

MICROFILM DIVIDER

OMB/RECORDS MANAGEMENT DIVISION
SFN 2053 (2/85) 5M



ROLL NUMBER

DESCRIPTION

4049

2001 SENATE GOVERNMENT AND VETERANS AFFAIRS

SCR 4049

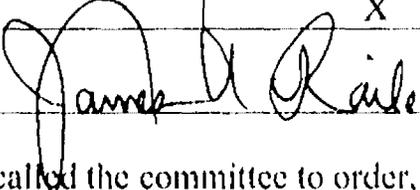
2001 SENATE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. SCR4049

Senate Government and Veterans Affairs Committee

Conference Committee

Hearing Date March 29, 2001

| Tape Number | Side A | Side B | Meter # |
|---|--------|--------|-----------|
| 1 | X | | 0.0-End |
| 1 | | X | 0.0-18.6 |
| 1 | | X | 23.0-31.0 |
| Committee Clerk Signature  | | | |

Minutes: **Chairman Krebsbach** called the committee to order, the clerk called the roll.

Chairman Krebsbach opened the hearing on SCR 4049 which is a concurrent resolution directing the legislative council to study limiting actions for lead-based paint claims. Introducing the bill to the committee was **Senator Tim Mathern**, district 11, Fargo. A copy of his written testimony is attached. **Senator Dever** inquired where we are at now with the statute of limitations on this. **Senator T. Mathern** indicated that that issue is viewed as a complicated question and answer. It might relate to when this material was introduced, it might relate to when it was in terms of the manufacturing process, it might relate to when it was applied, it might relate to when someone became aware of it being a hazard. It seems somewhat complicated to determine exactly when the statute of limitations runs out in every specific instance. This resolution and hopefully a bill would clarify the end date, he hopes of a time when an action could be brought. For example all actions would have to be brought by August 1, 2005. He is not certain there is a specific date for every action. He doesn't believe there is such

a date. Maybe there are others who do believe so and they will be here to testify later. **Senator Kilzer** inquired which Senator Nelson and which Attorney General were the ones who suggested that this study be done. **Senator T. Mathern** indicated it was **Senator Gary Nelson**, Majority Leader of the Senate and **Attorney General Wayne Stenehjem**. **Representative George Keiser**, district 47, Bismarck appeared before the committee as a cosponsor of the delayed resolution SCR 4049. He indicated he supports the bill for basically the same reasons as Senator T. Mathern. He indicated his perspective is somewhat different in that he believes there is a need to bring closure to this issue and he thinks there are some unanswered questions that can be addressed in the interim. These should be selected as a study. He thinks we have an obligation to answer the basic questions. Are there any options for our political subdivisions to extend this date or not. If there aren't great, let's move on with it. If there are and there is some legal recourse for those entities then we should ensure that they have those opportunities. He doesn't know that answer to that. He doesn't know whether this will be selected as a study. He does think that there is enough of a question as Senator Mathern expressed with the asbestos case, we weren't sure and we investigated and ending up extending that. This is an entirely different case. Lead based paint came out of the system much earlier. There were a lot more voluntary actions by the industry relative to the control of lead based paint as a contaminant but he also recognizes that we have a very deteriorating school infrastructure in our state and some other public buildings and that from a policy standpoint we should do everything within reason to consider what are the options that we have and therefore he supports this study resolution. **Senator Wardner** inquired if there are schools that have a lot of lead based paint in their buildings. Has that been brought to you as a problem? **Representative Keiser** indicated no, that has not been brought to him specifically by the schools as a problem. Given the periods when our schools

were built and the products that were used there probably is a reasonable, it is reasonable to expect that we have used lead based paints during that period. That was the state of the art when many of the schools were constructed. **Senator Dever** inquired, is it your feeling that absent this study or a bill that this statute of limitations or considerations of this issue are indefinite. **Representative Keiser** indicated absolutely not. In fact he believes in the statute of limitations and he thinks companies should be protected. Once that statute has run its course they should have every right to consider that they have protection, but, as Senator Mathern explained there are a lot of questions out there about what or how does the clock start, when does it start. There are several states that are considering actions and some states have taken action. We could as a state take action but he thinks a study is far more appropriate as to determine whether it is warranted or not. **Representative Scott Kelsh**, district 11, appeared before the committee asking to go on record in support of SCR 4049. This issue warrants a closer look and hopefully the committee will agree and adopt the resolution. **Tim O'Keefe**, Assistant City Attorney for the City of Fargo appeared before the committee. He presented a packet of information to the committee regarding lead based paints and the problems it causes particularly to political subdivisions in the state of North Dakota. He indicated to the committee that he is disappointed with the course that this has taken. Admittedly this came to the city of Fargo's attention very late in the session. He believes that legislature was perhaps at it's midway point when this was raised to some of the Fargo legislators. They requested that some type of bill be brought forth to clarify the statute of limitations problem. However, it is really a simple issue. What he has been told and he hasn't confirmed this is the asbestos legislation went through the same process eight years ago in 1993. It is a simple issue that is clearly intended to allow the courts to make the determination as to the responsible party and not to have the legislature make that decision. It's

an ability for the legislature to say okay the issue of statute of limitations may be somewhat clouded and it may prevent the ultimate issue from being raised so we are going to say through this bill that there is a four year window of opportunity for public entities to bring litigation. It also means that the paint companies at the end of those four years can rest assured that they will not face any further litigation from these public entities regarding the abatement of lead based paint. Basically his point is that this is an issue for the courts to decide and that this body can give the courts that opportunity. When his office first proposed this legislation they contacted several individuals including legislators, public officials, supervising buildings and grounds, environmental engineers, health officials and lawyers, including this states attorney general, Wayne Stenehjem. Everyone we initially spoke with including Attorney General Stenehjem, seemed very supportive of this idea. Unfortunately, he thinks because this was delayed, he thinks we took a hard and a fast approach, people became very suspicious. He thinks the simple issue became clouded and maybe that is their fault. Hopefully today if nothing else he can clarify for the people in this room why this is an important issue and get those questions answered and get everything out into the open so that if nothing can be done in this session, at least this study resolution will allow things to go forward and in two years, maybe it's too late, maybe it's not, I guess we will find out. At least he can answer the committee's questions and clarify the city of Fargo's position on this issue. He has been told by several people that the paint manufacturers have sent in their lobbyists, that those people are here to speak on behalf of the paint manufacturers, to say that there is no need for this legislation. This is a dead horse issue, they have gotten to the attorney general, they have told him that there is no need for this, we've been very proactive and we've addressed the problem. We've removed it from residential buildings and that's great. What that tells him is that they are afraid to go to the courts because

they are afraid to face the judge and jury to determine ultimately who is the responsible party. Now, we have resolution 4049. It is before you and it calls for a study. What he has done in hopes that he can aid in the education aspect he handed out a very thick packet (see attached), and he noted that the first two pages of that packet are somewhat important. This is a letter from an environmental engineer in Grand Forks. He is a consultant who has dealt with public schools that have lead based paint. He has done so in very recent history. He has given some anecdotal evidence which he wanted to pass on to the committee. Litigation on a class action basis has begun in many locations around the country. If that is the case, why should we in the state of North Dakota just sit back and watch. We shouldn't take this position. He hates the word proactive, but this is an area where we are not so much being proactive because it's already happened. We didn't dream this up. We should get on board now. For the city of Fargo they have determined it is a problem. They have several buildings in the city that are from this era. There are several buildings which they are positive contain lead based paints. The city of Fargo is ready to go ahead in this litigation the day after the effective date of this bill. The city of Bismarek or the city of Dickinson or Minot may not be ready. They may not have a problem. Maybe this resolution is the appropriate vehicle. At the same time, he is very disappointed that Senator T. Mathern's bill is not being addressed this session because the city of Fargo has already done the research, we've already done the studies, they are very comfortable with the responsibility levels that are found with the paint manufacturers and they are ready to go forward. The window of opportunity if Senator Mathern's bill is passed is four years. It would allow cities like Bismarek, Langdon, like school districts around the state to study the issue over the next few years, to investigate in their own buildings what the problem is over the next few years. This litigation has been started. It is not their idea. It is similar to the stance taken with

asbestos manufacturers in the 1993 legislative session. What we are asking for is for a bill to be passed identical to the asbestos legislation saying that public entities have four years. The city of Fargo is ready. They would like to see the real bill passed but if they can't get that then they will settle for 4049. It is a good bill. What it will show over the next two years is that this is a problem. There are grounds for litigation. He agrees that we should protect businesses that they shouldn't fear that when this time runs out they shouldn't have to worry. What he doesn't like to see taxpayers put at risk because of a problem like this. He doesn't want out of state lobbyists who work for companies like Sherwin Williams or other paint manufacturers coming in and saying you know we've really been proactive. We've really taken a strong stand, can't you just help us out. We have the evidence, we have the ability to go forward. Let them share in the responsibility of putting this product into our schools and into our public buildings. Now is the time. Senator Kilzer inquired about the basis of the litigation. He inquired if it was because children have documented increases of serum levels of lead or is it because of the fact that there is violation of some federal level or standard of lead that might be on a wall or something. Are people getting hurt or is it because of the federal levels that are acceptable or not acceptable? Mr. O'Keefe indicated there is litigation that goes on for those individuals who have been hurt by lead based paint. That's not really what this is about. This is about the fact that it is a toxic material that could cause those problems that should be removed or dealt with in the public buildings. That comes at a very high cost to public entities. The allegations of the lawsuit is there is this material that we are being required to determine if the paint used in that building contains lead. If it does contain lead then the regulations are starting to say you had better make sure that it is encapsulated or you had better remove it. To remove it comes at a very high cost. What we are saying is that we are forced to deal with this problem that is in the schools or other

public buildings. The EPA indicates that they want to see the levels in children going down.

