

LEAD IN GAME MEAT AND IMPLICATIONS FOR HUMAN HEALTH

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BACKGROUND

- **The primary lead contamination of game meat stems from intake of natural food, water and habitat exposure**
- **Projectiles used to hunt game may cause secondary lead contamination of their meat**
- **Is the lead contained in hunted game meat a risk for consumers?**
- **Blood lead levels are considered a proxy of lead chronic lead intake in the general population**

TIME CHANGES OF ALARM THRESHOLDS FOR BLOOD LEAD LEVELS

YEAR	ALARM THRESHOLD LEAD CONCENTRATIONS (ng/mL)
1971	400
1975	300
1978	300
1985	250
1991	100

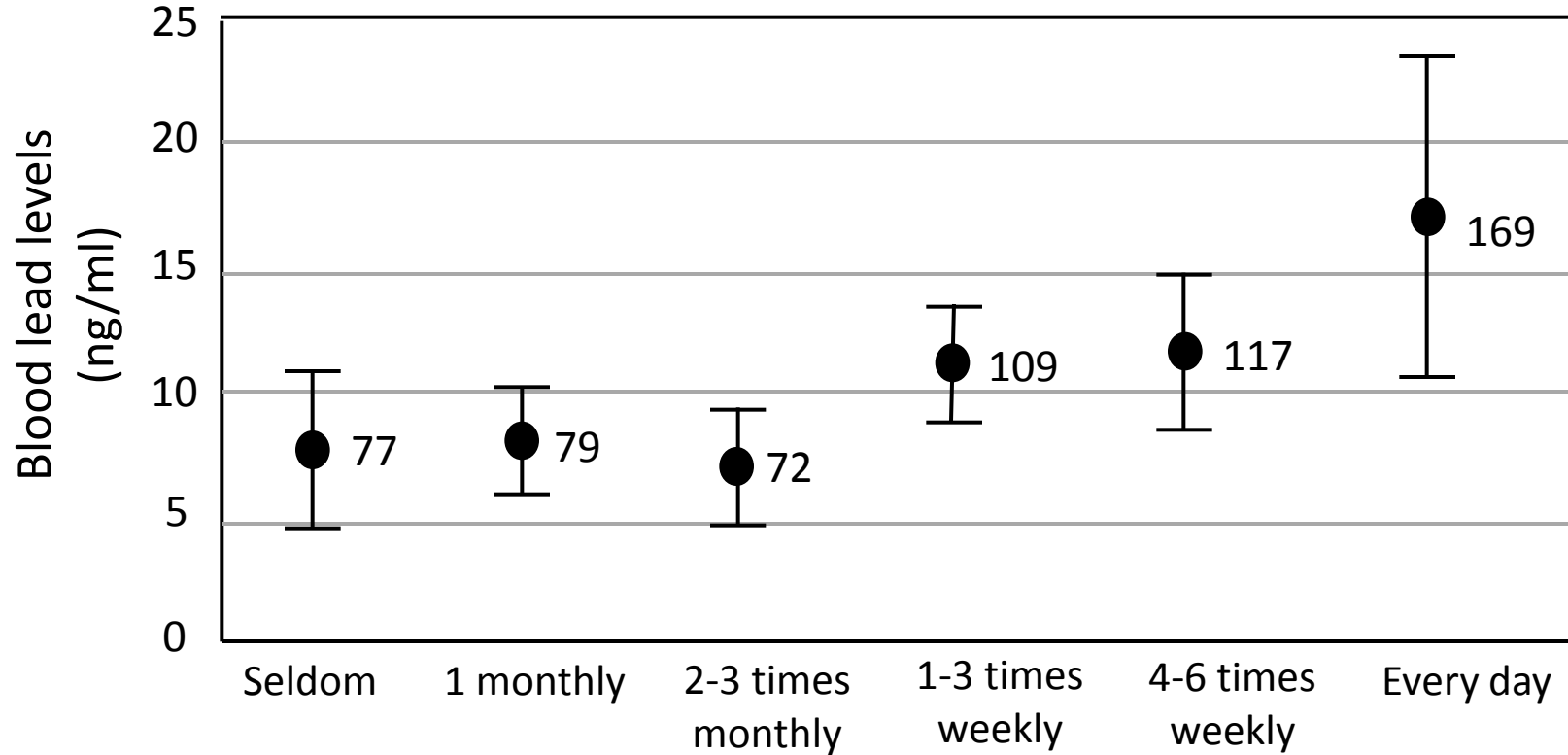
Center for Disease Control and Prevention, 2005

RELATIONSHIP BETWEEN BLOOD LEAD LEVELS AND CLINICAL DISEASE

	CRITICAL BLOOD LEVELS
Central nervous system (in children)	> 12 ng/mL
Blood pressure	> 36 ng/mL
Kidney function	> 15 ng/mL

