



Lead Poisoning: Limiting the Ability to Learn

What Educators Need to Know about Lead Poisoning in Children

Introduction to the Course

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Hello, I'm Mary-Margaret Gaudio, with the University of Connecticut Cooperative Extension System. The training that you are about to see is called "Lead Poisoning: Limiting the Ability to Learn." It has been designed to inform educators about lead poisoning in children.

This training has been developed for the LAMPP project by the Department of Extension's Healthy Environments for Children Initiative.

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The goals of this training are to raise awareness of lead poisoning among educators and to help educators and other school personnel respond to the needs of children who have been harmed by lead poisoning.

Throughout this training, I'll use the term *educators* to refer to school personnel in classrooms, administration, pupil personnel services, health services, and family resource centers and similar programs.

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This training consists of three modules that will explain what lead poisoning is, why educators should be concerned about it, and how to prevent lead poisoning.

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To explain why this training matters, I'll quote Dr. Bailus Walker, Jr., an expert on environmental health: "The education community has not really understood the dimensions of this [problem] because we don't see kids falling over and dying of lead poisoning in the classroom. But there's a very large number of kids who find it difficult to do analytical work or [even] line up in the cafeteria because their brains are laden with lead."

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Module 1 What is lead poisoning?

- Topic 1 *What does lead do?*
Topic 2 *Where does lead come from?*
Topic 3 *How do we know if a child is lead poisoned?*
Topic 4 *What are the consequences of lead poisoning?*

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The first module of this training will answer the question “What is lead poisoning?”

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At the end of this module, you’ll be able to recognize the impact of lead poisoning on children, list the possible signs and symptoms of lead poisoning in children and adults, and identify common sources of lead in the environment. You’ll also be able to describe how children may be exposed to lead, and to cite the method for determining whether a person has been lead poisoned.

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Let’s start with an overview. Lead poisoning is a serious but **preventable** disease. It can cause lifelong learning, behavior, and medical problems, and it is especially dangerous to the developing brains and nervous systems of unborn children and children under 6 years old.

4 *Topic 1 What does lead do?*

What does lead actually do?

Lead affects virtually every part of the body. It serves no purpose, and it competes with important nutrients like iron, calcium, and zinc.

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Dr. Theodore Lidsky, of the Institute for Basic Research in Developmental Disabilities, has described how lead affects the brain:

“Lead poisoning causes **brain injury** and ... these children should be treated like ... auto accident victims. ...Lead is stored in the brain long term and **its effects are likewise long term.**”

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Let’s look at how lead affects the brain and nervous system.

Lead damages brain structure and development. In doing so, it impairs the brain’s ability to concentrate, store information, draw upon past information, and respond to environmental stimuli. It also lowers IQ.

In addition to damaging brain structure and development, lead prevents nerves from transmitting messages properly

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Lead does other damage as well. It can impair hearing, damage the endocrine system, and cause anemia and kidney disease. Lead can interfere with bone formation and with reproductive hormones in men and women. Lead can also cause a loss of muscle strength and coordination.

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In unborn children, lead poisoning can lead to stillbirth, miscarriage, premature birth, and low birth weight. It can damage a child's brain and nervous system. Lead may also alter DNA and increase susceptibility to disease later in life.

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We've talked about the effects of childhood lead exposure. But lead exposure in adulthood can also be dangerous.

In adults, lead can cause problems with

- High blood pressure
- Cardiovascular disease, including heart disease and stroke
- The brain and nervous system, including memory and concentration problems and impaired thinking and reasoning, and
- Depression

Adult exposure can also cause problems with

- Reproduction, such as infertility and sexual dysfunction
- Cancer
- Anemia
- Kidney and thyroid functions
- Digestion
- Muscle and joint pain
- Cataracts

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Besides causing physical problems, lead can produce challenging behaviors.

All of these behaviors may be normal to some extent, normal from time to time, or due to other conditions, but they may be more severe or last longer in children with lead poisoning

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Infants or toddlers who are lead poisoned may seem unhappy, cranky, or fussy. They may be difficult to soothe or cuddle, have feeding and sleeping problems, may seem very sensitive to touch, tastes, noises, smells, or sounds, and may be late in babbling or talking. Again, these behaviors may be normal for infants and toddlers to some extent, but they may be more severe in children who have been lead poisoned.

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Preschoolers who are lead poisoned may seem overactive, fidgety, and uncooperative. They may have difficulty paying attention while playing or performing simple tasks. They may talk too much, or they may seem not to listen.

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School-age children who are lead poisoned may have problems concentrating and learning, may perform poorly, and may disrupt their classes. They may have problems with other children and may have difficulty tolerating frustration. Again, these behaviors, while they may be common to some extent among school-age children, may be more severe in children who have been lead poisoned.

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We've identified some challenging behaviors that lead can produce. Let's consider how adults may feel about these behaviors.

Educators, parents, caregivers, and other adults may find these behaviors frustrating or annoying. They may feel like working less and spending less time with that child.

Understanding that problems are caused by lead poisoning may help adults handle children more effectively.

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Please ask yourself this question: Would it make a difference to you, as an educator, to know that a child's misbehavior was due to lead poisoning, rather than to poor discipline at home or some other cause?

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We've just talked about how adults might feel. Now let's consider how children who have been poisoned by lead might feel. Here is a description of one child, as reported by Jim Haner in the *Baltimore Sun*:

"Kyle Bridges lay down in the middle of the street on his way to school.... He told his little brother ... 'I'm sick of living ... I'm just gonna wait here till a truck comes and runs me over. Don't worry, I just want to die.'

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"Kyle can barely read a word more than three letters long. He cannot do math at all, not even two plus two. He was in special education, but nothing the teachers tried or said seemed to stick. He was a playground outcast....

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"Ridiculed as a 'retard,' he would lapse into confused and embarrassed gibberish. Under stress, he was prone to lash out at other kids, his teachers, his grandmother. For as far back as anyone can remember, he has had an explosive temper. Kyle is 12 years old. **His small body is loaded with lead**, ingested in a succession of East Baltimore slum houses toxic with peeling paint and dust."

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Children who have been lead poisoned vary in the symptoms they display because the individual harm depends on so many factors.

There are **exposure factors**, such as how much lead gets into the body, how often the child is exposed, and how long the exposure lasts.

There are **individual factors**, such as the age of the child at the time of exposure, the child's previous exposures, the child's total environmental exposures from sources such as dust, soil, air, water, and food, and the child's overall nutrition and health.

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It's important to keep in mind that although the degree of harm may vary, lead is **always** harmful. There is no safe level of lead in the body.

