

Lead Exposure Associated With Firing Ranges

Health Effects of Lead Exposure

According to the Centers for Disease Control and Prevention, there is no recognized safe level of lead. Once lead is absorbed by the body, it is circulated to the blood, soft tissues and bones. Lead has the ability to be stored in bones for several years and most adults who have elevated blood lead levels are asymptomatic.

The signs and symptoms associated with lead poisoning will vary from individual to individual, but the number and severity of symptoms generally worsen with higher blood lead levels.

Common health effects of lead poisoning among adults include, but are not limited to:

- Reproductive effects
- Nausea, vomiting or diarrhea
- Poor appetite
- Weight loss
- Anemia
- Fatigue or hyperactivity
- Headaches
- Stomach pain
- Kidney problems

Treatment for Lead Exposure

The primary method of treatment or therapy for lead poisoning is to remove or reduce the exposure to lead. This applies to both adults and children who have been found to have elevated levels of lead. A well-balanced diet may also help reduce blood lead absorption. For individuals presenting signs or symptoms of severe lead toxicity or very high blood lead levels, chelation therapy is used to remove lead from the body.

Background

Lead is a toxic metal with harmful effects on multiple organ systems even at low doses. **Lead is most harmful to young children, but lead exposure in adults remains a public health concern.** Occupational and recreational exposures to lead may occur in a variety of industries and hobbies, particularly those that involve the use of firearms and ammunition. Approximately 15% of adults in the U.S. regularly participate in target shooting and are at risk for elevated blood lead levels. Evidence of elevated blood lead levels has been found among firing range workers, military and law enforcement personnel and recreational firearm users.

How Lead Exposures Occur

The primary routes of exposure to lead with the use of firearms is through inhalation and ingestion of lead particles or dust after a gun is fired. Particles from bullets along with the dust and fumes from the lead primer are the major sources of lead. The lead particles may be inhaled or found on surfaces such as hands, clothing and equipment where it may be ingested unintentionally, or provide opportunities for “take home” exposures to children or other family members. **Lead in the home is dangerous for children and women of childbearing age.** Consuming wild game hunted using lead bullets may be another source for lead exposure.

Testing for Lead Exposure

A blood test is available to determine the amount of lead found in the blood. For occupational exposures to lead from firearms or ammunition, a lead monitoring program should be provided by employers to monitor the blood lead levels of its employees according to the Occupational Safety and Health Administration’s Lead Standards. **Individuals who are exposed to lead through recreational or occupational use of firearms should discuss their exposure to lead with their health care provider as part of their medical history.** Children or women of childbearing age in the household should also be considered for testing.

Prevention of Lead Exposure

Lead poisoning is preventable by taking measures to limit exposures to lead. This can be achieved by exercising good personal hygiene practices when using firearms or handling ammunition. **Below are tips to prevent or limit firearm and ammunition related lead exposures:**

- Use lead-free bullets when possible.
- Do not eat, drink or smoke inside a firing range.
- Wash hands immediately after handling any firearm or ammunition, and wash hands before eating, drinking, smoking, or making contact with other people.
- Change clothes and shoes before leaving a firing range facility.
- Wash clothes or uniforms used at a firing range separately from your family’s clothing
- Wear gloves and eye protection when using chemicals to clean firearms or firing range surfaces.
- Discuss with your health care provider or occupational health physician about blood level screening or monitoring.
- Children in a household whose family members have exposures to lead, either occupationally or recreationally, should be screened for blood lead levels by their pediatrician.

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- If you have children under six-years-old, tell their doctor that you work with lead. It takes only a small amount of lead to cause lead poisoning in children and your doctor may want to test your child for lead.
- At home, use wet cleaning methods frequently to remove any lead dust that could be carried home accidentally.

Worker Exposure to Lead at Shooting Ranges

Workers at indoor shooting ranges can be exposed to high levels of lead. This lead comes from the fragmentation of lead ammunition and from smoke from lead-containing primers. Workers can be exposed by breathing air containing high levels of lead or by getting lead dust on their skin and later transferring it to their mouth while eating, smoking or touching their face.

Employer Actions to Prevent Lead Exposure

- Provide lead-free bullets and primers.
- Use a ventilation system that feeds in air behind the shooting area and pulls it down the range to a HEPA-filtered exhaust. The exhaust should not be located near the intake for range or building ventilation.
- Provide proper protective clothing to workers doing range cleanup and maintenance. Workers doing tasks that could expose them to lead dust, such as changing ventilation filters, emptying or cleaning HEPA vacuums and recovering lead bullets should be given properly fitted respirators.
- Provide workers training in proper cleaning methods such as HEPA vacuuming and wet cleaning when cleaning the range and bullet traps. Do not dry sweep the range, since it stirs up lead dust into the air.
- Make sure employees have access to handwashing stations.
- Provide a shower and lockers for employees to store a change of clothes.
- Follow the Virginia Occupational Safety and Health requirements for air sampling and medical monitoring of employees.

Employee Actions to Prevent Lead Exposure

- Tell your doctor or healthcare provider that you work with lead.
- If your employer has a medical monitoring program, get your blood tested for lead as recommended.
- If your employer does not provide monitoring, talk to your doctor about lead testing.
- Wear proper protective clothing and equipment, including a properly-fitted respirator when doing tasks that stir up dust.
- Wear gloves while cleaning guns, or wash your hands with lead-removing soap afterwards.
- Wash your hands, arms and face before eating, drinking or smoking. Do not touch your face with unwashed hands.
- Store and eat food in a lead-free area.
- Change out of your work clothes and shoes before going home. Keep work clothes away from street clothes, and wash them separately. If possible, shower after work. If there is no shower available at work, wash your hands, arms and face before leaving.