

# HOBBIES WITH LEAD FACT SHEET



## HUNTING AND FISHING

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Hunting and fishing are common outdoor activities in Nevada, yet many hunters and anglers remain unaware of the hidden danger of lead exposure in these activities. Lead is a poisonous metal that is commonly used in ammunition and fishing tackle because it is abundant, durable, heavy, and easy to mold. Lead poisoning can result from the handling of and accidental consumption of fragments of lead ammunition and fishing tackle, particularly in game meat.<sup>1,8</sup> At risk in Nevada are the 366,760 hunters and anglers who use lead ammunition and fishing tackle as well as the families and community members that hunters share their game meat with.

This fact sheet provides an overview of:

- Hunting and fishing in Nevada
- Sources of lead exposure in these activities
- The impact of lead exposure on human health
- Lead regulations in hunting and fishing
- Recommendations to keep hunters, anglers and their families safe

## HUNTING AND FISHING IN NEVADA

In Nevada, big and small game, furbearers, and unprotected species can be hunted. In 2019, the total number of hunting licenses, tags, permits and stamps in Nevada was 146,075.<sup>2</sup> Hunters include not only licensed hunters using rifles and shotguns, but also those who have no license and those who engage in hunting with archery equipment, muzzleloaders, other primitive firearms, pistols, or handguns.<sup>3</sup> Common species hunted in Nevada are bears, bighorn sheep, elk, deer, and migratory birds.

Nevada has over 200 lakes and reservoirs and 600 streams and rivers, providing nearly 400,000 surface acres of fishing opportunity.<sup>4</sup> In 2019, the total number of fishing licenses, tags, permits and stamps in Nevada was 220,685.<sup>5</sup> Anglers include not only licensed hook and line anglers, but also those who have no license and those who use special methods such as fishing with spears, and there were 35.8 million anglers in the United States in 2016.<sup>3</sup> Common species fished in Nevada are trout, bass, catfish, and sunfish.

For more information about lead poisoning and lead poisoning prevention, visit our website [nvclppp.org](https://nvclppp.org). To speak to someone about lead poisoning prevention, or to schedule a presentation, please call **702-895-1040** and ask to speak with a NvCLPPP team member or email [nvclppp@unlv.edu](mailto:nvclppp@unlv.edu)



Figure 1.  
Big Horn Sheep, a common  
species hunted in Nevada



FIGURE 2.  
Lahontan Cutthroat Trout,  
a common species fished  
for in Nevada

## LEAD EXPOSURE THROUGH HUNTING AND FISHING

Lead exposure through hunting and fishing can occur through various methods. In hunting, the most common source of exposure is lead bullets. Typically, this occurs through handling ammunition, inhalation of dust upon firing, and from ingestion of animals killed with bullet fragments and shot.<sup>1,7,8</sup>

Specifically, handloading or reloading is a process of making ammunition such as cartridges or shells by manually assembling them instead of purchasing pre-assembled and loaded ammunition. About 5 million hunters and shooters in the United States make their own bullets since it is more affordable and allows for personalization capabilities compared to store bought ammunition.<sup>6</sup> However, handloading is not without risk when lead is used. For example, a 78-year-old man was found to have an elevated blood lead level of 17.6 µg/dL—more than three times higher than the CDC's reference value— due to ammunition reloading and indoor shooting in the basement of his home.<sup>7</sup> Specifically, reloading lead bullets in his basement with poor ventilation and insufficient cleaning methods led to inhalation of a large amount of lead dust.<sup>7</sup>

Additionally, the consumption of wildlife shot with lead ammunition is a known source of dietary lead exposure. About 95% of the 13.7 million hunters in the United States, use lead bullets that produce shrapnel when hunting.<sup>1</sup> A 2009 study by Hunt and colleagues found that after processing and grounding 30 white-tailed deer carcasses into 234 meat packages, 32% of the meat packages still contained at least one lead fragment.<sup>8</sup> This is a cause for concern, especially for the individuals who consume a portion of the thousands of deer that are donated to food pantries annually.<sup>8,9</sup> In 2008 one study in North Dakota found that 56% of ground venison packages donated to food pantries contained metal and that 100% of the subsample (n=5) tested positive for lead.<sup>9</sup> Studies have linked elevated blood lead levels of hunters in places such as northern Canada, Alaska and Greenland, to consumption of game killed with lead shot.<sup>8</sup>

Anglers also regularly come across lead but may not be aware of the multiple sources of exposure. For instance, lead is commonly used in a variety of fishing equipment such as: fishing lures, sinkers, lead core fishing line, downrigger weights, and weights on fishing traps and nets. Anglers may be exposed to lead when handling and making lead sinkers, and through accidental ingestion of sinkers.<sup>10</sup> Simply handling fishing sinkers resulted in lead being deposited on the skin and that an average of 24% of this lead could be transferred from the hands to the mouth.<sup>11</sup>