They've removed lead from gasoline, from paint. They are taking measures to see that lead isn't getting into the dust particles and the basis of the litigation is who is going to pay for that.

noted that following up with what Senator Kilzer said, from what you are saying, it is federal

entities that are pushing the issue. Why didn't this issue surface four years ago? Why is it

coming now? Somebody is pushing the city of Fargo to do something about this lead based

paint. Is that correct? Or is it something the city has decided it wants to do? I guess that is the

question. Is it a federal mandate coming down or is something you've decided on your own you

want to take care of? **Mr. O'Keefe** indicated it is a little bit of both. There is no federal mandate

at this time that we have to go in and remove this in every situation. Yes there are regulations

that deal with it. There are regulations that deal with how to remove it, but, you can see the

pattern that is developing. It is already there as far as the HUD homes are concerned and some

public assistance buildings, residential homes where communities are required to go in and test

for this product. The next step is let's test our other buildings and when they've been tested and

it is found, then we have to deal with our problems. The other thing that has pushed the city of

Fargo is there is currently litigation in other communities. Their litigation has been examined a

Fargo feels they are in the same position. This is expensive, the route these regulations are

pushing us that it is going to create more expense for cities like Fargo and therefore we need the

ability to find out if someone else is going to help us pay for this high expense. The discussion

continued at length with questions offered by **Senators, Kilzer, Krebsbach, T. Mathern,**

Wardner, and Dever. Responses were offered by Mr. Okeefe (Tape 1, Side A, Meter #'s

24.6-37.2) Appearing before the committee in a neutral position on SCR 4049 was **Mike**

Spiletto with the community services division, his main job there is to manage a housing

program delivered by HUD. He responded primarily to questions which had been previously asked by the Senators. He responded to **Senator Wardners** question concerning who is pushing this. He also responded by questions from **Chairman Krebsbach** (Tape 1, Side A, Meter #'s 38.4-49.9). **Connie Sprynczynatik** representing the North Dakota League of Cities appeared before the committee. The league would have been supportive of Senator T. Mathern's proposed bill on this issue, however, she indicated that her organization is in support of this resolution as well. Appearing in opposition to the resolution was **Antonio Dias**, a lobbyist representing the Sherwin Williams company. His traditional position is in litigation and providing information for the Sherwin Williams Company. He hopes to provide the committee with some information which might be useful if the state is to move forward with a study commission in this area. It is never bad to study issues. He indicated they believe that this issue is one that bears careful consideration. Any time a statute of limitations is revived after it has been extinguished or it needs to be extended for some reason. It brings many issues to the forefront. One of those issues is why was the statute of limitations originally created to be the length that it was by the legislature? North Dakota has an existing statute of limitations in the state of North Dakota defined by this legislature, defined by the code of North Dakota. Whether or not the courts here in North Dakota can properly interpret that statute of limitations as it applies to this case is an important issue. When a legislature considers the issue of reviving an expired statute of limitations, many times that happens when conduct of companies that would be targeted by extended the statute of limitations or efforts of trying to vilify the activities of those companies which are currently ongoing. This is a corporate history with lead which bears no resemblance to those other companies. It is an industry which does not exist any more. He noted there was a reference to there is still lead paint being sold. He believes there are in some industrial uses.

Never to be of concern to the public at this time. There are OSHA regulations with regard to how that lead paint should be used. There are obviously many military uses for lead in paint as has been throughout the century. Lead at it's beginning has been know for its toxicity for hundreds of years. Greeks and Romans knew that lead was a dangerous compound and people could become injured by ingesting it. The idea of using lead in paint however, was a different story. At the turn of the century with the spread of influenza and other viruses and bacteria, the searsh was for a durable and washable surface that could be used on walls. If you went to wash your room or a hospital room after somebody had been sick, the paint compounds that were on the wall would disintegrate. Lead has a special property along with linseed oil which is a tremendous connection to the state of North Dakota. The flax grown in North Dakota produced a lot of linseed oil and made the folks in North Dakota one of the leaders in developing and working with lead pigments with linseed oil at the turn of the century. As lead became more prominent in the use of paint it worked its way into being supported in used by a number of communities, states, and the federal government. Through the 1940's the federal government was one of the leading proponents for the use of lead based paints based on its own government research. In fact throughout the country you'll states and cities where some places had their own lead plants. In 1955 the industry worked to put together a symposium which would determine what needed to be done with respect to lead based paints. It was recommended by those officials that lead essentially be eliminated from interior residential lead paint to a percentage of less than 1%. The companies than agreed to do that regulation and in 1955 adopted the ASA regulation to reduce interior residential lead based paint levels to less than 1% lead in the paint. It wasn't until 1978 that the federal government took action to stop the sale and marketing of lead based paint for virtually all uses including schools. The schools were not an issue in 1955. Public buildings

and schools separate from housing which is provided by a variety of committees and housing authorities throughout the country. One of the reasons you find lead based paint in these housing projects is because of the federal governments supports of the use of lead based paints. An example of how those regulations have helped to improve housing and public buildings is that since 1978 there has been no paint used, if there has been a violation of that sale or marketing of lead based paints that is a federal offense. He would encourage the city attorney to look at situations where there has been paint sold or found to be sold in those schools after 1978. He spoke on cases of litigation at this time. He noted that none have been successful. No settlements have been made and he indicated no settlements will be made by companies who have been sued. At this time **Senators T. Mathern, Kilzer, Krebsbach and Wardner** asked questions of **Mr. Dias**. He offered his responses (Tape 1, Side B, Meter #'s 9.2-17.9). There was nothing further on SCR 4049 at this time. Chairman Krebsbach closed the hearing on SCR 4049. **Senator T. Mathern** reiterated his reasons for introducing this resolution to the committee. He made a motion for a Do Pass on SCR 4049, seconded by **Senator Dever**. Comments were offered by **Senators C. Nelson, Dever, Kilzer, and T. Mathern**. Roll Call Vote indicated 6 Yeas, 0 nays, 0 Absent or Not Voting. **Senator Kilzer** will carry the bill.

REPORT OF STANDING COMMITTEE (410)
March 29, 2001 12:05 p.m.

Module No: SR-55-7120
Carrier: Kilzer
Insert LC: . Title: .

REPORT OF STANDING COMMITTEE

SCR 4049: Government and Veterans Affairs Committee (Sen. Krebsbach, Chairman)
recommends **DO PASS** (6 YEAS, 0 NAYS, 0 ABSENT AND NOT VOTING).
SCR 4049 was placed on the Eleventh order on the calendar.

2001 HOUSE GOVERNMENT AND VETERANS AFFAIRS

SCR 4049

2001 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. SCR 4049

House Government and Veterans Affairs Committee

Conference Committee

Hearing Date 4/4/01

| Tape Number | Side A | Side B | Meter # |
|---|--------|--------|---------|
| J | X | | 0-1407 |
| | | | |
| | | | |
| Committee Clerk Signature <i>Robin J. Small</i> | | | |

Minutes:

REP. M. KLEIN called the hearing to order with all committee members present, except REP. GRANDE and REP. CLARK.

In favor:

SEN. TIM MATHERN, DISTRICT 11

Please see attached testimony.

REP. M. KLEIN asks what is the time limit on this? MATHERN replies that it is around six years. Would like to look at all the things that pertain to this and maybe set a date.

REP. M. KLEIN asks if there are other states that are doing this or have already done this.

MATHERN replies that he believes that four or five other states have done this.

REP. KLEMIN asks why there is limitation on public buildings. MATHERN replies because of the concerns that were brought to him. REP. KLEMIN asks about the removal or abatement costs, what about injuries? MATHERN replies that was not the intent. Maybe an assessment.

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House Government and Veterans Affairs Committee

Bill/Resolution Number SCR 4049

Hearing Date 4/04/01

MATHERN comments that is a good point and it parallels in detail. REP. KASPER asks how long have they stopped manufacturing paint with lead in it? MATHERN states that many companies have voluntarily quit using it or decreased in the use. They banned the use of lead paint eventually in 1978. REP. KASPER asks so it was in the late seventies it was removed from paint. MATHERN replies that is true but it is still being used in commercial uses.

In favor:

REP. GEORGE KEISER, DISTRICT 47

KEISER talks about the federal governments outlook on this subject. Statute of limitations. Lead poisoning is caused from friction and the lead paint dust that could be inhaled. Lead paint in old buildings will eventually start to decay and then the dust from the paint can be inhaled easily. Or say the friction of a window painted shut, then one tries to open it and the paint will chip or separate and that could possibly be intaked. KEISER then speaks about farm machinery still being painted with lead based paint. REP. CLEARY asks if this resolution makes sure that this is a study. KEISER replies that it does not.

In favor:

REP. SCOTT KELSH, DISTRICT 11

KELSH wants to state for the record that he is in support of this issue.

Being there was no further testimony in favor or in opposition the hearing was then closed.

ACTION:

REP. BRUSGAARD motioned for a DO PASS and to be PLACED ON THE CONSENT CALENDAR, seconded by REP. HAAS. The roll call was taken with 13 YES, 0 NO and 2

ABSENT AND NOT VOTING. The motion carries. The CARRIER of the bill is

REP. BRUSEGAARD.

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House Government and Veterans Affairs Committee

Bill/Resolution Number SCR 4049

Hearing Date 4/04/01

SCR 4049: DO PASS AND TO BE PLACED ON THE CONSENT CALENDAR 13-0

CARRIER: REP. BRUSEGAARD

Date: 4/4/01

Roll Call Vote #: 1

2001 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. SCR 4049

House GOVERNMENT AND VETERANS AFFAIRS Committee

Subcommittee on _____

or

Conference Committee

Legislative Council Amendment Number _____

Action Taken Do Pass / Placed on Consent Calendar

Motion Made By Brusegaard Seconded By Haas

| Representatives | Yes | No | Representatives | Yes | No |
|-------------------|-----|----|-----------------|-----|----|
| CHAIRMAN KLEIN | ✓ | | REP KROEBER | ✓ | |
| VICE CHAIR GRANDE | | | | | |
| REP BELLEW | ✓ | | | | |
| REP BRUSEGAARD | ✓ | | | | |
| REP CLARK | | | | | |
| REP DEVLIN | ✓ | | | | |
| REP HAAS | ✓ | | | | |
| REP KASPER | ✓ | | | | |
| REP KLEMIN | ✓ | | | | |
| REP MEIER | ✓ | | | | |
| REP WIKENHEISER | ✓ | | | | |
| REP CLEARY | ✓ | | | | |
| REP HUNSKOR | ✓ | | | | |
| REP METCALF | ✓ | | | | |

Total (Yes) 13 No 0

Absent 2

Floor Assignment Rep. Brusegaard

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE (410)
April 4, 2001 10:16 a.m.

Module No: HR-59-7707
Carrier: Brusegaard
Insert LC: . Title: .

REPORT OF STANDING COMMITTEE

SCR 4049: Government and Veterans Affairs Committee (Rep. M. Klein, Chairman) recommends **DO PASS** and **BE PLACED ON THE CONSENT CALENDAR** (13 YEAS, 0 NAYS, 2 ABSENT AND NOT VOTING). SCR 4049 was placed on the Tenth order on the calendar.

2001 TESTIMONY

SCR 4049

Government and Veteran Affairs Committee

Testimony of Senator Tim Mathern, March 29, 2001

Madam Chairman Krebsbach and Members of the Committee. My name is Tim Mathern. I am the Senator from District 11 in Fargo. Thank you for taking the time today to talk about lead based paint as noted in SCR 4049. Lead based paint is a hazard, (refer to page three of the booklet attached). Also I refer you to Lead Hazards Fact Sheet attached which I asked the ND Department of Health to prepare for me.

I initially wished to introduce a delayed bill to address the statute of limitations for actions relating to abatement of lead-based paint in public buildings. This issue is similar to the asbestos abatement problem for which legislation was addressed in 1993. A copy of the bill that I had considered introducing is attached to my testimony. Senator Nelson, following discussions with the Attorney General suggested a study, which is why I am before you today.

