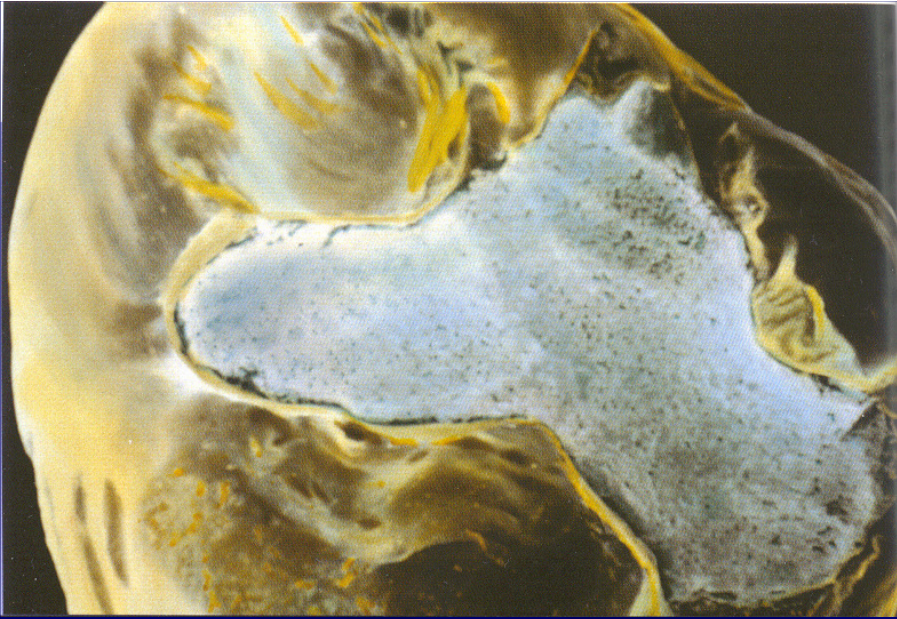
H. „90 % of german people had
amalgam. But our population is
healthier than ever“ (argument by dental associations)

H:

Hg-typical pathological changes in german human brains (n = 3261)



Braak et al. 1997



2. Why amalgam still is „safe“ for humans: flawed studies?

- A. No amalgam free control groups**
- B. Hg values in body fluids as standard**
- C. Neglegence of genetic suceptibilities**
- D. Low statistical power**
- E. Short duration of studies**

A:Two amalgam groups: One with complaints and psychological disorders. Equal Hg-levels

- “Thus, Hg released from amalgam fillings was not a likely cause of complaints...”
- „Whether patients feel impaired by their amalgam obviously does not depend on Hg- exposure“
- „...psychotherapy or psychiatric treatment is the adequate therapy for many patients with amalgam related complaints“

A: Swedish Twin study (25% without teeth)

- **„Amalgam-free“ group: Without teeth or crowns, bridges etc.**
- **Amalgam- group was healthier**

Björkmann et al. 1987

A: Swedish woman study (15% without teeth)

- **„Amalgam-free“ group: Less than 5 amalgam-fillings or without teeth or crowns, bridges etc.**
- **Amalgam- group was healthier**