EFSA, 2010

BLOOD LEAD LEVELS AND FREQUENCY OF GAME MEAT CONSUMPTION



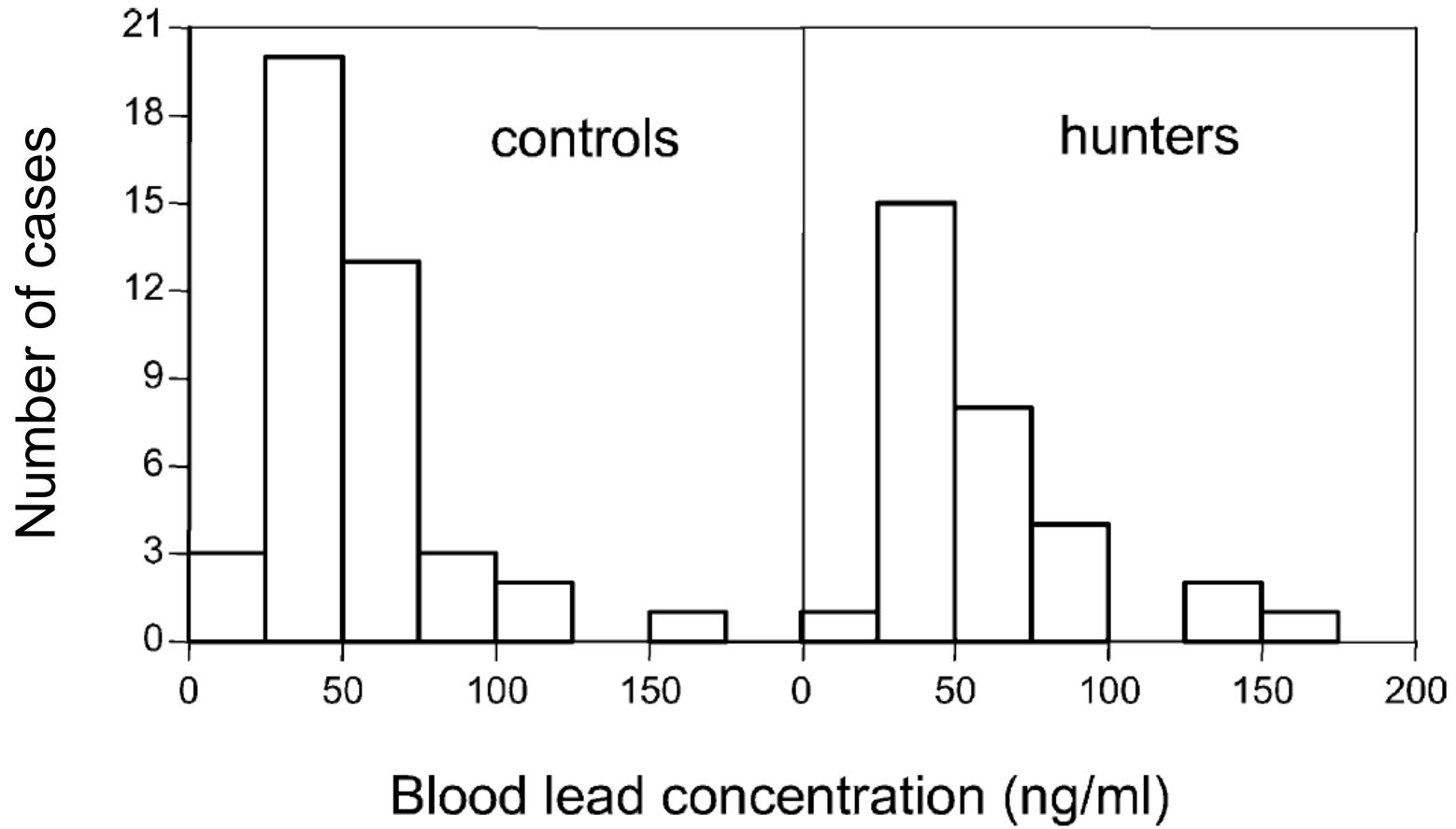
Bjerregaard et al, 2004

Eur Food Res Technol (2002) 215:375–379
DOI 10.1007/s00217-002-0581-3

ORIGINAL PAPER

**Max Haldimann · Andreas Baumgartner
Bernhard Zimmerli**

Intake of lead from game meat – a risk to consumers' health?



Haldimann et al. Eur Food Res Technol (2002) 215:375–379

BLOOD LEAD LEVELS IN HUNTERS AND BLOOD DONORS (CONTROLS)

SUBJECTS	N.	MEDIAN (ng/mL)	RANGE (ng/mL)
Hunters	25	59	21-171
Family members	6	42	31-49
Blood donors (males)	21	58	24-156
Blood donors (females)	21	41	20-104

Haldimann et al. Eur Food Res Technol (2002) 215:375–379

CONCLUSIONS

- **The blood concentrations of lead in moderate consumers of wild game meat are not different from people in the general population**
- **The main sources of lead intake in humans (60%) are the following foods (EFSA, 2012):**
 - **Cereals (16%)**
 - **Non-alcohol drinks (12%)**
 - **Milk and dairy products (10%)**
 - **Vegetables (8%)**
 - **Alcohol drinks (7%)**
 - **Water (7%)**

A NEW CASE-CONTROL STUDY

- **Sponsored by University of Milan and the Industry and Hunting Associations**
- **Lead concentration in venous blood collected at least 7 days after the last game meat meal in game meat consumers**
- **Comparison with control represented by healthy individuals living in the same environment of hunters (friends, relatives) but not consumers of game meat**