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Because this training is designed for educators, we'll spend considerable time in the next module on how lead affects learning.

M. Martin, from the Arizona School Boards Association, summarized the issue: "Lead-poisoned children have a diminished capacity to learn—diminished not from lack of effort, or lack of instruction—but because the **brain tissues lack the physiological ability to learn.**"

Please keep this idea in mind: lead's effects on the nervous system are a key reason why lead impairs learning.

22 *Topic 2* *Where does lead come from?*

But before we discuss in detail how lead affects learning, we need to understand where lead comes from and how children are exposed.

Lead is found throughout the environment. To eliminate childhood lead poisoning, we must know and eliminate the sources of lead

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The most common source of lead poisoning in the United States today is old paint.

Lead was used in paint because it made the paint durable; helped prevent corrosion, made the paint more resistant to water, weather, mold, and mildew, and made the paint dry faster.

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The dangers of lead were known at least as far back as the 1920's, and the Consumer Product Safety Commission has banned the use of lead paint in homes. When do you think this ban became effective?

1908

1936

1978 or

1987

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The ban on the use of lead paint in U.S. homes became effective in 1978.

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Although lead paint was banned for use in U.S. homes in 1978, millions of houses, apartment buildings, and schools built before then still contain lead paint. Children who live in or visit these homes or schools may be at risk for lead poisoning. The older the home, the more likely it is to contain lead paint. Houses built before 1950 are most likely to contain lead paint, but unless testing shows otherwise, assume that any house built before 1978 contains lead paint.

Lead paint and dust account for about 70% of lead poisoning in U.S. children

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You may be wondering how lead paint becomes a hazard.

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As it gets old, lead paint may turn to dust and chips through wear and tear of painted surfaces, opening and closing of painted windows and doors, deterioration of paint through leaks or lack of maintenance, or maintenance, repair, and renovation activities that disturb paint.

But even intact paint is a hazard if it is on accessible (chewable) surfaces, such as window sills and railings, friction surfaces (like windows), or impact surfaces (like doors, corners, and walls that get banged).

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It's important to note that lead dust particles are often so small that you cannot see them.

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Usually lead gets into a body when a person swallows or breathes in lead dust. The lead gets into the bloodstream and circulates throughout body. It is absorbed and stored in many tissues and organs, including the brain, liver and kidneys, and teeth and bones.

Stored lead can remain in the body for decades. It may be released into blood as new bone tissue replaces old, or it may be released especially after a fracture, during pregnancy, or at menopause.

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Young children are at most at risk for several reasons.

First, their developing systems absorb more lead than adult systems, and they are more sensitive to lead's damaging effects.

Second, their normal behavior puts them at risk.

Take a look at the child in the photo. What is she doing that puts her at risk?

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The answer is that she's engaging in normal hand-to-mouth behavior, putting an object in her mouth. If that object is contaminated with lead dust, she can swallow it and become lead poisoned.

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Unborn babies are also at risk. If a woman is exposed to lead **before** she becomes pregnant (even years before), lead can be released during pregnancy and passed on to the baby. If the woman is exposed **while** she is pregnant, lead can be passed from her blood to the baby

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You might be wondering how much lead it takes to poison a child.

To answer this question, please take a pen or pencil and make a dot like a period at the end of a sentence on a piece of paper. This is the amount of dust, if swallowed regularly by a child, is enough to poison the child.

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Here is an example of how a child can become lead poisoned.

Jamie and Julia Ramos live in a beautiful home built in 1880.

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Julia and her husband decided to renovate their outdated kitchen. Pulling out the old painted cabinets and sanding the painted woodwork put a lot of lead dust in the air. The dust settled on the floor, where Jamie often played.

After the work was finished, Jamie seemed a little crankier than usual, but his parents thought that the cause was teething. At Jamie's 2-year checkup, the doctor discovered that the little boy was lead poisoned.

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We've been talking about lead paint and paint dust as sources of childhood lead poisoning. But remember, about 30% of childhood lead poisoning cases are **not** associated with lead paint, so we need to consider other sources of lead.

One of those sources is water contaminated by plumbing.

Although household wells and public water supplies rarely contain lead, both old and new plumbing materials—such as pipes and solder—may contain lead. Lead can leach into water, especially when the water is hot or sits in pipes for long periods—overnight, over weekends, or during vacations. This may be a problem for both homes and schools.

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Some other possible sources of lead include **new** consumer products like

- Toys
- Jewelry
- Trinkets
- Candlewicks and
- Furniture

Other items that may contain lead are those made with polyvinyl chloride (PVC), such as

- Miniblinds
- Water pipes and
- Lunch boxes

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As educators, you need to be aware that lead could also be present in school facilities. For example, art classrooms might be contaminated with lead from ceramic glazes. Other classrooms might contain various recalled educational products. Sports playing fields might be contaminated with lead from artificial turf.

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Some other sources of lead include

- Old painted furniture
- Old painted playground equipment
- Contaminated soil
- Foods, especially imported items
- Some ethnic medicines and cosmetics

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Lead can also be found in

- Pottery with lead glazes

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- Leaded crystal
- Stained glass
- Fishing sinkers
- Bullets, and
- Adult workplaces (lead industries)

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Let's now look at some examples to see whether specific children could be at risk for lead poisoning.

(1) Jon lives in a beautiful Victorian home that his parents (both lawyers) recently restored. Could he be at risk? If so, why?

Because his home was built at the turn of the 20th century, it probably contains lead paint. Unless his parents and their contractor knew how to work safely around lead paint, the work could have created lead-paint dust and chips, exposing Jon to lead hazards.

(2) Ramon lives in a 1950s ranch with his mom, who owns a pottery shop. Could he be at risk? If so, why?

When his home was built, many residential paints contained lead. Normal wear and tear on painted surfaces could create lead dust, which Ramon could swallow or breathe in. In addition, his mother could bring home lead dust from her work in the pottery shop, where dust from lead glazes could get on her body or her clothing. Although many glazes are now lead-free, some glazes are not, and some glazes marked "lead-free" may actually contain lead. The shop could also be contaminated with lead from old glazes.

(3) Latoya lives in a new apartment building. Her father is a remodeling contractor. Could she be at risk? If so, why?

Latoya's father could bring home lead dust from work (on his clothing, in his hair, or in his vehicle) if he is not careful.

(4) Clara lives in a 1930s house with her grandfather, who works as a welder. Could she be at risk? If so, why?