Lead is a toxin. It is in our public buildings. An extremely small amount of lead can have a negative effect on humans. I am told that if you were to take a nickel and break it into 2 million pieces, only 15 of these pieces spread over a square foot of space would be enough to act as an intoxicant to a child. We need to deal with it and responsibility for costs involved may accrue to taxpayers and may need to accrue to paint manufactures if there is responsibility there.

I introduced this matter at the request of the City of Fargo to address the statute of limitations on when actions can be brought regarding the removal of this paint from public buildings. I think it is good for the state, our political subdivisions, and paint manufacturers to have a definite date at which time public building owners in North Dakota must bring a cause of action for removal or other abatement costs associated with lead based paint. This study resolution directs the legislative council to study the matter and to bring forth recommendations to the next legislative session.

Thank you for your consideration and attention to this matter. Others will be here to testify to this resolution but I am willing to address questions you may have. I ask you to recommend a Do Pass on SCR 4049.

SENATE BILL NO.

Introduced by

Senator T. Mathern

(Approved by the Delayed Bills Committee)

1 A BILL for an Act to create and enact a new section to chapter 28-01 of the North Dakota
2 Century Code, relating to limitation of actions for lead-based paint claims.

3 **BE IT ENACTED BY THE LEGISLATIVE ASSEMBLY OF NORTH DAKOTA:**

4 **SECTION 1.** A new section to chapter 28-01 of the North Dakota Century Code is
5 created and enacted as follows:

6 **Limitation of action for lead-based paint claims.**

- 7 1. The legislative assembly finds that it is in the best interests of the general public,
8 particularly those persons who may bring claims regarding lead-based paint in
9 public buildings and those against whom the claims may be brought, to set a
10 specific date by which public building owners must bring a cause of action for
11 removal or other abatement costs associated with the presence of lead-based
12 paint in their buildings. By enactment of this statute of limitations, the legislative
13 assembly does not imply that suits would otherwise be barred by an existing
14 limitations period.
- 15 2. Notwithstanding any other provision of law, an action to recover costs for removal
16 of lead-based paint from a public building; recover costs for other measures taken
17 to locate, correct, or ameliorate a problem relating to lead-based paint in a public
18 building; or for reimbursement for removal, correction, or amelioration of a
19 lead-based paint problem in a public building must be commenced before
20 August 1, 2005. An action that would otherwise be barred before August 1, 2005,
21 as a result of expiration of the applicable period of limitation, is revived or
22 extended. An action relating to lead-based paint revived or extended under this
23 subsection must be commenced before August 1, 2005.

Fifty-seventh
Legislative Assembly

- 1 3. For purposes of this section, "public building" means a building owned by a county,
- 2 city, township, school district, park district, or any other unit of local government or
- 3 the state or an agency, industry, institution, board, or department of the state.

Lead Hazards Fact Sheet

Hazard Summary

- Lead is a **very toxic** element, causing a variety of effects at low dose levels.
- **Brain damage, kidney damage, and gastrointestinal distress** are seen from acute (short-term) exposure to high levels of lead in humans.
- Chronic (long-term) exposure to lead in humans results in effects on the **blood, central nervous system (CNS), blood pressure, kidneys, and Vitamin D metabolism. Children** are particularly sensitive to the chronic effects of lead, with slowed cognitive development, **reduced growth** and other effects reported.
- The U.S. Environmental Protection Agency (EPA) has not established a Reference Dose (RfD) or a Reference Concentration (RfC) for lead.
- **Reproductive effects, such as decreased sperm count in men and spontaneous abortions in women**, have been associated with lead exposure.
- The developing fetus is at particular risk from maternal lead exposure, with **low birth weight and slowed postnatal neurobehavioral development noted.**
- Human studies are inconclusive regarding lead exposure and cancer, while animal studies have seen an increase in **kidney cancer** from lead exposure by the oral route. EPA has classified lead as a Group B2, **probable human carcinogen.**

Human exposure to lead occurs through a combination of inhalation and oral exposure, with inhalation generally contributing a greater proportion of the dose for occupationally exposed groups, and the oral route generally contributing a greater proportion of the dose for the general population. The effects of lead are the same regardless of the route of exposure (inhalation or oral) and are correlated with internal exposure, as blood lead levels. For this reason, this fact sheet will not discuss the exposure in terms of route but will present it in terms of blood lead levels.

Health Hazard Information

*References are available, but not included.

Acute Effects:

- Death from lead poisoning may occur in children who have blood lead levels greater than 125 $\mu\text{g}/\text{dL}$ and brain and kidney damage have been reported at blood lead levels of approximately 100 $\mu\text{g}/\text{dL}$ in adults and 80 $\mu\text{g}/\text{dL}$ in children.
- Gastrointestinal symptoms, such as colic, have also been noted in acute exposures at blood lead levels of approximately 60 $\mu\text{g}/\text{dL}$ in adults and children.
- Short-term (acute) animal tests, such as the LC_{50} test in rats, have shown lead to have moderate to high acute toxicity.

Chronic Effects (Noncancer):

- Chronic (long-term) exposure to lead in humans can affect the blood. Anemia has been reported in adults at blood lead levels of 50 to 80 $\mu\text{g}/\text{dL}$, and in children at blood lead levels of 40 to 70 $\mu\text{g}/\text{dL}$.
- Lead also affects the nervous system. Neurological symptoms have been reported in workers with blood lead levels of 40 to 60 $\mu\text{g}/\text{dL}$, and slowed nerve conduction in peripheral nerves in adults occurs at blood lead levels of 30 to 40 $\mu\text{g}/\text{dL}$.
- Children are particularly sensitive to the neurotoxic effects of lead. There is evidence that blood lead levels of 10 to 30 $\mu\text{g}/\text{dL}$, or lower, may affect the hearing threshold and growth in children.
- Other effects from chronic lead exposure in humans include effects on blood pressure and kidney function, and interference with vitamin D metabolism.
- Animal studies have reported effects similar to those found in humans, with effects on the blood, kidneys, and nervous, immune, and cardiovascular systems noted.)
- EPA has not established an RfC or an RfD for lead.
- EPA's Office of Air Quality Planning and Standards, for a hazard ranking under Section 112(g) of the Clean Air Act Amendments, considers lead to be a "high concern" pollutant based on severe chronic toxicity.

Reproductive/Developmental Effects:

- Studies on male lead workers have reported severe depression of sperm count and decreased function of the prostate and/or seminal vesicles at blood lead levels of 40 to 50 $\mu\text{g}/\text{dL}$. These effects may be seen from acute as well as chronic exposures.
- Occupational exposure to high levels of lead has long been associated with a high likelihood of spontaneous abortion in pregnant women. However, the lowest blood lead levels at which this occurs has not been established. These effects may be seen from acute as well as chronic exposures.
- Prenatal exposure to lead produces toxic effects on the human fetus, including increased risk of preterm delivery, low birthweight, and impaired mental development. These effects have been noted at maternal blood lead levels of 10 to 15 $\mu\text{g}/\text{dL}$, and possibly lower. Decreased IQ scores have been noted in children at blood lead levels of approximately 10 to 50 $\mu\text{g}/\text{dL}$.
- Human studies are inconclusive regarding the association between lead exposure and birth defects, while animal studies have shown a relationship between high lead exposure and birth defects.

Cancer Risk:

- Human studies are inconclusive regarding lead and an increased cancer risk. Four major human studies of workers exposed to lead have been carried out; two studies did not find an association between lead exposure and cancer, one study found an increased incidence of respiratory tract and kidney cancers, and the fourth study found excesses for lung and stomach cancers. However, all of these studies are limited in usefulness because the route(s) of exposure and levels of lead to which the workers were exposed were not reported. In addition, exposure to other chemicals probably occurred.
- Animal studies have reported kidney cancer in rats and mice exposed to lead via the oral route.
- EPA considers lead to be a probable human carcinogen (cancer-causing agent) and has classified it as a Group B2 carcinogen.

Health Data from Inhalation Exposure

| Concentration (mg/m ³) | Health numbers ^a | Regulatory, advisory numbers ^b |
|------------------------------------|--|--|
| 1,000.0 | • LC ₅₀ (tetramethyl lead) (8,870 mg/m ³) | |
| 150.0 | • LC ₅₀ (tetraethyl lead) (850 mg/m ³) | |
| 0.1 | | • ACGIH TLV (0.15 mg/m ³) • NIOSH REL (0.10 mg/m ³) |
| 0.01 | | • OSHA PEL (0.05 mg/m ³) |
| 0.001 | | • NAAQS (0.0015 mg/m ³) |

For lead: 1 ppm = 6.5 mg/m³.

ACGIH TLV--American Conference of Governmental and Industrial Hygienists' threshold limit value expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effects.

LC₅₀ (Lethal Concentration₅₀)--A calculated concentration of a chemical in air to which exposure for a specific length of time is expected to cause death in 50% of a defined experimental animal population.

NIOSH REL--National Institute of Occupational Safety and Health's recommended exposure limit; NIOSH-recommended exposure limit for an 8- or 10-h time-weighted-average exposure and/or ceiling.

NAAQS--National Ambient Air Quality Standard.

OSHA PEL--Occupational Safety and Health Administration's permissible exposure limit expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect averaged over a normal 8-h workday or a 40-h workweek.

^a Health numbers are toxicological numbers from animal testing or risk assessment values developed by EPA.

^b Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by the Government or other groups as advice.

Major Health Effects Noted from Lead Exposure

| Blood lead levels (µg/dL) | Health numbers ^a | Regulatory, advisory numbers ^b |
|---------------------------|--|---|
| 100.0 | • Death (children) (125 µg/dL) • Brain and kidney damage (adults) (100 µg/dL) | |
| 75.0 | • Brain and kidney damage (children) (80 µg/dL) | |
| 40.0 | • Increased blood pressure (40 µg/dL) | |
| 30.0 | • Slowed nerve conduction velocity (30 µg/dL) | |
| 20.0 | • Decreased IQ and growth in young children (20 µg/dL) | |
| 10.0 | • Preterm birth, reduced birthweight (10 to 15 µg/dL) | |

^a Health numbers are toxicological numbers from animal testing or risk assessment values developed by EPA.

^b Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by the Government or other groups as advice.

