## Lead in ammunition

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# **Requirements for hunting bullets**

- Availability for all calibres and types of firearms
- Safety of usage seen from all aspects
- Highest ethical standards and aspects have to be met
- Reasonable safety from an environmental perspective







### **Risks of lead substitutes**

### Lead substitutes:

In practice only solid copper or tombac with hollow point

### **Risks for the industry**

Hundreds of different calibres must, but can't be adapted

Copper bullets are suitable for some calibres, whereas traditional lead core bullets can be used in all existing calibres

### **Risks for the hunter**

Some mono-metal bullets foul barrels and may create dangerous gas pressures



Mono-metal bullets have very high weight retention, over-penetration ability and high risk of tumbling – Increased risk for ricochets

All existing rifles are constructed for the use of lead core bullets The industry manufactures what markets and customers require

# **Animal welfare – hunting ethics**



### Lead

- Used by millions of hunters since hundreds of years
- Fulfils all hunting ethic demands
- Safety of users
- Lead is the only material that can provide these requirements for ammunition.



Together

ahead.

### Copper

- Copper has not, and can never be given the same ductile properties as lead
- Thus it is impossible to design bullets with optimal killing ability in all calibres
- The Ammunition industry does not write the laws on animal welfare and ethics

Industry and hunter take their responsibility for hunting ethics. This is the reality we have to face using mono-metal bullets!

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## **Capability difference**

Escape distance is 3 to 4 times longer with lead-free bullets than with traditional lead bullets. This is alarming for hunting ethics.



Field studies conducted by BDB (Bund Deutsche Berufsjäger) on escape distances: 602 games of different species shot with lead and lead-free bullets



### World-wide usage of lead: 2006

#### 7.7 Million tons in the year 2006

84.50%	Lead batteries
3.88%	Colours, glass, ceramic products, pigments, chemicals
3.81%	ammunition
1.45%	Lead boards
1.06%	Cable coatings
0.92%	Cast metal (alloys)
0.58%	Brass and bronze bars
0.58%	Tubes and other drawn products
0.57%	Brazing (non electronic application)
0.40%	Brazing solder
2.25%	Other (plastics, dung, etc.)

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# Lead hunting bullets in environment

- Water-soluble lead compounds, if internalized, may be toxic to humans and animals
- Oxides from lead bullets will form insoluble complexes like other anthropogenic lead

### LEAD

is an element naturally occurring, in the earth's crust, mainly as the minerals galena, cerrusite and anglesite. Mean lead concentration in first 50 cm of the mineral soil layer in Swedish forest areas is about 200 to 800 kg per hectare.



Impact on soil lead level from hunting bullets will not be measurable compared with natural occurrence of lead and anthropogenic activities in modern society.

## Lead in food





Source: www.efsa.europa.eu/en/efsajournal/doc/1570.pdf



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## Absorbtion of lead in the body



By weight, 1/1000 (1 ‰) of the accidentally ingested lead is available for distribution to internal tissues and organs. In context: 10 mg/kg lead metal is to compare with EU limit of 0.1 mg/kg for beef (ionic lead we have to presume) when performing risk assessments and B-Pb calculations.

When meat around the wound channel is discarded, it eliminates the risk to ingest lead metal from bullets!

### Lead metal and EU limits

BfR, (Bundesinstitut für Risikobewertigung) states that all wild boar meat in Germany and Europe has a lead level of 4.7 mg/kg. This is presumed to be in form of lead metal from bullets!

With a release of 1 %\*) bioaccessible lead in GI tract, one kilogram of wild boar meat is equal with EU 1881/2006 limits for consumption of:

- 0.47 kg of bovine meat
- 0.1 kg of sausage
- 4.7 litres of tap water
- 31 grams meat from clams
- 50-60 cigarettes

- 0.24 kg of cereals
- 0.16 kg of cabbage
- 0.47 kg of fruits
- 0.24 kg of berries and small fruit
- 24 cl of wine or cider

1%<sup>\*)</sup> from performed experimental, in-vitro study "Lead in Game Meat"

EU limits are expressed in ionic, bio accessible lead. For comparison with lead metal the actual release in the GI tract has to be considered.

## Who should take responsibility?

If we are forced by law to use copper or copper alloys for bullets, who should take responsibility then?



### THIS QUESTION HAS TO BE DULY ANSWERED!

## The industry's point of view

- Where possible, we will supply lead-free ammunition to hunters who request it
- Change to mono-metal concept, benefits must be greater than cost and risk
- The discussion concerning lead ammunition has to be based on facts only

The industry has to follow all **international and national safety regulations**, such as:



C.I.P Firearms Act Test firing Act

to fulfill the consumers' safety in accordance to product liability and product responsibility laws!

### For the time being lead is still the best alternative!

Thank you for your attention.