When Clara's home was built, many residential paints contained lead. Normal wear and tear on painted surfaces could create lead dust, which Clara could swallow or breathe in. In addition, her grandfather could be exposed to lead through his welding work and could bring home lead dust on his clothing, in his hair, or in his vehicle.

42 *Topic 3 How do we know if a child is lead poisoned?*

We've talked about many possible sources of lead in the environment and ways that children could be exposed. But how do we know if a child is actually lead poisoned?

Parents and teachers may not even suspect that a child has lead poisoning. Although children with lead poisoning **may** show the behaviors mentioned earlier, many children do not show **any** signs or symptoms. They may not look or act sick. Or, if there are signs and symptoms, they often are not specific to lead poisoning. For example, if a child is irritable and restless, does she have the flu or lead poisoning?

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In addition, children who are **not** lead poisoned may also show these symptoms from time to time. For example, a baby may be fussy because he is teething or because he has been lead poisoned.

For these reasons, parents may not get immediate medical attention for their children, which compounds the problem. The longer lead stays in the body, the more damage it does. And the child may continue to be exposed to lead.

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If a child **does** show signs and symptoms, what might they be?

In the early stages, children might seem tired, restless, or irritable. They may have stomachaches, constipation, or poor appetites.

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As lead accumulates, children may become clumsy and weak, or lose skills that they already learned.

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And, as even more lead accumulates, children may vomit, lose sight or hearing, lose consciousness, or, in acute cases, die.

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The only way to know if a child is lead poisoned is through a blood test, which measures blood lead levels.

Blood lead levels are measured in micrograms per deciliter. A microgram is one millionth of a gram. To give you an idea of what that means, consider an average paper clip, which weighs about a gram, or a million micrograms.

A blood lead test mainly measures exposure over the previous few months. It doesn't measure the lifetime burden.

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Parents or guardians should always consult a doctor immediately if they suspect lead poisoning.

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According to the Centers for Disease Control and Prevention, or CDC, a blood lead level of 10 micrograms per deciliter or greater should prompt public health actions.

CDC does **not** say that levels below 10 micrograms per deciliter are safe.

In fact, many experts believe that lead levels **below** 10 micrograms per deciliter have serious harmful effects. Much recent research supports this position.

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Although modern medicine can diagnose lead poisoning, it **cannot** cure it. It cannot repair cognitive, behavioral, or neurological damage done by lead.

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Treatment aims to reduce high lead levels.

Children with levels below 45 micrograms per deciliter of blood, require continued monitoring of blood lead levels, prevention of further exposure, and good nutrition.

Children with levels of 45 micrograms per deciliter and above **may also require** chelation therapy. Chelation therapy uses medicines that bind lead in blood and help the body to eliminate lead. According to the CDC, the drugs used in chelation therapy can have serious side effects and must be used with caution.

And it's very important to keep in mind that chelation **cannot repair damage already done by lead**. Remember, chelation does **not** improve cognitive, behavioral, or other problems caused by lead.

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What's the size of the problem we've been talking about?

Do you know about how many U.S. children under 6 years old are lead poisoned each year? And how many Connecticut children under 6 years old were lead poisoned in 2008 (that's the last year for which we have statistics)?

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If you said that 200,000 U.S. children under 6 years old are lead poisoned each year, and that 1,033 Connecticut children under 6 years old were lead poisoned in 2008, you would be correct.

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Are some of these children in your school? In your classroom?

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Here's another part of the problem: Disadvantaged children are more likely to be lead poisoned. Do you know why?

There are several reasons. Poor, minority, immigrant, or refugee children are more likely to live in older homes with deteriorating lead paint and to live in urban areas, which usually have more lead contamination than rural areas. They are also more likely to have additional health challenges and have more limited resources for good nutrition.

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In addition, immigrants and refugees may have been exposed to lead in their native countries. They are more likely to use imported ethnic products containing lead, and they may have language and cultural challenges that hinder education about the problem.

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What is Connecticut doing about the serious problem of childhood lead poisoning?

A new Connecticut law, which became effective January 1, 2009, requires medical primary care providers to screen every child 9 to 35 months old annually. Providers include pediatricians, family doctors, nurse practitioners, and physician assistants.

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Medical providers must also screen any child 36 to 72 months old if that child has not previously been screened, or if there are clinical reasons to screen again.

Slides 58-60 are for health services personnel only

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Some clinical reasons to screen for lead poisoning include

- Neurological symptoms, such as unexplained seizures,
- Developmental delays, such as behavior problems and hyperactivity,
- Gastrointestinal problems, such as abdominal pain, chronic diarrhea, or constipation,
- Pica, or eating items that are not food, such as dirt, ice, or clay
- Failure to grow
- History of anemia, or
- Hearing loss

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The new Connecticut law also requires providers to conduct a medical risk assessment at least yearly for any child 36 to 71 months old. They may also assess at any time needed for a younger child

During the assessment, providers should discuss lead, especially the prevention of lead poisoning. They should ask about any

- Address change
- Places a child visits
- Home renovations
- Pica
- Exposure to recalled toys
- Family work or hobby exposures.

And they should also assess the risk for iron or calcium deficiency.

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In Connecticut, if a child has blood lead level of 10 micrograms per deciliter or greater, the law requires certain actions.

- The medical lab must report the case within 48 hours to the Connecticut Department of Public Health and to the local health director.
- If the child is less than 3 years old, the medical provider must try to contact a parent or guardian within 72 hours.
- The local health department must give the parent or guardian information about lead and ways to reduce exposure, about lead abatement laws, and about possible eligibility for services from the Birth to Three System, which is an early intervention program.

61 *Topic 4 What are the consequences of lead poisoning?*

Recent research shows that childhood lead exposure may affect adults many years later. Early exposure may increase the risks for osteoporosis, as well as mental decline, including Alzheimer's disease, impaired thinking abilities, reduced brain size in adults, and schizophrenia and related disorders. Although lead is probably not the only cause of age-related mental decline, it may be one of several factors.

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We've talked about the problems that lead poisoning can cause. Let's now consider some of the costs associated with this problem.

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We'll start with the some of the social costs of lead poisoning. They include

- Increased criminal and violent behavior
- The loss of intellectual capital. What I mean by that is how many Einsteins, Mozarts, or Mahatma Gandhis have been lost because of lead poisoning?

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The costs in suffering for individuals who are lead poisoned and their families are incalculable.

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What about the economic costs of childhood lead poisoning?

They include the costs of medical care, such as screening, treatment, follow-up testing, continued monitoring, and later adult diseases.

They also include the costs of environmental investigations and cleanup, legal liability issues, and criminal justice issues, such as legal proceedings and imprisonment.