**APPROXIMATE COSTS
FOR LEAD-BASED PAINT ABATEMENT**

| | | |
|--|---|---------------------------|
| Porch Floor | Provide and install porch enclosure | \$4.00 SF |
| Treads & Risers | Laminate tread, 5/4" pine Laminate riser, 1/4" ply | \$100.00 EA \$30.00 EA |
| Lattice Work Skirting Porch | Stabilize | \$1.50 SF |
| III. INTERIOR REHABILITATION (includes lead-safe and lead hazard control costs) | | |
| Closet Door and Frame | Rework and stabilize | \$90.00 EA |
| Baseboards | Stabilize | \$1.50 SF |
| Closet Clothes Pole & Shelf | Remove, reconstruct | \$75.00 EA |
| Windows | Remove, replace with D.H., D.G., PVC | \$200.00 to 375.00 EA |
| Interior Window Trim | Stabilize | \$2.00 LF |
| Walls & Ceilings | Stabilize | \$1.50 SF |
| Entrance Door & Frame | Rework and stabilize | \$90.00 EA |
| Fireplace Mantle | Stabilize | \$1.50 SF |
| IV. STAIRWELL REHABILITATION (includes lead-safe and lead hazard control costs) | | |
| Stringer Trim | Stabilize | \$1.50 SF |
| Balustrade & Newel Posts (Newel) | Stabilize | \$8.00 LF + \$30 EA |
| Column & Support Beam | Stabilize | \$1.50 SF |
| V. GENERAL CONDITIONS (includes lead-safe and lead hazard control costs) | | |
| Mobilization & Preparation | Containment set-up | \$.75 SF |
| Final Clean | HEPA vacuum, wet wash | \$.75 SF |
| Waste Disposal | Per local code | \$300 allowance/dwelling |

ARCHITECTS & ENVIRONMENTAL CONSULTANTS

AEC, PC P.O. BOX 14959 • GRAND FORKS, NORTH DAKOTA 58208-4959

March 13, 2001

Mr. Timothy M. O'Keefe
Solberg, Stewart, Miller, Johnson, Tjon
Attorneys at Law
1129 5th Avenue South - PO Box 1897
Fargo, North Dakota 58107-1897

MAR 15 2001

RE: Lead-based Paint Legislation

Dear Mr. O'Keefe:

As requested, enclosed are the following general lead-based paint information items. I have taken this information from my UND Environmental Training Institute training manuals used for lead-based paint inspector/risk assessor training which was easiest to access in a short period of time.

- * Background Information (pages B-1 through B-8).
- * Health Effects (pages C-1 through C-10).
- * Regulatory Background (pages D-1 through D-20).

Also enclosed is "Lead in Construction" as published by the US Department of Labor OSHA 3142, 1993 (5 pages).

Relative to costs for specific lead-based paint abatements, when talking with you in our telephone conversation, I did not think of the fact that we lost most of project records during the 1997 Grand Forks flood. In addition, many of our projects regarding abatement of lead-based paint also involved abatement of asbestos, making a true separation of costs for each difficult.

One example would be a 1995 North Dakota public school renovation, where lead-based paint was abated from corridor walls outside two sets of boys and girls bathrooms as well as at corridor walls as needed for three new doors (total estimated square footage at all locations was probably about 1,000 sf) and the abatement cost was \$116,450. While this particular project may have been more expensive than is typical for a lead-based paint abatement, it is an example of what costs can be under a given scenario. Lead-based paint is an expensive proposition to do an inspection (find it), to do a risk assessment, to design and abate the material, or to simply maintain an operations and maintenance plan (managing the lead-based paint in place).

From the many lead-based paint inspections we have conducted, albeit too small a quantity to determine some statistical confidence level, I find the following to hold somewhat true for commercial and institutional type buildings:

Dates of construction: Lead-based paint was most common prior to 1960, and secondly most common between 1960 and 1977; however, lead-based paint is still available and being applied. At a school a couple years ago, we conducted a lead-based paint inspection, and the janitor informed us we did not need to sample the railing because it was less than a year old and he had painted it himself. We collected a sample and the

Mr. Timothy M. O'Keefe
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analysis indicated it was lead-based paint, much to surprise of the janitor. Lead-based paint was banned only for consumer purchase and use, although many manufacturers reduced or eliminated lead from many of their other paint products voluntarily.

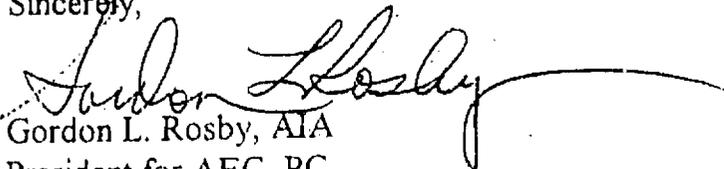
Interior painted wall and/or ceiling surfaces: Painted gypsum board and plaster surfaces are generally not lead-based paint. If lead-based paint is found, it is more common at toilet rooms, showers, kitchens, laundry rooms, locker rooms, and other rooms where high moisture occurs and/or more durable surfaces are generally desired. Also, interior surfaces where bright accent colors have been used, especially orange and deeper/brighter colors of browns, blues, yellows, etc. are commonly lead-based paint.

Exterior surfaces: Lead-based paint at exterior surfaces are common, especially wood doors, windows, soffits, siding, trim, etc. The silver coating used on smooth surface built-up roofing is typically a lead-based coating. As an example, I would be very surprised to find many painted wood windows on the university campus buildings in North Dakota that are not coated with lead-based paint. In fact, of the lead-based paint samples we have collected, paint at wood windows typically have a very high content of lead in comparison to other painted surfaces.

Metal surfaces (interior or exterior): Metal surfaces such as structural steel, steel joists, steel decking, steel railings, steel stairs, steel angles and lintels, hollow metal doors and frames, and miscellaneous steel were generally prime coated with a red lead primer by the fabricator prior to shipment to the site. Finish coats of lead-based paint on metal surfaces were also common because of the durability, color fastness, smooth finish, etc. As a result, painted metal surfaces tend to be lead-based paint more often than finishes on other types of surfaces.

This is just a sampling of information. There is a tremendous amount of information on lead-based paint, but I'm not sure what will do you the most good at this time. I am sending this letter by facsimile, but the attachments will only be sent with the original letter by first class mail. Please call our office if you need additional information or if I can help in some other way. I'd be happy to talk with specific North Dakota legislators by telephone if needed. This is about all I have time for this week, but can help get more next week if needed.

Sincerely,


Gordon L. Rosby, AIA
President for AEC, PC

BACKGROUND INFORMATION

OBJECTIVE:

To provide inspectors with an understanding of the history and uses of lead.

LEARNING TASKS:

Inspectors should be able to:

- Explain the history and uses of lead.
- Recognize the presence of a lead hazard in a dwelling.

As an inspector, this section is important because:

- You need to understand lead and its uses to better assess the lead hazard you are inspecting.
- Residents of dwellings you test, may question you about why you are involved in the testing process.
- You should understand the extent of the problem in order to effectively fulfill your role in the testing process.

HISTORY OF LEAD USE

Elemental lead is a heavy, soft, malleable bluish metal. It generally occurs in nature in the form of ores, and was recovered in early times as a by-product in the smelting of silver. Once lead is mined, processed and introduced into man's environment, it is a potential problem forever. No known or foreseeable technology will destroy or render it harmless. Nearly all of the lead in the human environment is due to man's activities.

The history of lead use traces back many centuries. The oldest known lead object was a statue excavated in Turkey and dated somewhere around 6500 B.C. Lead has been mined, smelted, and compounded for thousands of years. Lead objects have been found in Egyptian tombs. In ancient Syria, lead was used in rods and pieces as a means of currency. World production of lead 4000

years ago has been estimated at 160 tons per year; 2700 years ago, it was 10,000 tons per year; and, during the Roman Empire, lead production increased to 80,000 tons per year.

During the Roman Empire, lead was used extensively in many aspects of life. It was used to line vessels that stored water and wine, in utensils, and, in combined form, as a glaze on pottery. It is hypothesized that the decline of the Roman empire can be attributed, in part, to lowered birth rates and increased mental disturbances caused by lead poisoning among the populace.

The ancient Greeks were the first to write about lead poisoning, but, for the most of its long history, lead had not been suspected as a hazard. In fact, doctors over the years have utilized lead as a "treatment" for various diseases. A medical dictionary dated in 1745 suggests that lead dissolved in a mild acid such as vinegar might be used to cure sores or skin diseases. Others claimed that lead therapy could cure consumption, diabetes, dysentery, and epilepsy.

The occupational hazards of lead were first reported in 1713 by Bernardo Ramazzini, who described lead intoxication in potters working with lead glaze. Later in the 18th century, Benjamin Franklin (who was a printer and handled lead type) described the toxic effects of lead occurring in tradesmen who used lead in their occupations. These tradesmen included printers, plumbers, and painters. He lamented (in a now famous letter to his friend Ben Vaughn) the fact that no one seemed to be doing anything to protect people from the known poisonous nature of lead.

Centuries of mining, smelting, and use have released millions of tons of lead into the environment. With the advent of the industrial age in the 1800's the use of lead increased, and with it, the potential for occupational exposures. Its versatility, as well as favorable physical and chemical properties, accounted for its extensive use. Much of its usefulness is due to its plasticity and softness. It can be molded into containers and mixed with other metallic elements. Lead was used in building construction, especially roofing, cornices, electrical conduits, and water and sewer pipes.

Lead compounds (chemicals consisting of lead in combination with other elements such as oxygen or chromium) such as white lead and lead chromate were widely used as pigments in paint. Lead is also commonly present in varnishes and primers. Although the use of lead-based paint, in particular on interior surfaces, has declined over the years, most housing units built before 1980 contain some lead-based paint.

SOURCES OF ENVIRONMENTAL LEAD CONTAMINATION

Sustained use of large quantities of lead over many years has resulted in extensive environmental contamination. Although lead occurs naturally in small quantities in the earth's crust, by far the greatest risk of exposure to lead derives from man-made processes and products. The principal industrial use of lead is in the manufacture of electrical storage batteries. Other current uses include the production of ammunition, various chemicals, and sinkers for fishing. The use of lead in paint additives, gasoline additives, solder, and pipes has been reduced substantially or eliminated; but the old installed products or residuals from their use remain in the environment.

The major source of lead for most adults is occupational exposure. For infants and young children, however, surface dust and soil are the major lead hazard, because young children play on floors and in outside play spaces that may be contaminated with lead. They frequently put fingers, toys, and other objects in their mouths. The surface dust and soil exposure pathways are often derived from lead-based paint. Air is a less important pathway for lead deriving from lead-based paint, although lead may be in airborne dust during refinishing or renovation activities or because of windblown surface dust. Finally, children are often exposed to lead which is brought into the house on the work clothes of parents.

An individual may become poisoned through exposure to a single high level source or through the cumulative effect of repeated exposure to several low level sources. High level exposures can occur through an occupational route, or through an environmental route, such as deteriorating paint in the home. High level or acute lead exposures can be severe, resulting in convulsions, coma, and even death.

Experts agree there are **three major sources of lead exposure today: (1) lead-based paint; (2) urban soil and dust** (depositions from paint, gasoline, and industrial sources); and **(3) drinking water**, primarily from leaded solder, brass fittings and fixtures, and service lines. These sources are considered major because many people are generally exposed; other sources can result in high exposures in individual cases. Contributions from other sources add to the problem and are, therefore, of potential concern.

