

Lead Awareness



IOWA STATE UNIVERSITY

Environmental Health and Safety

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IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY**Protecting the Safety, Health, and Environment of the Iowa State Community**

Iowa State University strives to be a model for safety, health, and environmental excellence in teaching, research, extension, and the management of its facilities. In pursuit of this goal, appropriate policies and procedures have been developed and must be followed to ensure the Iowa State community operates in an environment free from recognized hazards. Faculty, staff, and students are responsible for following established policies and are encouraged to adopt practices that ensure safety, protect health, and minimize the institution's impact on the environment.

As an institution of higher learning, Iowa State University

- fosters an understanding of and a responsibility for the environment,
- encourages individuals to be knowledgeable about safety, health and environmental issues that affect their discipline, and
- shares examples of superior safety, health and environmental performance with peer institutions, the State of Iowa and the local community.

As a responsible steward of facilities and the environment, Iowa State University

- strives to provide and maintain safe working environments that minimize the risk of injury or illness to faculty, staff, students, and the public,
- continuously improves operations, with the goal of meeting or exceeding safety, health and environmental regulations, rules, policies, or consensus standards, and
- employs innovative strategies of waste minimization and pollution prevention to reduce the use of toxic substances, promote reuse, and encourage the purchase of renewable, recyclable and recycled materials.

The intent of this statement is to promote environmental stewardship, protect health, and encourage safe work practices within the Iowa State University community. The cooperative efforts of the campus community will ensure that Iowa State University continues to be a great place to live, work, and learn.



Wendy Wintersteen
President

Directory of Service and Emergency Providers

Services

Environmental Health and Safety

2408 Wanda Daley Drive | (515) 294-5359

Iowa State University Occupational Medicine Department

G11 Technical and Administrative Services Facility (TASF), 2408 Pammel Drive | (515) 294-2056

McFarland Clinic PC, Occupational Medicine

1018 Duff Avenue | (515) 239-4496

Thielen Student Health Center

2647 Union Drive | (515) 294-5801

Emergency

Emergency - Ambulance, Fire, Police

911

Department of Public Safety/ Iowa State University Police

Armory, 2519 Osborn Drive | (515) 294-4428

Mary Greeley Medical Center

1111 Duff Avenue | (515) 239-2011

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Lead - What is it? And Where is it?

Lead is a naturally occurring, heavy, bluish metal that has been used for centuries in manufactured products. Lead is nearly indestructible and is non-biodegradable. No known technology will destroy or render lead harmless.

Lead is mined as ore in many countries throughout the world and refined for use in the following products:

- paint
- batteries
- gasoline
- glazing
- pottery glaze
- solder
- water and sewer piping

As of 2008, residential paint can only contain a maximum of .009% lead.

What is a lead-based paint?

The Department of Housing and Urban Development (HUD) and Iowa State University (ISU) defines lead-based paint as any paint or other surface coatings that contain lead equal to or in excess of 0.5% by weight or 1.0 mg/cm² using an XRF direct reading instrument. This includes varnishes and stains.

What's the problem?

Disturbing Lead

If lead is present on or in a surface being disturbed by sanding, scraping, or welding, persons performing the work, as well as occupants of the surrounding area, may be exposed to lead.

Where is it?

At ISU, lead-based paint poses the primary risk for lead exposure. Paint preparation (scraping and sanding), renovation and demolition activities can all generate significant personal exposures.



Lead-containing paint on window system

Learn more with the EPA, [Protect Your Family From Lead In Your Home](#). brochure

Leaded paint has been used in many of the buildings on campus. It is most commonly found on exterior surfaces, but has also been identified on original plaster walls and industrial coatings on structural support beams. Lead-based paint was used more often in pre-World War II construction but can be found in buildings built before the 1980s.

In 1978, the Consumer Product Safety Commission (CPSC) banned the use of lead in residential paint. As a result, most buildings built after 1978 are not typically considered to be a risk for lead contamination from paint.

The activities that present the greatest risk for lead exposure include:

- demolition
- renovation
- painting projects (interior and exterior)
- plumbing and soldering
- firing range activities
- window glazing

What are the health effects?

Lead is recognized as a serious health hazard for anyone who inhales or ingests it.

Small lead particles that enter the lungs or digestive tract will be absorbed into the blood stream where the lead becomes a poison.

Disturbed lead particles may also settle on your skin, hair, and clothing. Eating, drinking, or smoking without first washing your hands after exposure can deliver additional lead into your system. Once inside your body, lead interferes with the brain, nerves, kidneys and blood-forming systems. When lead levels become high enough, lead can be stored in the bone marrow, where it may be released into the body at a later time. Damage from chronic lead poisoning may be irreversible and acute exposures can be fatal.

In adults, symptoms of lead poisoning include:

- abdominal pain
- digestive problems
- headaches
- high blood pressure
- impotence
- kidney damage

- memory and concentration problems
- muscle pain
- sleep disturbances

Developing fetuses and young children under the age of six are most susceptible to lead exposure. Lead has no biological value to the body and will replace calcium in children. Relatively low levels of lead can inhibit growth in developing fetuses. In young children, lead may cause irreversible damage to the developing nervous system, resulting in behavioral and learning problems. Slowed growth, hearing problems, and kidney damage are also possible effects.

Lead Detection – How do we know?