They include education costs, such as special education and school dropouts, lost future income, and future tax income.

And, finally, they include the costs of public health programs for prevention, education, and response to lead poisoning.

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A recent study by economist Elise Gould looked at the social and economic costs and benefits of controlling household lead paint hazards.

She estimated that the cost to control lead paint hazards in homes with the greatest risk would be between \$1 and \$11 billion dollars. Of course, that's a huge expense. But she also looked at the benefits of controlling those hazards.

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She estimated the financial benefits of controlling lead paint hazards in terms of health care savings, additional lifetime earnings, additional tax revenues, special education savings, ADHD savings, and crime savings.

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She concluded that for each 1 dollar spent on controlling lead paint hazards, we would see 17 to 221 dollars in benefits, for a net savings of 181 to 269 billion dollars.

You can think of this problem like fixing a leaky roof: it's expensive to repair the roof, but it's much more expensive to repair not only the leaky roof but also the damage done to the whole house by a roof that leaks in a rainstorm.

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To summarize this module:

We've talked about lead poisoning as a serious but **preventable** disease that damages the brain, nervous system, and other parts of the body. Lead poisoning can cause lifelong learning, behavior, and medical problems. It is especially dangerous to unborn children and children under 6 years old.

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Often there are no signs and symptoms of lead poisoning. Or the signs and symptoms may resemble other illnesses or problems. The only way to diagnose lead poisoning is through a blood test, so children must be tested.

Lead poisoning has major economic and social costs.

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The main source of lead poisoning in the United States today is lead paint.

Although lead paint was banned for residential use in 1978, it's still present in millions of homes.

When lead paint is deteriorating or disturbed, it can produce dangerous dust and chips. People can become lead poisoned when they swallow or breathe these lead chips or dust.

While lead paint is the major source of lead poisoning, it is not the only one. Some other sources of lead include

- Soil
- Water
- Consumer products
- Foods
- Hobbies and decorative items
- Traditional cosmetics and remedies
- Old or imported pottery and
- Adult workplaces

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Module 2 Why Should Educators Be Concerned about Lead Poisoning?

- Topic 1* *How does lead damage the ability to learn?*
Topic 2 *How can educators help children who have been lead poisoned?*
Topic 3 *What are the educational rights of children who have been lead poisoned?*

1

This module considers the question of why educators should be concerned about lead poisoning.

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By the end of this module, you will be able to

- Recognize the consequences of lead poisoning as it affects children in educational settings
- Describe the cognitive and behavioral effects of lead poisoning in children, and
- Identify the educational rights of children who have been lead poisoned

3

How does lead affect learning?

Dr. John Rosen, a pediatrician and lead expert at Montefiore Medical Center, in New York, explains it this way:

"Lead at remarkably low concentrations has the unique capability of robbing kids of such skills as reading, writing, concentration, and abstract thinking. The set of things that are required for academic success and employment success can be **lost forever**, and all of that comes at a remarkable societal cost."

4 *Topic 1* *How does lead damage the ability to learn?*

Lead damages the ability to learn in several ways:

- It lowers IQ scores.
- It lowers academic performance.
- It causes many developmental, behavioral, and psychological problems.
- And it lowers overall functioning.

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We'll first consider what research shows about lead and IQ scores. There are many published studies of lead's effects, but I'll mention just a few recent ones.

- Early studies showed that **high** levels of lead lowered IQ scores.
- More disturbing, recent studies show that **even low levels of lead** (that is, levels less than 10 µg/dL) lower IQ scores

For example, one study in 2003 showed that, at age 5 years, IQ decreased more than 7 points as blood lead levels increased from 1 to 10 µg/dL.

Another study, in 2007, showed that, at age 6 years, the IQ of children with blood lead levels of 5 to 9.9 µg/dL was significantly lower than the IQ of children with blood lead levels less than 5 µg/dL.

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Although it's well known that lead is especially damaging to very young and unborn children, recent research shows that lead is also very dangerous to school-age children, especially those 5 and 6 years old. This research is very new, and more information will be needed about the effects of lead on this age group.

A study published in 2009 looked back at blood lead levels of children who were 5 to 6 years old in the 1980s and 1990s. They found that lead exposure at this age is more dangerous than previously thought. Lead lowers IQ even more than exposures at age 2, perhaps because children's brains may be especially vulnerable at this developmental stage.

Other researchers studied these children as adults. They found that lead exposures reduced the tissue volume in the adult brain. The strongest effects were on areas responsible for planning, attention, impulsivity, and reasoning. They also looked at criminal records of these adults, and found a correlation between lead levels and a greater risk of adult violent criminal behavior (assault, rape, homicide).

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Lead not only lowers IQ score; it also lowers performance test scores. One study, in 2000, looked at performance test scores of children 6-16 years old.

The study found that the higher the lead level, the lower the scores in

- Arithmetic
- Reading
- Nonverbal reasoning and
- Short-term memory

And these losses in cognitive and academic skills occurred at lead levels < 5 ug/dL.

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I'll mention just one more study. A 2007 study of scores in end-of-grade tests in reading and math in grade 4 showed that

- Higher lead levels were associated with
 - Lower scores in reading and math and
 - Higher failure rates,

These effects were strongest at 5-10 $\mu\text{g}/\text{dL}$ —remember, that's under the level that is considered lead poisoning.

- The study also found that more black children than white children had higher blood lead levels

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What are the implications of this study of lead levels and performance tests?

Consider lower achievers:

- Some children who would otherwise have passed **will fail**.
- Some children who would otherwise have progressed to next grade **will be held back**.

Now consider higher achievers.

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Some children who would otherwise have been eligible for gifted/enrichment programs will not be eligible.

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There are other implications for lead levels and performance tests.

- Since low-income and minority children are usually exposed to more lead, they are disproportionately affected, and
- Lead exposure may account, in part, for the achievement gap and for failing schools

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Lead causes a great many developmental, behavioral, and psychological problems.

Lead poisoning is associated with attention problems, making children more distractible and more likely to daydream.

These children may be more active and at greater risk of ADHD.

They may be more impulsive, less able to organize, less persistent, more easily frustrated, and less able to handle frustration.

Children who have been lead poisoned may be more dependent and may have problems with their peers. They may also have problems completing tasks and following simple directions and sequences, as well as rigid, inflexible problem-solving strategies.

Children who have been lead poisoned may also have problems controlling their behavior and may show more disruptive behavior, more outbursts or fighting, and more aggression and violence.

All of these problems can interfere with a child's ability to learn.