Lead in Paint

The amount of lead-based paint in housing is significant: tens of millions of housing units contain at least some lead-based paint. Children living in homes with lead-based paint become exposed to that lead by directly eating chips of lead-based paint or chewing on protruding surfaces painted with lead-based paint. The more common route of exposure, however, is the ingestion of lead-bearing dust that is generated by the paint when it deteriorates, chalks, or is disturbed through renovation or even abrasion from the opening and closing of windows. Even in this less direct way, lead-based paint can be a source of severe lead poisoning.

The mechanism by which children ingest lead-based paint is often normal hand-mouth activity. Infants commonly put non-food objects covered with leaded dust or paint into their mouths, while toddlers frequently handle toys and are exposed to accessible surfaces such as window sills. In addition, young children absorb a significantly higher percentage of ingested lead than adults, and absorption is increased by malnutrition and poor diet. There is an association between the presence of lead-based paint and the presence of excessive levels of lead in dust and soil.

Daycare facilities represent a potential source of lead exposure to children. The Day care facility can have the same problems (i.e., deteriorating paint inside and chalking of paint outside the facility, and dust, soil, or water contamination with lead) as an individual home. Lead in that setting could cause exposure to children in some circumstances.

Lead in Surface Dust and Soil

Several studies published during the past two decades by the U.S. Environmental Protection Agency (EPA), the Agency for Toxic Substances and Disease Registry (ASTDR), and investigators at the University of Cincinnati have confirmed the association between dust lead and childhood blood lead. Blood lead levels generally rise from 3 to 7 micrograms per deciliter ($\mu\text{g}/\text{dl}$) for every 1000 parts per million (ppm) increase in soil or dust lead concentration. Particle size and the chemical form of the lead affect the bioavailability of lead in dust and soil. Access to soil, behavior patterns, presence of ground cover, and a variety of other factors also influence the relationship between soil dust lead and blood lead.

Surface dust includes house dust and street dust. Soil may be divided into (1) the very top layer of soils with which people are in contact, and (2) soil below the very top layer. Lead in surface dust and soil of all types can come from weathering and chipping of lead-based paint, from scraping and sanding of lead-based paint in preparation for refinishing, and from renovations that break surfaces painted with lead-based paint. House dust can also come from these activities. However, other potential sources of leaded dust include abrasion on doors and windows; atmospheric fallout from the combustion of leaded gasoline which was deposited prior to the phase down in use; factory emissions; and, dust and dirt that is carried into the home on shoes and clothing, especially from factories or construction sites, or by pets.

Approximately 14% of all housing units built prior to 1980 have lead in interior surface dust that exceeds the levels recommended in the HUD Interim Guidelines. The chance of a home having excessive dust lead is about twice as large if the home has high levels of interior lead-based paint than if it does not. However, most of the homes with interior leaded dust have it only on the window sills or in the window wells inside which the bottom of the window fits when closed. Only about 1 million units have excessive lead dust exclusively on the floors.

Soil outside the building is another direct source of childhood lead exposure. It is also a potential source of lead in house dust since soil can be tracked into the dwelling or blown in.

Approximately 16% of all homes built prior to 1980 have concentrations of lead in soil adjacent to the house that exceed 500 ppm (although this is the soil lead clean-up level currently used at Superfund sites in residential settings. EPA is not recommending routine remedial action at this level). The chance of levels greater than 500 ppm occurring is at least 4 to 5 times greater if the house has exterior lead-based paint than if it does not. The greatest threat of lead contamination is around the close perimeter of the house at the roof dripline. Activity in this area should be restricted if the soil is suspected of being lead contaminated.

Lead in Water

Lead-contaminated drinking water also contributes to the overall level of exposure. For an average 2-year old child, drinking water contributes about 20% of total lead exposure. The proportion of exposure to lead attributable to drinking water, however, varies with different levels of lead in the water and with variation in other lead exposures. Drinking water may contribute from as little as 5% to more than 50% of children's total lead exposure. Infants whose diets are dependent on formula may receive more than 85% of their lead from drinking water.

Lead contaminates drinking water primarily through corrosion of plumbing materials in the distribution/plumbing system. Potential sources of lead in drinking water systems may include: 1) water service mains (rarely); 2) lead plumbing goosenecks or pigtails; 3) lead service lines and interior household plumbing, especially where lead solder was used; 4) lead-containing alloys, such as faucets or valves made of brass or bronze. The main cause of lead contamination in drinking water is corrosion of lead-containing materials in household plumbing. In particular, poorly soldered joints where the solder contains lead, and accumulations of brass fittings, may produce high lead levels in the water.

The amount of lead in drinking water attributable to corrosion depends on a number of factors, including the amount and age of lead-containing materials susceptible to corrosion, the amount of time the water is in contact with these materials, and the corrosivity of the water.

Water corrosivity is determined by its acidity, temperature, and total dissolved solids. Hot, acidic, "soft" (low in dissolved solids) water is the most corrosive towards lead. Conversely, cold, alkaline, "hard" water is least corrosive. New solder and brass fittings will release more lead into the water than older ones. As time passes, mineral deposits form a coating on the surface of materials in contact with the water. The coating insulates the water from the lead and decreases the rate of corrosion.

Long contact time between the water and lead-containing materials promotes the accumulation of dissolved lead in the water. Thus, water stagnant in the plumbing overnight typically has higher lead levels than flushed water.

Lead in Air

Because of the EPA phase-down in the use of leaded gasoline, there have been significant reductions of lead contamination in air over the past 15 years. The reduction of lead in air correlates very well with declines in childhood blood lead levels between 1976 and 1980 found by the second National Health and Nutrition Examination Survey. EPA reports that total atmospheric lead emissions dropped 94% between 1978 and 1987 due to its phasedown of leaded gasoline, the introduction of unleaded gasoline in new cars, and attrition in the supply of vehicles that burn leaded gasoline.

Air can also be contaminated by emissions from stationary sources, such as smelters and battery factories, and from the combustion of oil, coal, waste oil, and municipal wastes. Windblown dust is another source of air contamination. Lead emissions from industrial and other stationary sources have declined because of compliance with State plans and regulations aimed at achieving national air quality standards.

In the occupational setting, lead in air is a significant problem at many worksites, especially where renovation, lead abatement, and painting of bridges or other steel structures are conducted. The National Institute of Occupational Safety and Health (NIOSH) reports that workers are

apparently frequently poisoned by lead while working on bridges (a high percentage of bridges are painted with lead-based paint). Operations such as abrasive blasting, sanding, burning, or welding on steel structures coated with lead-containing paints may produce very high concentrations of lead dust and fumes.

Lead In Food

Food can be contaminated by deposition of airborne lead onto crops or water, during transportation or processing, or from containers with lead solder, lead glaze or other materials with lead. In food processing, the primary source of lead has been solder in the seams of cans. A phase-out of lead solder in cans began in the late 1970s resulting in a significant reduction in lead in canned food. The Food and Drug Administration (FDA) has developed a comprehensive plan to address lead exposure through food and food-contact surfaces in the United States. However, imported canned foods may still contain lead solder. Pottery and ceramic cookware, plates and crystal (especially imported pieces) may contain high levels of lead. Food or beverages stored in these items can become highly contaminated with lead. Finally, some home remedies for intestinal disorders popular in certain minority communities, e.g., "Azarcon" and "Greta", contain high levels of lead.

Other Sources

Although discussions concerning lead poisoning are often focused on children, adults also are affected by lead. Adults who work in certain industries, such as smelting, auto body repair and painting shops, and construction (including lead abatement), can be at risk themselves. Moreover, they may carry lead contaminated dust into their homes on work clothes, shoes, and hair, if care and precautions are not taken. Proper personal hygiene and work practice precautions should be followed. Also, hobbyists working with stained glass or pottery, and sportsmen who make their own bullets or fishing weights, should exercise caution to minimize lead exposure.

HEALTH EFFECTS

OBJECTIVE:

To provide inspectors with an understanding of the extent of the current hazard and the health effects.

LEARNING TASK:

- ◆ Describe the health effects of lead

INTRODUCTION:

The severity of the health effects of the lead contamination problem is only now being fully realized. Lead in the body can cause serious damage to the central and peripheral nervous system, the cardiovascular system, and the kidneys. Exposure to high concentrations of lead can cause retardation, convulsions, coma, and, sometimes, death. Children are especially vulnerable and susceptible to lead poisoning. Even low levels, persisting during childhood, are known to slow a child's normal development and cause learning and behavioral problems. The Agency for Toxic Substances and Disease Registry (ATSDR), as well as numerous other investigators, reports long-lasting impacts on intelligence, motor control, hearing, and emotional development of children who have levels of lead in the body that are not associated with obvious symptoms.

How Lead Enters the Body

When exposed to an environment that contains lead, an individual can transfer lead into body tissues through eating (ingestion) or breathing (inhalation) fine particles of lead compounds. Inhalation and ingestion are the major routes of exposure for both children and adults.

What Happens to Lead in Your Body

Once in the body, from ingestion or inhalation, lead is distributed via the bloodstream to red blood cells, soft tissue, and bone. Lead in the body is eliminated very slowly by the kidneys and gastrointestinal tract; much smaller amounts are lost through perspiration.

Lead serves no useful purpose in the body. It is a poison which binds with the chemicals that aid biological reactions throughout the body, particularly in the blood-forming system, the brain and nerves, and the kidneys, interfering with the synthesis of many body chemicals. The resulting damage from lead poisoning may be permanent, and, in some cases, fatal.

Symptoms

Acute Lead Poisoning:

The most common symptom of acute lead poisoning is colicky abdominal pain, evolving over days to weeks. Constipation may also occur. The abdominal pain may be severe enough to suggest an abdominal emergency such as a gall bladder attack or appendicitis. Some cases of acute lead poisoning may be associated with destruction of the red blood cells. The other major manifestation of acute lead poisoning is damage to the brain and central nervous system.

Additional non-specific complaints may include irritability, fatigue, weakness, and muscle pain. In more severe cases, warning symptoms of acute, serious brain swelling include vomiting, irritability, restlessness, tremors, and progressive drowsiness. These symptoms may herald the onset of seizures, coma, and possibly death. Rapid development of severe lead poisoning to this degree is uncommon, except in situations where there is massive, uncontrolled exposure to lead.

Chronic Lead Poisoning:

Chronic lead poisoning may result after lead has accumulated in the body over time, mostly in the bone. Long after exposure has ceased, some physiological event such as illness or pregnancy may release this stored lead from the bone and produce adverse health effects such as impaired hemoglobin synthesis, alteration in the central and peripheral nervous systems, hypertension, effects on the male and female reproductive systems, and damage to the developing fetus (lead freely crosses the placenta).

Biological Evaluation

Exposure to lead is characterized either by the concentration of lead in the material (air, water, food, dust, soil or paint) to which people are exposed in the environment, or by the concentration

of lead in whole blood, usually expressed in micrograms of lead per deciliter of blood ($\mu\text{g}/\text{dl}$). Although there are some other clinical procedures to test for lead in the body, **the blood lead level is the best initial measurement to evaluate lead exposure.** It indicates the amount of lead circulating in the bloodstream, often a measure of recent exposure to lead. However, as noted above, lead absorbed in the bone in the past can be mobilized during pregnancy, wasting illness or injury, and osteoporosis, so that blood lead is **not always** an indication of recent exposure.