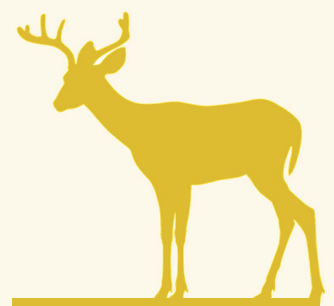
**Lead exposure in hunting can occur through various methods.**

**The most common source is lead bullets.**



FIGURE 3. Examples of lead ammunition

**Additionally, the consumption of wildlife shot with lead ammunition is a known source of dietary lead exposure.**



# LEAD EXPOSURE THROUGH HUNTING AND FISHING

Additionally, practices such as biting lead split-shot to secure onto fishing line and melting down scrap lead to produce home-made fishing weights can result in the swallowing of lead particles and the inhalation of lead fumes.<sup>12</sup> Another concern is the accidental ingestion of intact sinkers. For instance, 4-year old child suffered lead poisoning the day after swallowing a single fishing sinker, which spiked his blood lead level to 65 µg/dL— 13 times higher than the CDC's lead reference value.<sup>12</sup> A study conducted in fishing communities in Africa found that children with elevated blood lead levels were more than three times more likely to have a family member who made fishing weights.<sup>13</sup>

One final area of concern is the impact of lead fishing equipment on aquatic environments. Fish and other aquatic life may swallow lead sinkers and other lead-containing fishing equipment, which results in the gradual buildup of lead in the bodies of aquatic wild life through the process of bioaccumulation.<sup>14</sup> When a fish has ingested lead, there is a risk to other species such as birds or humans who consume those fish with lead in their system. More than 30 species of birds have been documented to have ingested lead fishing tackle, along with 3 mammal and 2 reptile species.<sup>12</sup>



FIGURE 4. Examples of fishing weights

## WHAT ARE THE REGULATIONS REGARDING LEAD SHOT AND FISHING EQUIPMENT IN NEVADA?

### Lead Shot

Per Nevada Administration Code 503.183, the hunting of certain migratory game birds in Nevada requires non-toxic shot.<sup>15</sup>

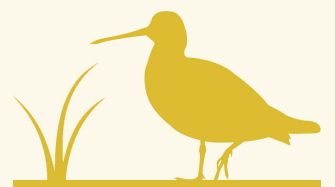
1. Hunters of ducks, mergansers, geese, swans, coots, gallinules or snipe are required to use nontoxic shot in muzzleloaders or in shells for a shotgun when hunting in Nevada.<sup>15</sup>
2. Nontoxic shot type or shot coating should not have a lead content of 1 percent or more according to 50 Code of Federal Regulation §20.134.<sup>16</sup>

### Fishing

Currently no regulations exist in Nevada regarding the presence of lead in fishing equipment.

**Hunting certain migratory game birds requires non-toxic shot.**

**No regulations exist on lead in fishing equipment.**



<sup>12</sup> U.S. Environmental Protection Agency, "Lead in Drinking Water," U.S. Environmental Protection Agency, 2019, <https://www.epa.gov/lead>.  
<sup>13</sup> World Health Organization, "Lead in Drinking Water," World Health Organization, 2011, <http://www.who.int/news-room/fact-sheets/detail/lead-contamination>.  
<sup>14</sup> U.S. Environmental Protection Agency, "Lead in Drinking Water," U.S. Environmental Protection Agency, 2019, <https://www.epa.gov/lead>.  
<sup>15</sup> Nevada Administrative Code 503.183, "Hunting of Migratory Game Birds," Nevada Department of Conservation and Forestry, 2019, <https://www.nv.gov/conservation>.  
<sup>16</sup> 50 Code of Federal Regulation §20.134, "Lead Content of Shot," U.S. Department of the Interior, Bureau of Land Management, 2019, <https://www.ecfr.gov/current/title-50/chapter-I/subchapter-B/part-20/subpart-1/section-20.134>.



## HOW DOES LEAD IMPACT HEALTH?

Lead is a neurotoxin that can affect the development of the brain, body, and nervous system. For example, once in the blood stream, lead can travel to the brain and permanently damage its structure and function,<sup>17</sup> especially in children under 6 years old whose bodies are still developing. Similarly, lead can cross the placenta from an expectant mother to a developing baby causing irreversible damage.<sup>18</sup>

The CDC defines elevated blood lead levels in children and adults as any blood lead level at or greater than 5 micrograms per deciliter ( $\mu\text{g}/\text{dL}$ ), however research shows that adverse health effects in children can occur lower than that level.<sup>19</sup> There is no safe level of lead exposure.