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Unhappily, the list of problems associated with lead goes on.

Lead can cause problems with learning and remembering new information, with understanding and using language, and with reading, writing, and arithmetic.

Lead increases the risk of school failure, making students more likely to have higher absenteeism, have lower class standing, and drop out of high school.

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Lead's effects on behavior harm not only the affected child but also the larger society. Lead increases the risk of conduct disorder, which includes persistent, disruptive behavior patterns, aggression, chronic lying or stealing, and intentional destruction of property.

Lead poisoning is associated with an increased risk of delinquent or **criminal behavior**, especially violent crimes, and an increased risk of **addiction** to illegal drugs.

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Finally, lead can cause hearing loss, slower response time, impaired function of immune system, impaired coordination and motor skills, and, in girls, delayed growth and puberty.

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The effects of lead can be seen in changes that have occurred as blood lead levels have declined since the 1970s.

These levels have declined as a result of various actions:

- From 1973 on, lead was phased out of gasoline.
- In 1978, lead was banned from house paint.
- In 1986, lead was banned from plumbing.

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A researcher has found that as lead levels have dropped, so have mental retardation rates. At the same time, national SAT verbal and math scores have risen.

The Implication is that children with high blood lead levels are more likely to be classified as mentally retarded, and have lower SAT scores.

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One of the many challenges associated with lead poisoning is that the effects of lead may be delayed.

That is, a child may be exposed early, but effects may show up even years later.

Problems may occur when children face new educational challenges.

For example, lead's effects may show up in 1st grade, when students begin to learn basic academic skills, such as reading and arithmetic, or

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In 4th grade, when students begin to apply basic skills to learning new material—that is, when they begin “reading to learn,” as opposed to “learning to read.”

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Or lead's effects may become obvious in 6th and 7th grade, when students are increasingly expected to independently use higher-order planning and organizational skills.

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Of course, lead is not the **only** problem that confronts children today.

It's is not solely responsible for all behavioral and developmental problems, although it may contribute significantly to them.

Additional risk factors like poverty, poor nutrition, or abuse can increase the risk for problems.

But lead may add another heavy weight to a child's burden.

21

It's important to understand that lead is not a problem **only** for disadvantaged families.

Here is an extract from an email written by a white, college-educated, middle-class mother. Her son's blood lead level at age 10 months was 44 µg/dL:

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I am not a terrible parent, I am not a lousy housekeeper, I am a determined mother who has her son's best interest as my #1 priority.... The removal of paint years ago has left my son with permanent brain damage and a chronic degenerative condition to deal with for the rest of his life.

Ignoring lead and education issues doesn't make them go away; it just intensifies the costs on taxpayers for long-term special education costs, and affects society at large when these kids fail out of school and enter the communities. Lead is not a myth, lead poisoning is not obsolete, and childhood lead poisoning will not be eradicated by 2010.

That last sentence refers to the federal government's goal of eliminating childhood lead poisoning by 2010. This program is being recorded at the end of 2009, and we're not yet close enough to that goal.

22

As educators, you may want to know what information schools have about lead levels.

- Lead levels, if known, are included on the school health assessment form
 - Does the school nurse review this form?
- If the form shows a high lead level, consider,
 - What is your district's protocol for sharing information?
 - What is your district's protocol for responding to information?

23 *Topic 2 How can educators help children who have been lead poisoned?*

How can educators help children who have been lead poisoned?

Like all other children, those who have been lead poisoned have individual strengths and weaknesses. Helping them learn begins with individual assessment to determine the

- Appropriate level of support and
- Specific interventions to meet each child's needs

24

How else can educators help children who have been lead poisoned?

They can watch for behaviors that interfere with learning.

- As we've explained, children with lead poisoning often show behaviors similar to those of children with ADHD. For example, they may be
 - Inattentive
 - Easily distracted
 - Impulsive, or
 - Have difficulty sitting still

These children may benefit from accommodations similar to those for children with ADHD.

Educators can also watch for emerging difficulties, especially at challenging periods.

25

There are some specific actions that educators can take to help children who have been lead poisoned, such as offering learning opportunities to stimulate the brain, including

- Toys and other objects to explore
- Social engagement, and

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- Encouraging language interaction with other children

They can also

- Provide positive feedback for children
- Encourage parental involvement, and
- Advocate for each child

While these actions may be appropriate for all children, they may be especially important for children who have been lead poisoned.

26

If children have been lead poisoned, educators also need to

- Consider diagnostic evaluations for children with developmental or learning delays
- Ensure that children receive all services to which they are legally entitled, and,
- As necessary, support parents in their quest for appropriate services, such as
 - The Birth to Three program for early intervention and
 - School health services

27

Some educators may find that they are in a position to help families cope with a diagnosis of lead poisoning. Although every individual family has its own needs, there are some common methods to helping families in this situation.

First, understand the common reactions to a diagnosis of lead poisoning

- Denial
- Anger
- Guilt
- Grief, and
- Acceptance

Second, encourage families to take positive actions, such as

- Learning about lead poisoning
- Learning about their own children's specific needs
- Reaching out for support
- Asking questions of health personnel, and
- Advocating for their children

28 *Topic 3 What are the educational rights of children who have been lead poisoned?*

Both parents and educators need to advocate for children who have been lead poisoned. Often, to do so, they need to know the educational rights of such children.

All students are entitled to accommodations within regular education.

Children who do not show educational progress even with accommodations may obtain educational interventions, supports, and services under two key federal laws:

- The Individuals with Disabilities Education Improvement Act of 2004 (IDEA), and
- Section 504 of the Rehabilitation Act of 1973

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29

Let's talk first about IDEA.

This federal legislation ensures free, appropriate public education for eligible children with disabilities.

Eligibility includes the identification of an IDEA disability that adversely affects educational performance. As a result of this disability and its adverse impact, the child requires specially designed instruction.

“Other health impairment” is an IDEA disability. Under the category of “other health impairment,” IDEA lists lead poisoning as one of several conditions that may adversely affect a child's educational performance.

30

Under IDEA, a planning and placement team (or PPT) plays a key role in a child's education.

- A PPT includes parents, teachers, and others.
- It initiates and discusses evaluations and determines whether a child is eligible for services under IDEA.
- A PPT develops, reviews, and revises an individual Education Plan (or IEP). The IEP may include special education and related services (such as health or psychological services).
- It also includes goals and objectives for the child.

31

The second major piece of federal legislation that may address educational rights for children with lead poisoning is Section 504 of the Rehabilitation Act of 1973.

Section 504 prohibits discrimination against people with disabilities and may cover students who are not eligible under IDEA.