The Level of Concern

Over the past 20 years, the Centers for Disease Control (CDC) has responded to emerging knowledge about the effects of low-level lead exposure in children by progressively lowering the blood lead level said to warrant medical intervention. In 1970, the level was $60 \mu\text{g}/\text{dl}$. Shortly after the Lead-based Paint Poisoning Prevention Act was enacted in 1971, the level was lowered to $40 \mu\text{g}/\text{dl}$. In 1975, the level was lowered to $30 \mu\text{g}/\text{dl}$ and, in 1985, it was lowered still further to $25 \mu\text{g}/\text{dl}$. In October, 1991, the 1985 intervention level was revised downwards to $10 \mu\text{g}/\text{dl}$, and the single, all-purpose definition of childhood lead poisoning was replaced by a multi-tier approach to follow-up. The multi-tier approach emphasizes the implementation of primary prevention activities, this is, elimination of lead hazards before children are poisoned, as blood lead levels of concern are lowered.

CDC now states that **"the goal of all lead poisoning prevention activities should be to reduce children's blood lead levels below $10 \mu\text{g}/\text{dl}$."** They recommend that community prevention activities be undertaken if many children in the community have blood lead levels greater than or equal to $10 \mu\text{g}/\text{dl}$. medical evaluation and environmental investigation and remediation should be implemented for all children with blood lead levels greater than or equal to $20 \mu\text{g}/\text{dl}$. All children with blood lead levels greater than or equal to $15 \mu\text{g}/\text{dl}$ should receive individual case management, including nutritional and educational interventions and more frequent screening. Furthermore, depending on the availability of resources, environmental investigation (including a home inspection) and remediation should be done for children with blood lead levels

of 15-19 $\mu\text{g}/\text{dl}$, if such levels persist. However, the highest priority should continue to be children with the highest blood lead levels.

It should be pointed out that even the present level of concern, 10 $\mu\text{g}/\text{dl}$, is far above the "natural background" blood lead level, which, in pre-industrial humans, was on the order of 0.1 $\mu\text{g}/\text{dl}$, a factor of 100 lower. Lead has no beneficial effects on humans. Moreover, the fatal dose to a young child is 100 - 150 $\mu\text{g}/\text{dl}$, only about 10 times the level of concern. Thus, the "safety factor" for lead is only about 10; EPA and other agencies routinely require much higher safety factors for other environmental contaminants. Under no circumstances should 10 $\mu\text{g}/\text{dl}$ be regarded as a harmless level of blood lead.

Minnesota Statute 144.9504, subd. 2 **Lead Inspection:** An inspecting agency shall conduct a lead inspection of a residence according to the following venous blood levels and time frames:

| | Blood lead level | Lead inspection |
|--------------------------|--|------------------------|
| Child or pregnant female | 70 µg/dl | within 48 hours |
| Child or pregnant female | 45 µg/dl | within 5 working days |
| Child | 20 µg/dl | within 10 working days |
| Child | persistent level of 15 - 19 µg/dl for 90 days after initial identification | within 10 working days |
| Pregnant Female | equal to or greater than 10 µg/dl | within 10 working days |

An inspecting agency may also conduct a lead inspection for children with any elevated blood lead level within the limits of available state and federal appropriations.

In a building with two or more dwelling units, an inspection agency shall inspect the individual unit in which the conditions are met and shall also inspect all common areas. If a child visits one or more other sites such as another residence, or a residential or commercial child care facility, playgrounds, or school, the inspecting agency shall also inspect the other sites.

Within limits, the inspecting agency shall identify the known addresses for the previous 12 months of the child or pregnant female with blood lead levels of at least 20 µg/dl for the child or at least 10 µg/dl for the pregnant female; notify the property owners, landlords, and tenants at those addresses that an elevated blood lead level was found in a person who resided at the property; and give them a copy of the lead inspection guide. The inspection agency shall provide the notice without identifying the child or pregnant female.

Further information for secondary prevention as covered under 144.9504, please refer to your lead regulation manual, Minnesota tab.

Treatment

The first step in the treatment of suspected lead poisoning is to **remove the patient from further exposure**. The medications used for treating lead poisoning are known as "chelators." Chelation is used only in cases of high levels of blood lead under the care of a medical specialist, as there are

serious side effects of this treatment, such as anemia. Because of these side effects, chelation should never be used as a preventive measure. Chelation is the process by which lead is removed from the body of an individual by the use of medication. Chelators irreversibly bind the lead circulating in the bloodstream so that it is excreted through the urinary system.

EXPOSURE MEASUREMENTS

How are doses measured and who sets acceptable exposure levels?

Inhalation is the most common way people are usually exposed to toxic substances. Such materials may be found on abatement sites in the form of paint strippers, fuels for power equipment and paint thinners. Toxic substances found in the air are measured in the following ways:

- ◆ The quantity of the chemical substance contained in a volume of air usually is measured chemically and expressed as a concentration - for example, parts per million of air (ppm).
- ◆ Concentration of dusts and mists are measured in milligrams per cubic meter of air (mg/m^3). As an example, consider a postage stamp which weights about 7 mg. An air concentration of $7 \text{ mg}/\text{m}^3$ is equivalent to about the weight of one postage stamp of contaminant in each cubic meter of air.
- ◆ Fiber measurements are usually expressed as number of fibers per cubic centimeter ($\text{fibers}/\text{cm}^3$).

While the most common exposure pathway for toxic substances is inhalation, that is not always true of lead. Another important route of exposure is through ingestion. For that reason, good personal hygiene practices are an important element of worker protection. Water for washing is mandatory for good safety and health plans.

EXPOSURE LIMITS

The concentration of a toxic substance in the air can be measured and compared to published exposure levels.

- ◆ Permissible Exposure Limits (PELS) are legal exposure levels set by Occupational Safety and Health Association (OSHA). Employers must keep exposure below the PELs. PELs are legally enforceable by OSHA.
- ◆ Threshold Limit Values (TLVs) are recommendations for exposure limits which are prepared by the American Conference of Governmental Industrial Hygienists (ACGIH). TLV is the time-weighted average concentration for a normal 8-hour workday or a 40-hour work week to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. TLVs are published annually. Employers may use the most current TLVs as guidelines for exposure levels because of frequent review, but these levels are not legally enforceable, unless adopted by OSHA as PELs.
- ◆ Short-term exposure limits (STEL) are set by ACGIH and OSHA. The STEL is a maximum average concentration a person may be exposed to over a short period of time, usually 15 minutes.
- ◆ Threshold limit value - ceiling (TLV-C) is a concentration that should never be exceeded.
- ◆ Time-weighted Averages (TWAs) - most PELs and TLVs are measured as time weighted averages. The purpose of this type of measurement is to determine the average exposure over a typical 8 hours shift.

Lead Exposure (OSHA 29 CFR 1926.62)

For Specific Air Lead Levels

| Regardless of Level | ≥ Action Level (AL) 1-30 Days | ≥ AL Over 30 Days | > Permissible Exposure Limit (PEL) | > 4 x PEL | During Assessment of Trigger Tasks |
|--|---|---|---|--|---|
| (d) Exposure assessment and interim protection | (d) (4) Monitoring representative of exposure for each exposed employee | (j)(1)(ii) Medical surveillance program | (e) Engineering and work practice controls | (g)(2) Clean protective clothing daily | (f) Appropriate respiratory protection |
| (h) Housekeeping | (j)(1)(i) Initial medical surveillance | (j)(3) Medical exams and consultation (if required) | (f) Respiratory protection | | (g) Protective clothing and equipment |
| (l)(5) Hand washing Facilities | (j)(2)(ii) Follow-up blood sampling | | (g) Protective clothing and equipment | | (l)(2) Change areas |
| (l)(1)(i) Hazcom Training and/or 1926.21 Safety Training and Education | (k) Temporary Removal due to elevated blood lead (l)(1)(ii)(iv) Information and training | | (l) Hygiene facilities and practices (m) Signs | | (l)(5) Hand washing facilities (j)(1)(i) Biological monitoring (l)(1)(i) Hazcom training (l)(2)(iii) Respiratory training 1926.21 Safety training and education |

The standard also sets levels for employee blood lead (PbB). Measurement of blood lead levels is a useful indicator of the amount of lead circulating in the blood stream, but give less information about lead stored in tissues. Blood lead levels are important indicators of the likelihood a person may acquire a lead-related disorder.

Initial Blood Lead Test Results

Exposure over action level at lead one day in 12 consecutive months.

| BLL \geq 50 | BLL \geq 40 | BLL < 40 |
|---|--|-------------------------|
| ⇕ | ⇕ | ⇕ |
| Follow-up Test | BLT every 2 months until 2 consecutive | No further surveillance |
| ⇕ | ⇕ | ⇕ |
| BLL \geq 50 | Two consecutive BLL < 40 | |
| ⇕ | ⇕ | ⇕ |
| Medical removal BLT @ month on MRP | | |
| ⇕ | ⇕ | ⇕ |
| Two consecutive BLL < 40 MRP restrictions removed | | |

Exposure over action level more than 30 days in 12 consecutive months

| BLL \geq 50 | BLL > 40 | BLL < 40 |
|---|---|--|
| ⇕ | ⇕ | ⇕ |
| Follow-up test | BLT every 2 months until 2 consecutive BLL < 40 & annual medical exam | BLT every 2 mo. for the first 6 mo. on the job |
| ⇕ | ⇕ | ⇕ |
| BLL \geq 50 | Two consecutive BLL < 40 | Every 6 mo. thereafter |
| ⇕ | ⇕ | ⇕ |
| Medical removal Medical examination (as medically approp.) BLT @ month on MRP | | |
| ⇕ | ⇕ | ⇕ |
| Two consecutive BLL < 40 MRP restrictions removed | | |

Additionally, *Healthy People 2000*, has been adopted by the Centers for Disease Control and has been referenced by NIOSH in several recent documents, uses 25 ug/dl as the medical removal protection limit. This limit has been used in many HUD specifications.

Medical Removal

Medical removal is designed to give employees time to reduce blood lead levels. Removal for lead-exposed occupations is triggered by results of employee blood testing or a physician's opinion. Further detail with regard to medical removal protection is referenced in the OSHA standard 1926.62.

Record Keeping

Employers must retain the following employee information for 30 years, plus duration of employment.

- ◆ Name, social security number and job description.
- ◆ Copy of physician's medical opinion.
- ◆ Results of airborne exposure monitoring done for that employee and representative values provided to the physician.
- ◆ Any employee complaints related to exposure to lead.

