



## **Commentary on the interpretation by special interest groups of the 2008 U.S. Centers for Disease Control and Prevention study on lead exposure from game consumption**

### What the CDC study says.

In 2008, the CDC and North Dakota Department of Health conducted a study of blood lead levels in 736 North Dakota residents, both hunters and non-hunters, who volunteered to participate. Read the report here:

[http://www.peregrinefund.org/lead\\_conference/2008%20CDC%20ND\\_Final\\_TripReport\\_5NOV08.pdf](http://www.peregrinefund.org/lead_conference/2008%20CDC%20ND_Final_TripReport_5NOV08.pdf)

Here are excerpts from the study:

- "In this study, the consumption of wild game was significantly associated with an increase in PbB. [PbB means blood lead concentration].  
(Page 8)
- "Recent consumption of wild game and amount consumed per serving were also significant factors associated with PbB."  
(Page 9)
- "The clinical significance of low PbB in this sample population and the small quantitative increase of 0.30 g/dl in PbB associated with wild game consumption should be interpreted in the context of naturally occurring PbB. Despite the decline in PbB in recent decades, the mean PbB in the population is several orders of magnitude higher than the levels of preindustrial human societies (0.016 g/dl) and the natural background of PbB in humans."  
(Page 9)
- "Findings from this study have limited generalizability."  
(Page 10)
- "Further research is needed to determine the magnitude of the risk associated with wild game consumption among children and among the population who receives donated meat."  
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## What special interest groups claim the CDC study says.

The study has been interpreted by special interest groups to mean that eating game harvested with traditional lead bullets is safe. For example, they have said: "The CDC report has confirmed that traditional ammunition poses no health risk to people who consume game harvested meat"

The report does not come to that conclusion. Principal investigators are best equipped to interpret the meaning of their study results because they understand the limitations of the study design. The author's conclusions and limitations of interpretation are very clear from the excerpts above.

Special interest groups don't tell you that the study only represents average hunters in North Dakota, and that people who have different game consumption habits might show different results. There are certainly individuals, families, and communities throughout the U.S. and world who eat game harvested with lead ammunition at a much higher frequency than "average North Dakota hunters." They especially need to take precautions to avoid lead exposure.

Here are other samples of critics' comments with our response:

- "The average lead level of the game consumers was lower than that of the average American."

**Response:** North Dakota is a much cleaner (lead free) place to live than "average Americans" inhabit. "Average Americans" include inner city, urban, and suburban dwellers who continue to be exposed to old lead paint peelings, or, for example, the roughly half-million people who are exposed to lead from mine tailings in northern Idaho, among other lead hotspots. So, "average American" in this context is not useful for understanding whether game consumers are exposed to lead.

- "...the study showed an insignificant 0.3 g/dl difference between those who consume wild game and those who do not."

**Response:** The 0.3 g/dl (micrograms per deciliter) difference is small but not "insignificant." There was a statistically significant difference in blood lead level between game-consumers and non game-consumers at P<0.0001 level (statistically highly significant). Granted, the mean difference of 0.3 g/dl more lead in the blood of game-consumers than non game-consumers is not large by contemporary levels (although it is orders of magnitude higher than the 0.016 g/dl baseline that the report recommends be the reference point). But, the conclusion from the study is simple: People who eat game are exposed to more lead than people who don't eat game. That's all.

The study design could not determine whether that exposure was biologically important because blood lead elevation is short-lived, and the study made no attempt to measure lifetime accumulated lead in bone or health effects of this source of lead exposure. The study did determine that it is worth investing in further research to answer these questions.

- "...the highest lead level found was 9.82 µg/dl, well below the CDC's level of concern for adults of 25 µg/dl; the average level of children under 6 tested was 0.88 µg/dl, less than half of the national average and well below the CDC's level of concern for children, 10 µg/dl..."

**Response:** The CDC benchmarks are levels at which intervention is required to find and remove sources of lead exposure from children (10 µg/dl) and adults (25 µg/dl). OSHA benchmarks are higher. Benchmarks were formerly 60 µg/dl, but they have steadily been reduced over the past 50 years as researchers have detected health effects at lower levels of lead exposure.

The current CDC benchmark levels of concern do not reflect modern knowledge of the health effects of lead at lower levels. The benchmarks were set in 1991 and are out of date. Health professionals petitioned the CDC in 2006 to reduce the benchmark for children to 2 µg/dl (check on the web at: [http://www.asmalldoseof.org/toxicology/chp\\_7\\_sl\\_lead.ppt](http://www.asmalldoseof.org/toxicology/chp_7_sl_lead.ppt) ).

Any doctor who is up to date on lead toxicity will tell you that lead is affecting your health at levels well below the CDC benchmarks. It can be difficult and expensive for local health department to find a single lead exposure source to remove when levels are that low, so current benchmarks for intervention reflect economic and political factors rather than what is best for your health.

- ö the notion that any amount of lead is a "concern" is scientifically unfounded rhetoric that runs contrary to nationwide, long-standing standards of evaluation.ö

**Response:** Health professionals have concluded that there is no safe level of lead in the blood (no lower safe threshold), and the best way to treat lead exposure is through primary prevention, that is, prevent exposure in the first place.

öThe data demonstrating that no "safe" threshold for blood lead levels in young children has been identified highlights the importance of preventing childhood exposures to lead,ö according to a CDC statement published in 2005.

The CDC study showed that game-consumers are exposed to lead. Other studies have shown that residues from lead bullets or shot are the source of lead in game meat. If you are concerned about the toxic effects of lead, which are especially important in children under age 6 and women of child-bearing age, adopt a primary prevention approach: Don't eat game killed with lead ammunition. Shoot with lead-free alternatives instead.

## What you need to know

### Lead is toxic.

Lead residue from bullets and shot can contaminate anything from none to 100% of the game meat you eat (several independent studies have found that contamination is highly variable and unpredictable). It may not be as important a source of lead exposure as the old paint in your home, but because lead exposure is cumulative over your lifetime (it is deposited in bone and can be remobilized in old age or during lactation) all sources should be avoided as far as possible.

### Adopt primary prevention

Why worry about lead in game meat if you can avoid it by using non-lead ammunition? A long list of ammunition alternatives is available on the Arizona Game and Fish Department's website at:

[http://www.azgfd.com/pdfs/w\\_c/condors/Non-LeadAmmo.pdf](http://www.azgfd.com/pdfs/w_c/condors/Non-LeadAmmo.pdf)

You should judge for yourself what special interest groups say about lead exposure from ammunition residues in game meat. Ask yourself whether they are motivated by an interest in your health and the health of your children, or some other agenda.

Think about it. The choice is yours.