Section 504 protects students who **have physical or mental impairments** that **substantially limit one or more major life activities**, such as

- Caring for oneself
- Performing manual tasks
- Walking, seeing, and hearing
- Breathing, eating, and sleeping
- Learning, reading, concentrating, and thinking, or
- Communicating

32

Under this legislation, a 504 team evaluates a student to determine his or her eligibility.

The team considers many sources of information, including grades, teacher reports, parent information, test scores, and other records. It determines the student's educational and support needs and develops a 504 plan that includes accommodations and modifications to allow the student to participate fully.

A child may qualify even if mitigating measures are used to address the lead poisoning, and no impact on education has been shown.

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Slides 33 through 35 are for educators in private schools only.

33

We've been talking about federal legislation as it affects public schools. The rules are somewhat different for children whose parents place them in private schools.

We'll discuss them very briefly.

In such cases, under IDEA, the **school district** where the private school is located must

- Ensure equitable participation for private school students
- Identify and evaluate children with disabilities through Child Find procedures, and
- Consult with private schools and private school parents to determine services needed by the majority of students who attend private schools in the district.

34

Note that children enrolled in private schools by their parents do **not** have individual rights to receive services.

For example, a district may determine that a majority of private school students in that district need speech and language services. Assume that one child needs **other** services. However, this child is not entitled to receive other services from the public school while she remains enrolled in the private school.

For additional information about IDEA and private schools, contact the State Department of Education.

35

Now let's very briefly consider Section 504 as it applies to children whose parents have placed them in private schools.

Section 504 applies to private schools that receive **federal funding**, either directly or indirectly.

Unlike IDEA, Section 504 does **not** require public schools to provide services to children enrolled by their parents in private schools.

Again, for additional information, contact the State Department of Education.

36

What should educators do if they suspect a child has lead poisoning?

They can start by convening a PPT or Section 504 meeting to discuss a multidisciplinary evaluation of the child.

They can review the results of evaluations and determine if the child

- Is eligible for special education under IDEA or
- Qualifies under Section 504

And, if the child is eligible, they can ensure that the child receives services as described in the Individualized Educational Plan (IEP) or Section 504 plan.

37

We've been talking about the educational implications of lead poisoning in the abstract. Let's consider now a real child whose life has been damaged by lead.

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We've changed his name to protect his privacy, but the details are true, as reported by his mother.

In 1997, when Jay was 10 months old, his blood lead level was 44 micrograms/deciliter. It resulted from breathing lead dust and fumes while his parents renovated a 200-year-old house.

Jay had no symptoms, yet he required chelation treatments to reduce his lead levels.

38

Fast forward to Jay at the age of 10 years. Here's how his mother described him:

"Jay will talk your ears off about shipwrecks, North American birds, and airplanes. When dealing with adults, he is more mature than most kids his age; all the neighborhood women find him charming. He seems to understand his 'redheaded' temper better now, keeping it more under control.

"The school made some minor accommodations for him this year, without jeopardizing his status in a program for the top 10% of his class....

"He's a B average student and excels in music and art. He plays saxophone with the band, teaches himself keyboards at home, and makes meticulous sketches of ships and liners. Last summer, he participated in the National Young Scholar's Program."

39

Now let's look at Jay at the age of 11 years. Recall what we said earlier about the delayed effects of lead poisoning.

"[Jay] has declined from the top 15 students in his elementary school district to failing all major subjects, despite his gifted IQ.... My son's teachers want to label him as "autistic," "ADD," or "ADHD," yet the root cause is a neurotoxin in old lead paint which caused the permanent brain injury.

"Middle school has been an ongoing struggle... The teachers ... cannot devote anymore time to him, because they already have 26 children in each class. Even though he receives 91% test and quiz grades in math, he is still failing because he stares out the window, not doing the class work and not turning in his homework...."

40

Here's Jay at the age of 12 years:

"Neuropsychological testing over the past two years indicated that there is measurable deterioration as he matures. His grade average declined from an A-B average in 4th grade to straight F's in 7th grade. The school [refused to place him] in an Individualized Education Program (IEP), basing their rationale almost solely on his 135 IQ. "He should be able to do the work," they would say....

"By Thanksgiving 2008, Jay was failing all five major classes, and the school refused to do anything, so I contacted the Superintendent directly.... He agreed to start the Child Study Team (CST) meeting process...."

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“The next hurdle was the CST psychologist, who advised me that my son ‘only had elevated lead levels for two years.’ The guidance counselor warned me that ‘he probably won’t get placed with an IEP, he’s too smart.’

“Then the social worker told us exactly where to start: the state’s Department of Education’s Parental Rights in Special Education. Determination of eligibility for special education and related services specifically addresses ‘lead poisoning’ as ‘other health impairment’”

42

“[My son’s] brain has been permanently damaged by his early lead exposure.... The damage from the lead has now started to surface, twelve years after the exposure. Finally, Jay was placed in inclusion classes ... [He] now has A-B-C grades.... Jay is starting to thrive again....

“It’s a long, frustrating road that families travel down without a roadmap to consult for directions. My son should be OK now, but what about the other children, the cases that were closed after the blood level receded below intervention levels or the lead was removed from the child’s environment? What happens to those children when they fail out of school?”

43

Do you think children who have been lead poisoned can succeed in school?

Please take a moment to think about how you, as an educator, can help them.

44

I’d like to summarize what we know about how lead poisoning affects children and their education.

As blood lead levels increase, behavior problems increase, and IQ and test scores decline.

45

As blood lead levels decrease, mental retardation rates decrease and SAT scores increase.

46

Here are the key points to remember in this module:

Lead damages the ability to learn. It lowers IQ scores and lowers performance test scores. It causes **many** developmental, behavioral, and psychological problems. Even **low levels** of lead harm the ability to learn.

Lead harms both disadvantaged and privileged children.

Also, keep in mind that lead-poisoned children may have legal rights under IDEA and under Section 504 of the Rehabilitation Act of 1973.

As always, educators must assess each child’s individual needs.



Module 2a Child Daycare Facilities and Lead

This module is for personnel at Connecticut child daycare facilities only.

Topic 1 Definitions

Topic 2 DPH requirements for child daycare centers and group daycare homes

Topic 3 DPH requirements for family daycare homes

1

This module on child daycare facilities provides a **brief overview** of the lead-related requirements of the Connecticut Department of Public Health (or DPH).

For more detailed information, please consult your local health department or the Connecticut DPH.