Summary

The many adverse health effects of lead, the widespread opportunities for exposure, and the low levels of absorption which may cause serious harm underscore the importance of awareness for both workers and health care providers. The prevention of lead poisoning can be accomplished by understanding the hazards of lead and ensuring meticulous implementation of control measures. An understanding of the health hazards of lead will also encourage inspectors to protect themselves from excessive exposure, and will enable them to answer questions from property owners or residents on the need for lead inspections.

REGULATORY BACKGROUND

OBJECTIVES:

Inspectors should have knowledge of the federal and state regulations as they pertain to their job responsibilities.

- ◆ OSHA Lead in Construction Interim Final Rule (29 CFR 1926.62)
- ◆ Minnesota Department of Health Chapter 4761
- ◆ Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (HUD), June 1995
- ◆ Minnesota Statutes 144.871 to 144.879
- ◆ MPCA Waste Disposal Statute and Rules (MS 116.87 - 116.89 and MR 7005.6010 - 7005.6080).

LEARNING TASKS

- ◆ List the major provisions of the federal OSHA and HUD regulations in regard to lead exposure and lead paint inspections.
- ◆ Describe the applicability of the federal OSHA and HUD regulations
- ◆ Identify all new or changed Minnesota lead abatement laws and rules.
- ◆ Describe the applicability of the new or changed Minnesota lead abatement laws.

As an inspector, this section is important to you because these regulations constitute regulatory requirements which may directly impact the project on which you are working.

OVERVIEW

Over the last two decades, the Federal government has taken a number of key actions to reduce risks associated with lead exposures. It has banned the use of lead in house paint and in the solder and pipes used in public drinking water systems. It has encouraged the phase-out of solder in food cans. EPA has contributed to these efforts by taking action to virtually remove lead from gasoline and, most recently, by promulgating new standards in drinking water.

These actions have been very effective in reducing major sources of lead exposure. Deaths from lead poisoning, which up to 20 years ago were not uncommon, have been almost eliminated. However, old lead-based paint, and the associated contaminated dust and soil, remain largely untouched as environmental sources of lead. Moreover, continuing scientific research has demonstrated that harmful effects may occur at lead levels previously considered safe. Experts agree that a large number of children are still at unacceptable levels of risk.

LEGISLATIVE AND REGULATORY HISTORY

Although many cases of severe lead poisoning were reported in the United States during the first half of this century, it was not until the 1950's that public health officials in some of the larger cities began to trace the cause of many of the cases to old housing with deteriorating lead-based paint. In the 1950s and 1960s several older, larger cities began to regulate the use of lead-based paint, to educate the public on its dangers and how to avoid them, and to screen children for lead poisoning. In 1955, the paint industry adopted a voluntary standard limiting the use of lead in interior paints to no more than one percent by weight of nonvolatile solids.

LBPPPA Amendments (1971) *Lead-Based Paint Poisoning Prevention Act*

- ◆ Prohibited the use of lead-based paint in residential structures constructed or rehabilitated by the Federal Government or with Federal assistance in any form.
- ◆ Defined lead-based paint as paint containing more than 1% by weight.
- ◆ Authorized a national program, administered by the CED to conduct mass screening programs to identify children with lead poisoning, refer them for medical treatment, investigate their residential environments for sources of lead, and order abatement. In 1981 the program was folded into the Maternal and Child Health Services Block Grant to the states. In 1988 the Lead Contamination Control Act authorized the resumption of a small categorical program to assist local screening programs.
- ◆ In 1972 HUD issued regulations prohibiting lead-based paint in HUD associated housing.

LBPPPA Amendments (1973)

- ◆ Lowered the lead content allowed in paint to 0.5 percent until December 31, 1974 and 0.06 percent after that date unless found safe at a higher percent by the CPSC (Consumer Product Safety Commission).
- ◆ 1974 CPSC reported to Congress that it considered 0.05 percent lead to be a safe level.
- ◆ Required HUD to eliminate, to the extent practicable, the hazard of lead-based paint poisoning in pre-1950 housing covered by housing subsidies and applications for mortgage insurance, and also in pre-1950 Federally owned housing prior to sale.
- ◆ In 1976 HUD issued regulations implementing those requirements.

CDC Ban on Sale of Lead-Based Paint (1978)

- ◆ Lead-based paint became defined as paint containing more than 0.06 percent as of June 23, 1997.
- ◆ CPSC banned the sale of lead-based paint to consumers and the use of lead-based paint in residences and other areas where consumers have direct access to painted surfaces.

HUD (1986 and 1987)

- ◆ Issued new regulations for all HUD housing programs that redefined "immediate hazard" and changed the construction cutoff date from 1950 to 1973 in most cases.

LBPPA Amendments (1987)

- ◆ Required the inclusion of intact paint in the definition of immediate hazard and a construction cut off date of 1978.
- ◆ Required the inspection of a random sample of dwellings in pre-1978 family envelopments to be completed by December 6, 1994 and the abatement of lead hazards exceeding 1.0 mg/cm².
- ◆ Required on extensive research and demonstration program.
- ◆ Required reporting - including a comprehensive and workable plan for abatement in privately-owned housing and a workable plan for abatement in public housing.

- ◆ HUD issued new regulations in June 1988 pertaining primarily to the public housing program, and also making 1978 the construction cutoff date for all programs and defining "applicable surface" to include intact paint for all programs in accordance with the act.
- ◆ April 1989, HUD, EPA and HHS (Department of Health and Human Services) formed a task force to ensure regulatory efforts produce a unified and coherent approach to lead pollution problems.

Differences in Regulations

Inspectors must determine whether or not State and local regulations conflict with Federal regulations. If they do, the most stringent requirements, from each of the regulations must be complied with.

HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing

- ◆ In response to the 1989 HUD and Independent Agencies Appropriations Act, the Department of Housing and Urban Development, with considerable input from EPA and OSHA, developed comprehensive technical interim guidelines on the testing, abatement, clean-up, and disposal of lead-based paint. HUD spent much of 1994 and 1995 revising these guidelines and in September 1995 issued the document. *(Full copies of the document available on the resource table, with order blanks to order personal copies.)*

Although lengthy, knowledge of the guidelines are essential for persons engaged in testing or abating lead-based paint. The guidelines provide detailed, comprehensive, technical information on how to identify lead-based paint hazards in housing and how to control such hazards safely and efficiently. The goal of this document is to help property owners, private contractors, and Government agencies sharply reduce children's exposure to lead without unnecessarily increasing the cost of housing. The guidelines address lead hazards posed by paint, dust, and soil in the residential environment.

The guidelines are issued pursuant to Section 1017 of the Residential Lead-Based Paint

Hazard Reduction Act of 1992, which is often referred to as Title X, because it was enacted as Title X of the Housing and Community Development Act of 1992 (Public Law 102-550). The guidelines are based on the concepts, definitions, and requirements set forth by Congress in Title X.

The guidelines complement regulations, other directives, and other guidelines to be issued by HUD, the EPA, OSHA and the CDC. Other Federal agencies and State and local governments may also issue regulations and directives pertaining to housing under their jurisdictions. The guidelines are not enforceable by law unless a Federal, State, or local statute or regulation requires adherence to certain parts of the document.

Table of Contents for Guidelines:

| | |
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| Chapter 1 | Introduction |
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| Chapter 4 | Lead-based paint and housing renovation |
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| Chapter 17 | Routine building maintenance and lead-based paint |
| Chapter 18 | Lead hazard control and historic preservation |
| | Also includes references, glossary and appendixes |

Regulation by the Occupational Safety and Health Administration (OSHA)

- ◆ Original lead standard (1910.1025) was for the general industry.
- ◆ The Lead in Construction Standard (1926.62) was issued in February 1996. Under this standard, regulating occupational exposure to inorganic lead in the construction industry

the PEL is 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) as an 8-hour time-weighted average (TWA).

1926.62 requires:

1. Monitoring of the blood lead level (BLL) for workers exposed to airborne lead at or above the action level of $30 \mu\text{g}/\text{m}^3$ (8 hour TWA).
2. Specifies medical removal of workers whose average BLL based on two tests is $50 \mu\text{g}/\text{dl}$ or greater.
3. Provides salary retention for medically-removed workers.

In recognition of the health risks associated with exposure to lead, a goal for reducing occupational exposure was specified in *Healthy People 2000*, a recent statement of national consensus and U. S. Public Health Service policy for health promotion and disease prevention. The goal for workers exposed to lead is to eliminate, by the year 2000, all exposures that result in BLL greater than $25 \mu\text{g}/\text{dl}$.

Waste disposal under the Resource Conservation and Recovery Act (RCRA)

- ◆ EPA is considering revising the existing hazardous waste regulations that govern waste generated from lead-based paint abatement activities.
- ◆ At present, the primary Federal statute governing waste management from generation to disposal is RCRA. While hazardous waste management must meet Federal standards, most States are authorized by EPA to administer the basic RCRA hazardous waste program.
- ◆ RCRA distinguishes between solid and hazardous waste and defines hazardous waste and hazardous waste generators. It provides information on required procedures to be followed before, during, and after disposal. Treatment, storage, and disposal facilities (TSDs) and waste transporters are described. While RCRA governs Federal hazardous waste disposal regulations, States regulate solid (non-hazardous) waste; many run their own hazardous waste programs with EPA approval under RCRA. However, many States, and even some localities, have more stringent rules than RCRA. Thus it is important for

all PHAs, as well as those individuals involved with lead-based paint abatement projects, including inspectors, to become familiar with all State and local waste disposal rules and the ways in which these rules differ from RCRA.

- ◆ The basic philosophy that should be adapted by all involved parties is minimization of waste production. This philosophy prevents waste products from entering the environment. Employing good control measures during abatement and cleanup, and using proper procedures for storing and handling waste, help to minimize waste. LBP abatement produce potentially large quantities of solid waste, such as building components, sludge from paint stripping, lead paint chips and dust, waste water from cleanup, used protective clothing and filters, plastic sheeting used for containment, etc. Some of these waste materials are hazardous, because of leachable lead in the paint or corrosiveness.
- ◆ Thus, it is important to understand how to determine what wastes are hazardous, and how to dispose of both hazardous and solid wastes in a safe and cost-effective manner. **Chapter 10 of the HUD Guidelines provides information on proper waste disposal.** Also, waste disposal questions may be directed to EPA's RCRA/Superfund Hotline at 1-800-424-9346 (202-260-3000 in Washington, D.C.).
- ◆ It should be pointed out that even if abatement waste is not classified as hazardous under EPA regulations, it may still be contaminated with lead dust. Thus, care should be taken to avoid contaminating the environment or exposing children to lead dust. For example, practices such as stockpiling debris in the yard of a home should be avoided.

EPA's drinking water regulations

- ◆ Drinking water is the largest remaining source of lead over which EPA has direct regulatory control. In 1986, the U.S. Congress banned the use of lead-containing materials in public water supply systems and in any plumbing providing drinking water connected to public water systems. All 50 States adopted this ban. The major U.S. plumbing codes were revised to exclude the use of materials containing lead in potable water applications.