Ahlqwist et al. 1988, 1993, 1999

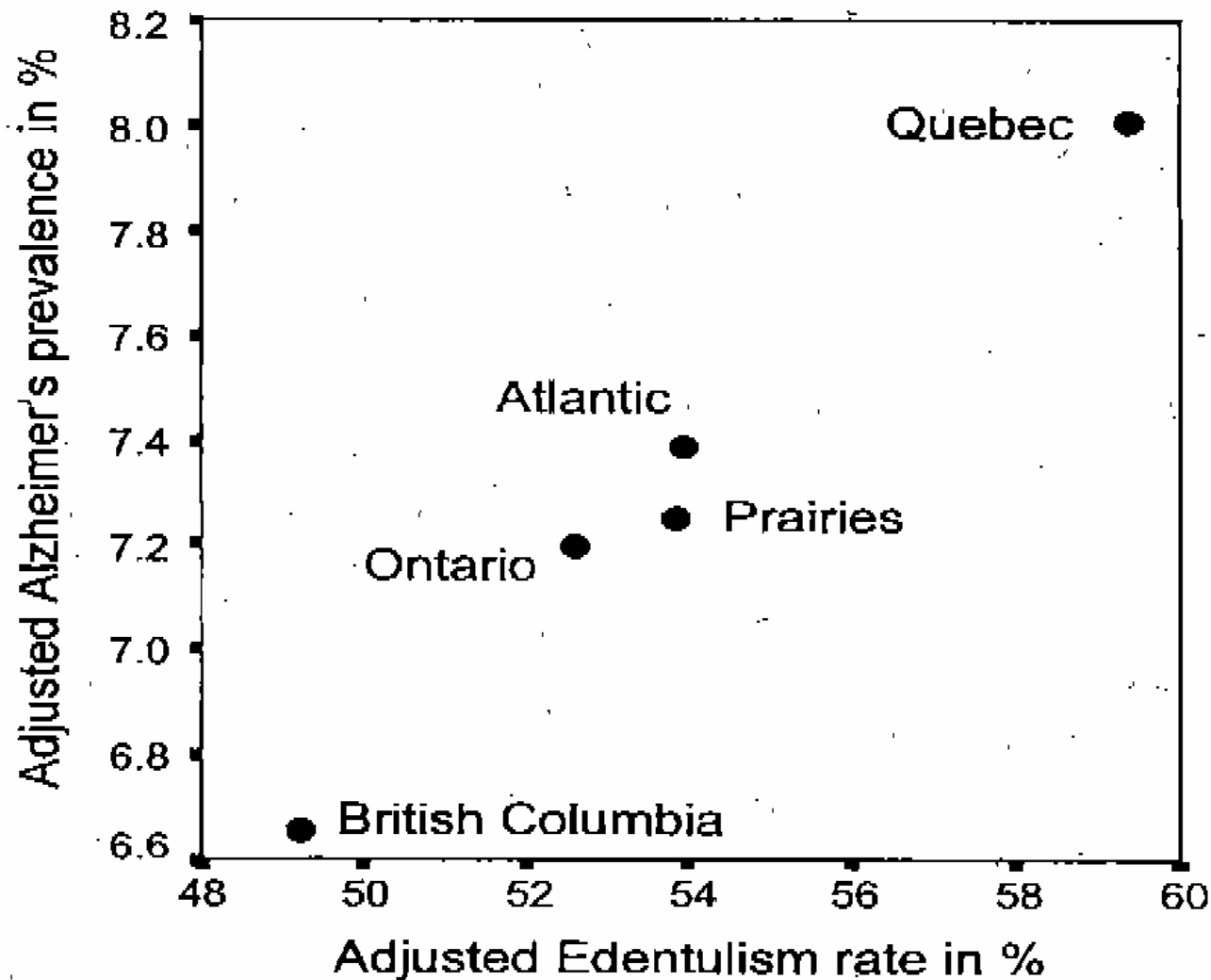


Figure 1. Prevalence of Edentulism and Alzheimer's disease in older people, (65+) in Canada.

Lund et al. 2003:

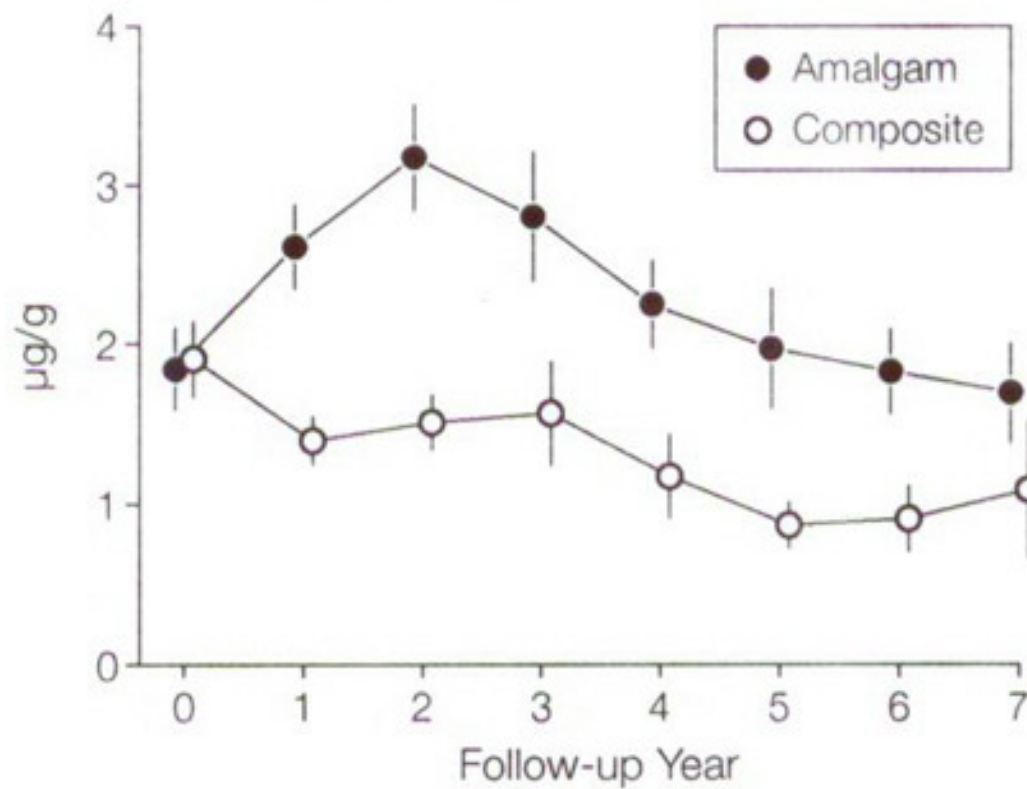
„Therefore, Amalgam is not the cause of AD“

B: Children amalgam trials

- **Short duration (5-7 year)**
- **Two childs of the amalgam-group die and were excluded from the analysis**
- **Eliction of the fittest**
- **Neglegence of susceptibilities**
- **Low statistical power**

DeRouon et al. 2006, Bellinger et al. 2006

Creatinine-Adjusted Urinary Mercury



**Amalgam
was told to
be
unhealthy...**

**No trouble.
I'm wearing
gloves.**



THANK YOU!!