The presence of lead is most commonly identified through these two methods:

- **Laboratory Analysis** - A small sample of paint chips (5 grams) is collected to represent a cross section of paint down to the substrate. This method is extremely accurate however, it is destructive and results often take one to two weeks.
- **XRF Testing** - An x-ray Fluorescence (XRF) device uses a radioactive source to excite lead molecules present in materials. XRF allows for nondestructive testing of materials with substrate correction. Environmental Health and Safety (EH&S) maintains an XRF testing device that is used for testing materials that you suspect may contain lead. Specialized training is required for users.



X-Ray Fluorescence Device

How do we minimize exposure?

Maintenance tasks may require the disturbance of lead containing materials. In order to minimize exposure to the individual conducting the work and others in the area, and to avoid contamination of university property, a number of procedures are recommended. Most of the procedures reflect common sense approaches and can be accomplished with minimal effort.

Contact EH&S at (515) 294-5359 to initiate testing. Lead safe work practices include:

- High Efficiency Particulate Air (HEPA) filtered ventilation for tools.
- Use HEPA filtered vacuum for any cleanup.
- Use a drop cloth to collect debris. Do not leave lead dust/debris.
- Work involving lead materials should be conducted when areas are unoccupied.
- Heat guns operating below 700 degrees Fahrenheit.

- Use chemical solvents or pastes.
- Wet sanding, scraping, and sawing.
- On-site washing facilities and following good hygiene practices.
- Avoid methods with high exposure potential. **Do NOT** use:
 - heat guns operating above 700 degrees F
 - unshrouded and non-HEPA filtered tools
 - welders on painted surfaces
 - uncontained hydro-blasting or high pressure wash
 - chemical strippers containing methylene chloride

Additional information and guidance is available by calling Environmental Health and Safety (EH&S) at (515) 294-5359.

What personal protective equipment (PPE) and personal hygiene methods should we use?

Since inhalation is the primary route of exposure to lead dust for adults, the first line of defense is respiratory protection. Avoid breathing any dust that you suspect may contain lead particles.

- If monitoring indicates that the work you are conducting exceeds the OSHA Permissible Exposure Limit (PEL), use a half-face respirator with HEPA (P100) filters.
- Use gloves to minimize contamination to your hands.
- Wear disposable protective coveralls.
- Wash your hands before eating, drinking, or smoking.

Housekeeping

Use HEPA filtered vacuums and/or wet wiping when cleaning surfaces painted with lead paint.

Wet wiping should be accomplished with wipes soaked with a detergent solution. Never use compressed air to clean up lead contaminated dust.

How do the EPA, OSHA, HUD, IDPH and the CPSC regulate lead?

Environmental Protection Agency

The [Environmental Protection Agency](#) (EPA) has adopted rules that govern the training required for workers who remove or disturb surfaces containing lead, inspectors who inspect for lead, and assessors who determine the relative risk posed by the presence of lead containing materials. The EPA rules dictate how work involving lead abatement, assessment and inspection must be carried out.

Residential Lead – EPA rules also require landlords to disclose to prospective tenants any knowledge concerning the presence of lead paint in the housing being leased. Sellers of housing must disclose any knowledge of the presence of lead paint to the buyer or agent and must allow the buyer 10 days to conduct a lead inspection. An EPA pamphlet is available describing the hazards of lead in the home.

Occupational Safety and Health Administration

The [Occupational Safety and Health Administration](#) (OSHA) established regulations governing construction worker exposure to lead. Employers of construction workers engaged in the repair, renovation, removal, demolition, and salvage of structures and materials are responsible for the development and implementation of a worker protection program in accordance with Title 29 Code of Federal Regulations (CFR), Part 1926.62. This program is essential to minimize worker risk of lead exposure. OSHA regulations in Iowa are enforced by the Iowa Division of Labor through the Iowa Occupational Safety and Health (IOSH) bureau.

Department of Housing and Urban Development

The [Department of Housing and Urban Development](#) (HUD) has issued rules that specifically govern abatement, inspection and risk assessment that cover “Target” (Pre-1978, Federally funded and Native American) housing. While these rules only cover





Please call EH&S at (515) 294-5359 if you have any questions concerning lead exposure or the information in this booklet.

“Target” housing, they have been referenced by many other state regulations and related lead-specific guidelines.

Iowa Department of Public Health

The [Iowa Department of Public Health](#) (IDPH) has established rules covering training and certification requirements for workers and professionals who conduct work associated with lead testing, removal and abatement.

Consumer Product Safety Commission

The [Consumer Product Safety Commission](#) (CPSC) is charged with protecting the public from unreasonable risks of injury or death associated with the use of the thousands of types of consumer products under the agency’s jurisdiction. CPSC is committed to protecting consumers and families from products that pose a fire, electrical, chemical, or mechanical hazard. CPSC works to ensure the safety of consumer products, such as toys, cribs, power tools, cigarette lighters, and household chemicals. The Commission’s regulations at 16 CFR 1303.1 ban consumer products in which the lead content is in excess of 0.009 percent of the weight of the total nonvolatile content of the paint.

Summary

The health effects from lead exposure are serious. Lead-based paint is the primary material associated with lead exposure risks for those working at Iowa State University. In addition to lead paint, lead exposures can result from glazings, solder, electrical and plumbing connections, and other lead containing materials. Information presented in this publication will help minimize potential exposures to you, your coworkers, and your family.

Non-discrimination Statement

“Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. veteran. Inquiries regarding non-discrimination policies may be directed to Office of Equal Opportunity, 3350 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, Tel. 515 294-7612, email eooffice@iastate.edu”