2

Within the DPH, the Child Day Care Licensing Unit, as the name suggests, licenses child daycare facilities. To ensure that children are not exposed to dangerous substances, this unit inspects facilities and may require comprehensive lead inspections or visual checks and sampling. It also investigates complaints and enforces statutes and regulations.

3 *Topic 1 Definitions*

First, we need to define some terms so that we can explain the relevant DPH requirements.

DPH defines three categories of child daycare facilities:

- Child daycare centers, such as nursery schools, preschools, and school-age programs, which serve more than 12 children
- Group daycare homes, which serve 7 to 12 children, and
- Family daycare homes, which serve 1 to 6 children

4

DPH has one set of requirements for child daycare centers and group daycare homes. It has another set of requirements for family daycare homes.

5

We also need to define “comprehensive lead inspections,” which are required in specified situations. These inspections must be conducted by trained code officials or DPH-certified lead inspectors.

Comprehensive lead inspections include:

- Tests of representative components of painted surfaces throughout facility
- Dust wipe samples of selected window wells, windowsills, and floors,
- Tests of bare soil in areas where children play, and
- Water samples

These inspections can identify “lead hazards” and “intact lead paint”—two other terms that we’ll explain.

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6

“Lead hazards” include lead paint that is chipping, flaking, peeling, chalking, or otherwise deteriorating.

“Intact paint” is usually not considered a lead hazard, but it must be identified and managed to prevent it from **becoming** a lead hazard.

7 *Topic 2 DPH requirements for child daycare centers and group daycare homes*

Now that we’ve defined the key terms, we’ll talk about the DPH requirements for child daycare centers and group daycare homes. Keep in mind that DPH has some different requirements for family daycare homes.

8

For any child daycare center and group daycare home program that is located in a building constructed before 1978, a comprehensive lead inspection is required as part of the application process if a new facility seeks a license.

9

It is also required as part of a biannual inspection by the local health department if a licensed facility was not previously inspected.

10

It is also required as part of a public health response if a child with an elevated blood lead level attends a facility that was not previously inspected.

11

If lead hazards are found in these facilities, they must be corrected immediately.

The corrections must follow a lead-hazard remediation plan approved by the local health department, the work must be done using lead-safe work practices, and the corrections must be verified by the local health department.

12

If intact paint is identified in these facilities, it must be included in a written lead management plan, and designated daycare staff must regularly monitor paint conditions. If the paint deteriorates, it must be corrected immediately using lead-safe work practices

13 *Topic 3 DPH requirements for family daycare homes*

Now let’s consider DPH requirements for family daycare homes. Remember, these facilities care for 1 to 6 children.

14

For family daycare homes built before 1978, DPH licensing specialists who conduct the site visits also include visual checks and sampling.

That means that the DPH specialists check for deteriorated paint, collect paint chip samples from any deteriorated surfaces, and send the samples to a lab for analysis.

15

For a family daycare home, a comprehensive lead inspection is required if deteriorated lead paint is found, or if a child with an elevated blood lead level attends the family daycare home.

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16

If lead hazards are found, they must be eliminated. However, the methods are slightly different, depending on whether a child under 6 years lives in the home or not.

Where a child under 6 years lives, the hazards must be **abated**, which means permanently removed, using approved abatement methods. The local health department must approve the abatement plan.

Where no child under 6 years lives, the hazards must be eliminated using lead-safe work practices. The local health department or DPH must approve the lead-hazard remediation plan.

17

If intact paint is identified in family daycare homes, it must be included in a written lead management plan, and a designated daycare staff must regularly monitor paint conditions. If the paint deteriorates, it must be corrected immediately, using lead-safe work practices,

18

For more information on lead issues, you can contact the Connecticut Department of Public Health's Lead Poisoning Prevention and Control Program.

19

For more information on general daycare issues, you can contact the Connecticut Department of Public Health's Child Day Care Licensing Unit.

Lead Poisoning: Limiting the Ability to Learn



Module 3 Preventing Lead Poisoning

- Topic 1 Protect children from lead paint*
Topic 2 Protect children lead in water
Topic 3 Protect children from lead in other sources
Topic 4 Teach children to be lead-safe

1

This module explains briefly how we can prevent lead poisoning.

2

At the end of this module, you will be able to recognize the importance of preventing lead poisoning; cite methods of preventing lead poisoning, especially in children; and identify age-appropriate messages to teach children about preventing lead poisoning

3

The federal government has set a goal of eliminating childhood lead poisoning by 2010. It includes two approaches: primary prevention, which means preventing lead exposure in children; and secondary prevention, which means testing children to determine if they are lead poisoned and preventing further exposure.

4

According to Dr. David Bellinger, an expert on lead poisoning:
“The key thing is primary prevention. We’re still waiting—in a sense, using children to tell us where the lead problems are—the way miners used canaries to see when oxygen was low.”

5 *Topic 1 Protect children from lead paint*

The first step in preventing lead poisoning is to protect children from the major source of lead: lead paint.

6

One of the main ways that children are now exposed to lead paint is during home improvement projects.

To address this problem, in 2008 the U.S. Environmental Protection Agency (EPA) issued a new rule. The Renovation, Repair and Painting Rule aims to eliminate hazards that can be created by renovation, repair, and painting activities that disturb lead paint. The rule covers most homes and many child-occupied facilities, such as preschools.

EPA’s rule applies to paid contractors who are working on homes built before 1978 and to most renovation, repair, or painting activities.

It requires that contractors be trained and certified, provide a lead-awareness pamphlet before work begins, and use specific lead-safe work practices.

7

These lead-safe work practices include

- Protecting occupants and their belongings
- Containing or isolating the work area

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- Minimizing lead dust
- Avoiding dangerous practices, and
- Cleaning up thoroughly

If you are involved in a home improvement project, make sure that you hire only contractors who know about the EPA rule and will follow its requirements.

8

It's not just **home** improvement projects that can put children at risk. Maintenance and renovation projects that disturb lead paint in schools and childcare facilities can also raise the risk of lead poisoning.

Therefore, the EPA rule also applies to work that disturbs lead paint in **child-occupied facilities** built before 1978. The EPA defines child-occupied facilities as residential, public, or commercial buildings where children under age 6 years are regularly present. These facilities may include schools and child-care facilities.

Slide 9 is for school administrators only.

9

So, what should administrators of schools built before 1978 do about renovations or repairs?

If you are an administrator of such a school,

- Consider having a lead-based paint inspection or risk assessment;
- Keep children out of the work area.
- Hire only contractors or workers who have been trained and certified via EPA standards
 - Ensure that workers use lead-safe work practices
 - Make sure that final cleanup is thorough.

