



Prevent Lead Poisoning in Indoor Shooting and Firing Ranges

- Do you work in an indoor firing range?**
- Do you use indoor firing ranges?**
- Do you cast bullets?**
- Do you reload your own ammunition?**

If you answered yes to any of these questions, you may be exposed to lead and may be putting yourself and your family at risk for lead poisoning.

Who is at risk?

Indoor firing and shooting ranges are common sources of adult lead exposure in Iowa. Workers and shooting hobbyist at indoor firing ranges can be exposed to hazardous lead concentrations and may be at risk for lead exposure and poisoning. If you work or volunteer in a shooting range, are a law enforcement officer, target and hobby shooter, or part of a shooting team, you should know the health effects and symptoms of lead exposure, how to prevent lead exposure, and how to get tested for lead poisoning.

How does lead exposure happen?

Lead exposure occurs in indoor firing ranges when proper environmental and occupational health controls are not in place to effectively protect the health of shooters and firing range staff from exposure to lead. Common types of exposures are from inhalation (breathing in lead dust) or ingestion (swallowing lead dust, usually from contaminated hands or food).

Workers are commonly exposed to airborne lead when using ammunition with primers containing lead styphnate or lead bullets. Shooters or anyone in the firing range can be exposed to lead fumes from the "gun smoke" or the lead dust that is released into the air when the gun is fired. Workers can also be exposed to airborne lead dust when cleaning the range and guns or emptying bullet trays.

Workers and hobby shooters can also ingest lead when eating, drinking or smoking. Lead dust can settle on hands, lunchroom surfaces or food and drink.

Workers and hobby shooters can also carry lead home on their clothing and skin and potentially expose their families to toxic levels of lead. Lead in the home is especially dangerous for children and women of childbearing age.

This document is provided by the Iowa Department of Public Health Occupational Health and Safety Surveillance Program to answer frequently asked questions and is not intended to be comprehensive guidance. For more information, visit the NIOSH webpage on indoor firing ranges (<http://www.cdc.gov/niosh/topics/ranges/>) and the OSHA lead standard webpage (<http://www.osha.gov/SLTC/lead/>). Information utilized was compiled by the Colorado Department of Public Health and Environment Occupational Health and Safety Surveillance Program. Nov. 2017

Tips to prevent lead exposure:

Lead poisoning is 100% preventable. Proper ventilation, good housekeeping practices and basic personal hygiene practices will limit or eliminate the risk of lead exposure. The following simple steps are recommended to prevent lead exposure in firing ranges:

1. Use jacketed ammunition, preferably with non-lead primers, to reduce airborne lead in the range. Consult your range master or manager for more information.
2. Check to make sure the firing range has good ventilation to reduce airborne lead levels at the firing line. General exhaust ventilation is not adequate and indoor firing ranges must ensure supplied air moves steadily across all shooting booths to carry the gun smoke away from the shooter's face and directly down the range where it is exhausted, filtered and discharged. A separate ventilation system exclusively for the range is recommended.
3. Only cast or fabricate lead bullets in workshops properly equipped to control lead exposure. These workshops should be staffed by trained craftsmen who know how to protect themselves from lead exposure.
4. Never dry sweep or shovel bullet debris at an indoor firing range. Wet-mopping or using a vacuum with a high-efficiency particulate air (HEPA) filter is recommended to remove lead particles.
5. Minimize airborne lead dust while cleaning the bullet trap. Where possible, debris trays should be emptied inside closed plastic bags. Debris should be repeatedly misted with water during all shoveling operations. New bullet trap designs which do not require cleaning are best and also save time.
6. Never eat, drink or smoke inside a firing range.
7. Wash hands immediately after shooting, cleaning firearms, picking up spent casing pellets or reloading ammunition. Wash hands, forearms, and face before eating, drinking, smoking or contact with other people.
8. Change clothes and shoes before leaving the firing range facilities.
9. Wash clothes or uniforms used at the firing range separately from your family's clothing.
10. Wear respirators and full protective outer clothing when performing range maintenance. Fit-tested NIOSH approved respirators with HEPA filters should be worn during all cleaning operations. Lead particles will pass through common paper dust masks.
11. Wear gloves and eye protection when using chemicals to clean weapons or firing range surfaces.
12. Have your blood lead level tested. If you work in a firing range, you can participate in your workplace bio-monitoring program to monitor blood lead levels.

Bullet loading and casting are also common sources of lead exposure. These processes produce a fume that turns into tiny dust particles and can be inhaled or ingested. Proper safety precautions, such as never loading bullets in an unventilated area, inside the home or around children, and wearing proper personal protective equipment (PPE) must be taken to prevent lead exposure when loading bullets.

Recommendations for range operators:

According to the National Institute for Occupational Safety and Health (NIOSH), employers and firing range operators should take the following steps to ensure their workers are aware of lead hazards and are not exposed to hazardous levels of lead:

1. Provide workers and shooters with information about hazards and appropriate training to prevent hazardous exposures.

- Provide general information and specific hazard warnings through workplace postings and targeted training programs.
- State the precautions and hygiene practices required of the firing range workers and shooters.
- Train workers and shooters on the actions and means available to eliminate or limit potential exposures.
- Inform workers and shooters about symptoms that may indicate a health problem. Also inform workers that elevated lead levels can occur without overt symptoms and that a blood lead level test should be done if there is concern about an exposure to lead.
- Inform pregnant workers and shooters, or those considering pregnancy, about the possible adverse health effects to the fetus.

2. Establish effective engineering and administrative controls.

- Provide workers with cleaning facilities and lockers and develop a mandatory washing and hygiene program for shooters and workers to limit personal and take-home contamination.
- Install a well-designed supply air and exhaust ventilation system.
- Maintain and replace air filters regularly.
- Incorporate effective administrative controls in the workers' schedules to limit their exposure time and ensure safe and clean working conditions.

3. Provide workers and shooters with personal protective equipment and other protective measures.

- Provide skin protection, eye protection, and NIOSH approved respirators for workers involved in cleaning lead-contaminated surfaces and areas.
- Provide floor mats, kneepads, and shoe covers when necessary to limit transfer of lead to clothing.

4. Provide workers with health and medical monitoring.

- Provide workers with initial and periodic medical monitoring as required by the OSHA lead standard (29 CFR 1910.25(d)).
- Consult with an occupational medical provider or medical toxicologist regarding management practices for all lead-exposed adults (workers and shooters).