

Lead Exposure in Backyard Poultry

Although backyard poultry are kept for a variety of reasons, many owners raise birds for personal consumption of meat and eggs. There is some concern that poultry can be exposed to heavy metals, such as lead, and then pass lead on to people in their eggs or meat.

Lead is a naturally occurring heavy metal in the environment that is associated with negative health outcomes across many species of animals. Poultry are most commonly exposed to lead through soil that has been contaminated by lead-based paint chips or dust that have come off older buildings. Worms and insects in contaminated soil have also been shown to contain lead. Sources of lead in the environment can also include ammunition, discarded manufactured materials, such as batteries, building materials, spent oil, lead paint, and leaded gasoline. Additional sources of lead include contaminated grit, fishing weights, curtain weights, and costume jewelry. Some soft plastics, such as coatings on electrical wires, have also been shown to contain lead. Lead can also be present in water or feed. Lead has been detected in backyard chickens in both rural and urban areas.

Although poultry can and do become sick from lead toxicity, birds can have levels high enough to contaminate meat and eggs without displaying any signs of illness. Numerous studies have found lead in the egg shell as well as the edible part of the egg, primarily in the yolk. Therefore lead in poultry is a potential public health risk for families that consume the eggs, especially children.

To monitor flocks for lead exposure, test the soil on your property in all areas that chickens can access. If elevated lead levels are detected (Rajewski 2019)...

SOIL

- Restrict your flock's access to safe areas OR add at least 0.6 m (2 ft) of new, clean soil to cover areas where lead was detected
- Retest soil annually because rainfall and other climates can cause soil shifting and mixing
- Use feeders instead of scattering food on contaminated soil

SOURCES OF LEAD

- Identify potential sources of lead on your property.* Keep chickens and the coop away from these areas.
- When constructing a chicken coop, ensure recycled wood and other materials are lead-free
- Test the water hose or spigot to rule out contamination from old lead pipes
- Unabsorbed lead is excreted in chicken poop. So, do not use chicken poop for composting.
- Consult with your veterinarian about having individual chickens screened. Birds can accumulate above normal levels without showing signs of illness.

EGGS

- Remove dust or soil from eggshells before preparing for consumption

- Consult with your veterinarian about testing eggs to make sure they are safe for human consumption.
- Absorbed lead primarily ends up in the egg yolk and egg shell. So, discontinue any use of egg shells as a source of dietary calcium for other birds OR as a part of compost.

PEOPLE

- Change your shoes before coming indoors.
- Wash hands after contact with soil or chickens. Consider wearing gloves.

*Think of your flock's health as a clue to the health of your property's environment. If chickens are found to be positive for lead, there is a risk that children are also exposed to the primary source of lead contamination.

REFERENCES

Cadmus KJ, Mete A, Harris M, et al. Causes of mortality in backyard poultry in eight states in the United States. *J Vet Diagn Invest*. 2019 May;31(3):318-326. doi: 10.1177/1040638719848718. PMID: 31084344; PMCID: PMC6838705.

Darling CT, Thomas VG. Lead bioaccumulation in earthworms, *Lumbricus terrestris*, from exposure to lead compounds of differing solubility. *Sci Total Environ*. 2005 Jun 15;346(1-3):70-80. doi: 10.1016/j.scitotenv.2004.11.011. Epub 2005 Jan 22. PMID: 15993683.

Leibler JH, Basra K, Ireland T, et al. Lead exposure to children from consumption of backyard chicken eggs. *Environ Res*. 2018 Nov;167:445-452. doi: 10.1016/j.envres.2018.08.013. Epub 2018 Aug 8. PMID: 30125763; PMCID: PMC6310228.

Rajewski G. Backyard chickens and the risk of lead exposure. May 29, 2019. Tufts Now. Available at <https://now.tufts.edu/articles/backyard-chickens-and-risk-lead-exposure>. Accessed August 14, 2021.

Rosenbaum MH, Greenacre CB. Toxicology. In: Greenacre CG, Morishita CY (eds). *Backyard Poultry Medicine and Surgery: A Guide for Veterinary Practitioners*, 2nd ed. Hoboken, NJ: Wiley Blackwell; 2021.

Sobhakumari A, Hargrave SA, Hill AE, Poppenga RH. Lead contamination in backyard chicken layer flocks in California. *J Vet Diagn Invest*. 2019;31(3):359-363. doi:10.1177/1040638718792046