To learn more, contact the Connecticut Department of Public Health or the U.S. Environmental Protection Agency.

10

We've just talked about home improvement projects being done by paid contractors, who are covered by the EPA rule. But of course, it's just as important to protect children during **do-it-yourself** projects.

Even if you are doing work that is not covered by the EPA rule, it's still vital to work lead-safe in houses built before 1978.

Here's an overview of lead-safe work practices:

- Keep children and pregnant women out of the work area
- Contain the dust,
- Wear protective gear
- Work wet to keep dust from spreading
- Work clean

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11

To learn how to carry out these lead-safe work practices, consult some of the many resources available to help do-it-yourselfers work lead-safe.

Here are a few examples:

- EPA has developed a course to teach people how to work safely around lead paint.
- The Connecticut Department of Public Health has a short video, entitled *Don't Spread Lead*, showing do-it-yourselfers how to work lead safe.
- EPA also has two booklets: *Renovate Right* and *Steps to Lead Safe Renovation, Repair and Painting*.

12 *Topic 2 Protect children lead in water*

As we said earlier, lead paint is the major but not the **only** source of lead.

Since lead can also be found in water, we need to protect children from that source too.

13

To protect children from lead in tap water in homes and schools, you can take some basic precautions:

Do not use water hot from the tap for cooking, drinking, or making baby formula.

Always run water until it is as cold as it gets, especially if it has been sitting for several hours. The water usually needs to run about 20 to 30 seconds

14

It's important to note that boiling water does not remove lead.

Slides 15-18 are for administrators only.

15

Some schools and child-care facilities are considered **public water systems** and are regulated under the Safe Drinking Water Act (SDWA), which covers the monitoring and treatment of water.

A facility is considered a public water system if it regularly provides water for human consumption to an average of at least 25 individuals a day **and**

- It has its own water source (such as a well) **or**
- It treats the water **or**
- It sells the water.

If a facility meets that definition, it must comply with the provisions of the SDWA. The state drinking water program makes this designation.

For schools and childcare facilities that are not regulated by the SDWA, such as facilities served by a public water supply, EPA offers guidance through its 3Ts program, a voluntary program to reduce lead in drinking water.

16

The 3Ts program covers training, testing, and telling.

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The first T, which stands for training, teaches school officials and others about lead. It is designed to raise lead awareness, identify potential problems, and establish a testing plan.

17

The second T refers to testing drinking water for lead. Although testing is not required, it is strongly recommended, because although water from the public water supply may not have dangerous levels of lead, the plumbing inside the school itself may leach lead into the water.

18

The final T refers to telling parents, students, staff, and the larger community about the potential risks of lead, the results of testing, and actions being taken to correct any problems that have been identified.

19 *Topic 3 Protect children from lead in other sources*

We've talked about protecting children from lead paint and lead in water. Now we need to consider how to protect children from lead in various other sources.

20

One such source may be dust, dirt, and soil. This lead may come from

- Dust or flakes from old lead paint on the exterior of homes built before 1978
- Old leaded gasoline
- Pesticides, especially fruit and nut orchards where lead arsenate was sprayed
- Lead wheel weights from cars and trucks
- Industrial emissions, such as smelters, electric plants fired by fossil fuels, and cement factories

To protect children, have them wash their hand often, especially after playing and before eating. They need to scrub well, for at least 20 seconds, to remove lead particles.

Remember to wash their toys frequently too.

21

Keep children away from soil that might contain lead.

To keep lead dust outside, leave shoes at the door, and wear slippers or socks inside.

Have soil, especially garden soil tested. Do not grow vegetables on soil that might contain lead. The University of Connecticut Soil Lab can test for lead and other substances.

Move play areas away from bare soil, and plant shrubs or lay sod to cover bare soil.

22

Over the past few years, the news has been full of stories about consumer products that contain lead.

To protect children from such items, watch for recalls from the U.S. Consumer Product Safety Commission and the Food and Drug Administration. Go to the website www.recalls.gov for the latest recalls.

Keeping small objects, especially metal objects, out of children's mouths is important not only to prevent choking, but also to prevent lead poisoning.

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In 2006, a 4-year-old Minnesota boy died from lead poisoning after swallowing a metal charm. The charm, a promotional item distributed with athletic shoes, was 99% lead. The lead dissolved in the child's stomach over several days. His blood lead level reached 180 ug/dL. A month after his death, 300,000 of these charms were recalled.

23

Protect children from lead in pottery and folk medicines.

Don't use imported or antique pottery for food or drink. Lead glazes may leach out, especially into acidic foods or drinks, like orange juice.

Always be wary of folk medicines that might contain lead. Some examples are *azarcon* and *greta*, which are sometimes given for intestinal problems. These folk remedies are almost 100% lead.

24

You can also help to protect children by ensuring that they have good nutrition.

For many reasons, it's important to give children healthy foods. Be sure they have a balanced diet low in fat, because fatty foods let the body absorb lead faster.

Children should eat regular meals and snacks, because empty stomachs absorb more lead.

Because lead fools the body into thinking it is calcium, iron, or zinc, children should get appropriate amounts of these nutrients, along with vitamin C, which helps the body absorb iron.

25 *Topic 4* *Teach children to be lead-safe*

Finally, as educators, you can also teach children about lead poisoning and how to help protect themselves from lead.

Here are some simple messages that even young children can usually understand and apply:

- Lead can make you sick
- Stay away from paint dust and flakes
- Ask adults to clean up paint dust and flakes
- Leave your shoes at the door
- Wash your hands after playing and before eating, and
- Eat healthy foods

26

To summarize this module;

The federal goal for 2010 is to eliminate childhood lead poisoning

Schools and homes could contain lead in old paint, in water, and in educational products

27

To prevent lead poisoning, both home-improvement contractors and do-it-yourselfers should use lead-safe work practices in buildings built before 1978.

In addition,

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- Give children healthy foods
- Teach children to be lead-safe
- Protect children from lead in
 - Dust and dirt
 - Soil
 - Water
 - Consumer goods
 - Imported or antique pottery and
 - Folk medicines

28

In conclusion, what can we, as educators, do to eliminate the problems of childhood lead poisoning?

First, we can advocate for children who have already been lead poisoned.

Next, we can work to make our homes, schools, and communities lead-safe.

Finally, we can teach children how to stay safe from lead.

Please consider: What can **you** do?

29

For more information, contact the
Healthy Environments for Children Initiative at the
University of Connecticut Department of Extension

Website: www.hec.uconn.edu

Email: hec@uconn.edu