Even children who appear healthy may have dangerously elevated blood lead levels, and lead poisoning may not be diagnosed until moderate or severe symptoms appear. Exposure to lead can cause well-documented adverse effects such as:<sup>20</sup>

- Damage to the brain and nervous system
- Slowed growth and development
- Learning and behavior problems
- Hearing and speech problems
- Decreased cognition
- Decreased ability to pay attention
- Underperformance in school



In pregnant women, high lead exposure has the potential to cause low birth-weight babies, premature births, and miscarriage. In adults in general, effects of lead poisoning can include high blood pressure, hearing loss, infertility and stillbirth.<sup>21</sup>

## RECOMMENDATIONS

The long-term goal is to adopt federal legislation that bans the manufacturing, use and sale of lead equipment for hunting and fishing and to enforce these bans, since voluntary and education-only approaches have proven ineffective.<sup>12</sup>

Until then, below are a list of practical recommendations, for both policy makers and individuals, to keep hunters, anglers, and our families healthy while we continue to do the activities we are passionate about.

**There is no safe level of lead exposure.**

**Even children who appear healthy may have dangerously elevated blood lead levels.**



Photo by Edward Eyer from Pexels

# RECOMMENDATIONS

## Recommendations for Policy Makers

1. Adopt incentives for non-lead bullets and conduct random spot checks. States like Arizona allow hunters who remove gut piles containing lead ammunition to enter into a raffle for a prize. In 2018, 90% of hunters removed approximately 4 tons of remains that were potentially contaminated by lead ammunition or voluntarily used non-lead ammunition.<sup>22</sup>
2. Provide education at boat ramps about lead exposure, non-lead fishing components, and educate hunters about the different types of bullets.
  - a. Highlight that smelting one's own fishing weights results to exposure of dangerous lead fumes. Discourage DIY smelting and/or provide instruction on how to minimize risk when smelting.
  - b. Emphasize that painted lead fishing weights do not eliminate lead exposure risks to anglers and wildlife.
  - c. Hunters usually have three options: lead bullets, lead-core copper-jacketed bullets, or lead-free bullets.<sup>1</sup>
  - d. Hunters should not mistake copper-jacketed bullets as lead free, the copper jacket often covers a lead core.<sup>1</sup>
3. Implement governmental incentives to manufacturers for the production of non-lead bullets and fishing weights. Regulate the price of non-lead alternatives by offering them at the same price or cheaper than leaded ammunition to encourage purchase. As non-lead ammo is mass produced, economies of scale will help bring down prices.
4. Form partnerships with sporting goods stores to incentivize non-lead fishing and hunting projects and encourage partners to donate gift cards, prizes or other incentives.
5. Continue to document lead risk from all sizes and types of fishing equipment. Without documentation, political leaders will not have sufficient evidence needed to press for science-based restrictions. Additionally, since there is no safe level of lead exposure, do not make legislative exceptions for small-sized fishing weights.
6. Require that meat donated to food pantries be killed with lead free shot.
7. Encourage physicians to warn patients of the risk and counsel them about the availability of non-lead alternatives.<sup>1</sup>

# SUGGESTED CITATION

Raack, L., López, E., Marquez, E. (2020). Hobbies with Lead Factsheet: Hunting and Fishing. Nevada Childhood Lead Poisoning Prevention Program: Las Vegas, NV.

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1. The National Lead Poisoning Prevention Program (NLP3) is a national program that provides information and resources to help reduce lead exposure. For more information, visit <http://www.leadpaint.org>.  
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# RECOMMENDATIONS

## Recommendations for Individuals and Families



Until more in depth policies and regulations are adopted, the best way to prevent lead poisoning from hunting and fishing is to take proper precautions. To prevent lead exposure:

1. Recover and remove all shot game from the area and remove the ammunition from the animal when using lead ammunition.
2. Remove slugs, bullets or fragments and surrounding flesh immediately from any carcass remains left in the area.
3. Use non-lead components (bismuth, tungsten, and steel are common replacements) when handloading or making fishing lures at home.
4. Purchase and use non-toxic bullets and fishing tackle that do not contain lead.
  - a. Examples of non-toxic ammunition include, but are not limited to, bismuth-tin, steel, copper-clad iron, corrosion-inhibited copper and tungsten.
  - b. Steel shot may become cheaper over time than equivalent lead shot and has the potential to reduce the hunter's cost.<sup>23</sup>
5. Use adequate ventilation and cleaning methods when handloading your own ammunition and keep children out of the area.
6. Change your clothes and shoes before entering your car or entering your home and wash separately from regular laundry.
7. Wash hands before eating, drinking or touching anything after hunting and/or fishing.
8. All people, but especially children and pregnant women, should avoid eating wildlife that was killed with lead ammunition.
9. Hunters and anglers who are using equipment that contains lead should ask their physician for a blood lead test to identify and then treat lead exposure.
10. Research safety measures before making your own fishing equipment to prevent exposure to lead.

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