- ◆ Among the materials prohibited by law in public water supply systems are solder and flux containing more than 0.2% lead, and other plumbing materials containing more than 8% lead. Illegal use of solder apparently continues. Also, experience indicates that considerable amounts of lead can leach from brass plumbing products, even though they contain 8% lead or less. New product certification standards being developed by NSF International (a consortium which develops voluntary standards and certification programs for direct and indirect drinking water additives) limit the amount of lead leaching out of brass plumbing products.
- ◆ In November 1988, a new amendment to the Safe Drinking Water Act, known as the Lead Contamination Control Act of 1988 (LCCA), became law. It requires that the EPA develop a guidance document, and that the States establish programs, to help schools and day-care centers to test for and remedy lead contamination in drinking water from water coolers and other sources of lead. The LCCA also contains specific requirements for the testing, recall, and repair and/or replacement of water coolers with lead-lined storage tanks or with parts containing lead. The Act establishes civil and criminal penalties for the manufacture and sale of water coolers containing lead.
- ◆ Although lead contamination of drinking water rarely occurs at the point of supply in municipal water systems, EPA's Office of Drinking Water proposed, in 1988, a strengthening of the lead standard, as measured at the entry point to the distribution system or the treatment plant. In June, 1991, under authority of the 1986 Safe Drinking Water Act (SDWA), EPA's Office of Ground Water and Drinking Water promulgated the "National Primary Drinking Water Regulation for Lead." These new standards are 10 times as protective as the previous standard. They require 79,000 public water-suppliers to monitor tap water in hundreds of thousands of homes across the country. Based on this monitoring, water treatment techniques may need to be adjusted.
- ◆ The goal of the new standards is for at least 90% of monitored household drinking water taps to have lead levels of 15 parts per billion (ppb) or less, which corresponds to an average level of approximately 5 ppb. Drinking water lead concentrations are highest in tap water. This regulation also set a Maximum Contaminant Level Goal (MCLG) of zero

for lead in drinking water. MCLG's are nonenforceable, optimal health-based targets. EPA believes that the costs of these standards will be far outweighed by the health benefits of reduced lead exposure and lowered health risks, especially for babies, young children, and pregnant women. A copy of the Fact Sheet on this rule is provided in Lead Regulations Notebook.

- ◆ Since public water suppliers are not responsible for plumbing inside private homes, EPA encourages the public to let tap water run for 30 seconds (collect it in a bucket and use it for, e.g., watering plants that are not used for food) before using it for cooking or drinking. Individuals may also want to test their water for lead. Households that have lead levels above 15 ppb in a 1 liter sample (20 ppb for a 250 ml sample) should take the following steps to limit lead exposure: running tap water for 30 seconds before use; not using water from the hot water tap for drinking or cooking; not boiling water longer than necessary for making baby formula; and checking for lead solder. Further information on lead in drinking water may be obtained by calling EPA's Drinking Water Hotline at 1-800-426-4791.

SUMMARY OF TITLE X: THE RESIDENTIAL LEAD-BASED PAINT HAZARD REDUCTION ACT OF 1992

BACKGROUND

- ◆ On October 28, 1992, the Housing and Community Development Act of 1992 (P.L. 102-550) which includes Title X - "The Residential Lead-Based Paint Hazard Reduction Act of 1992" was signed into law.
- ◆ Title X provides for a comprehensive national approach to dealing with lead-based paint in the nations, housing stock.
- ◆ Focus as a result of Title X has changed the philosophy from total abatement to a program of abatement and in-place management of priority hazards.
- ◆ FY 94 President's Budget had earmarked \$15 million over the FY93 base to implement Title X, which includes \$10 million for state grants.
- ◆ FY 94 President's Budget requests \$22 million total for lead in OPPT.

FINDINGS AND PURPOSE

"The Federal Government must take a leadership role in building the infrastructure - including an informed public, state and local delivery systems, certified inspectors, contractors and laboratories, trained workers and available financing and insurance necessary to ensure that the national goal of eliminating lead-based paint hazards in housing can be achieved as expeditiously as possible."

The central theme of Title X is to empower citizens to inform themselves and to have in place State, local and private delivery systems to allow them to act to protect their children and themselves.

EPA'S STRATEGY FOR REDUCING LEAD EXPOSURES

A. GOALS AND OBJECTIVES

In February 1991, EPA issued its *Strategy for Reducing Lead Exposures*.

The **GOAL** of the strategy is to reduce lead exposures to the fullest extent practicable, with particular interest in reducing the risk to children

To achieve this goal, the Agency has established two objectives to set program priorities and measure progress:

- 1) to significantly reduce the incidence of blood lead above 10 $\mu\text{g}/\text{dl}$ in children while accounting for associated costs and benefits, and
- 2) to significantly reduce lead exposures that are anticipated to pose risks to children and the environment.

These objectives are being met by the following types of efforts:

- 1) eliminating or reducing the most serious past sources or uses of lead (e.g., lead from gasoline and residential paint),
- 2) addressing any serious current uses;
- 3) vigorously setting and enforcing current standards (e.g., lead levels in water [15 ppm action level] and the air NAAQS);
- 4) establishing a system for preventing any undesirable new uses from coming onto the market through use of Significant New Use Rule (SNUR) under TSCA;

- 5) promoting **public education, training, and technical improvements** to reduce exposures (e.g., the new lead hotline [1-800-LEADFYI] and clearinghouse;
- 6) promoting **research** to better identify, assess, and abate the risks from lead (e.g., developing safe, cost-effective abatement techniques); and
- 7) **assisting state and local governments** develop appropriate infrastructure to deal with the lead problem.

B. LEAD-BASED PAINT (LBP)

The Agency believes that exposure to lead-based paint is the primary cause of lead poisoning in children.

Title X, the Residential Lead-based Paint Hazard Reduction Act of 1992 addresses this hazard.

C. SOIL

Three-City Study investigated the effectiveness of soil abatement on reducing childhood blood levels in three metropolitan areas: Boston, Cincinnati and Baltimore

OSWER Soil Directive is being revised to incorporate use of IEUBK pharmacokinetic model. Directive provides guidance to address lead in soil at Superfund and RCRA Corrective Action sites.

D. DRINKING WATER

"Action Level" of 15 ppb for lead in drinking water, as measured at the tap, promulgated on June 7, 1991

Lead in solder, plumbing fittings proposed rules being considered under TSCA

E. AIR

Lead NAAQS revision being evaluated

F. LEAD IN PRODUCTS

Industrial Paints

- ◆ investigation underway to characterize and address risks posed by non-residential paint

Fishing Sinkers

- ◆ received Section 21 petition requesting that EPA require labels noting toxicity to waterfowl
- ◆ presently examining risk and available remedies

SNUR under development

- ◆ reduce potential risks from new lead products
- ◆ list of ongoing uses under development

TSCA Section 402(a), Lead-Based Paint Activities Training and Certification Regulations

TSCA Section 404(d), Model State Program

- ◆ Promulgate regulations ensuring that individuals engaged in lead-based paint activities are trained, training programs are accredited and that contractors are certified.
- ◆ Set standards for performing abatement activities.
- ◆ Promulgate model State programs for compliance with training and accreditation regulations, including application process, compliance monitoring.
- ◆ Development of a Federal program in States without a program.
- ◆ Grants to States to carry out authorized programs.
- ◆ Final Rule promulgated by April 28, 1994 (18 months after enactment of Title X).

TSCA Section 403, Identification of Dangerous Levels of Lead

- ◆ Section 403 requires EPA to promulgate regulations which identify lead-based paint hazards, lead-contaminated dust, and lead-contaminated soil.
- ◆ The legislative history concerning this requirement suggests, but does not direct, that EPA set "appropriate and varying levels for lead in soils", "provide for the necessary site-by site analysis", and "consider exposure risks based on site specific characteristics".
- ◆ Final Rule promulgated by April 28, 1994 (18 months after enactment of Title X).
- ◆ Will require great amount of coordination between ORD, OSWER, and OPPT.

Section 1018, Disclosure of Information Concerning Lead upon Transfer of Residential Property

Requires EPA and HUD jointly to promulgate rule requiring that:

- ◆ Purchasers/lessees receive EPA's lead pamphlet
- ◆ Sellers/lessors disclose all known lead hazards to purchasers/lessees
- ◆ Purchasers have a 10-day period for inspection for lead-based paint hazards
- ◆ Sales contracts contain a Lead Warning Statement

Rule to be promulgated by October 28, 1993

TSCA Section 406(a), Lead Hazard Information Pamphlet

Requires EPA to publish a lead hazard information pamphlet by October 28, 1994.

- ◆ Directs EPA to consult with HUD and CDC.
- ◆ Pamphlet must undergo public notice and comment before final release.

Statute is highly prescriptive, requiring inclusion of specific information:

- ◆ Health risks of lead exposure.
- ◆ Hazards of lead-based paint
- ◆ Risks of remodeling and renovation
- ◆ Approved methods for evaluating and reducing LBP Hazards
- ◆ How to find certified contractors
- ◆ Federal, State, and local resources
- ◆ Rights of prospective purchasers and tenants

TSCA Section 406(b), Renovation Information Rule

- ◆ Requires EPA to promulgate rule, by October 28, 1994, requiring renovators & remodelers to furnish customers with copy of EPA brochure prior to beginning work
AREA > Z.S.F.

TSCA Section 402(c)(1), Renovation and Remodeling Guideline

- ◆ In order to reduce the risk of exposure, EPA will promulgate guidelines for the conduct of renovation and remodeling activities which may create a risk of exposure to dangerous levels of lead.

- ◆ Disseminate guidelines to persons engaged in renovation and remodeling activities. Guidelines promulgated by April 28, 1994 (18 months after enactment of Title X).

TSCA Section 402(c)(2), Study of Renovation and Remodeling

- ◆ Conduct a study on hazard potential of renovation and remodeling activities and publish results.
- ◆ Study results published by April 28, 1995 (30 months after enactment of Title X)
- ◆ Revise Section 402(a) regulations to apply to renovation and remodeling activities by October 28, 1996 (48 months after enactment of Title X).

TSCA Section 405(b), Standards for Environmental Sampling Laboratories

- ◆ Establish protocols, criteria, and minimum performance standards for laboratory analysis of lead in paint, soil, and dust.
- ◆ Establish a laboratory accreditation program, review its performance.
- ◆ Publish a list of accredited laboratories, and to review the effectiveness of the laboratory accreditation program.
- ◆ Operational program by October 28, 1994 (24 months after enactment of Title X).

Status: TSCA Section 405(b), Standards for Environmental Sampling Laboratories

- ◆ ELPAT (Environmental Laboratory Proficiency Analytical Testing) program in cooperation with NIOSH and AIHA is up and running - initiated December 1992.
- ◆ First round of samples distributed; over 200 laboratories currently participating NLLAP (National Lead Laboratory Accreditation Program) will be operational by Summer 1993.
- ◆ Guidance documents published May 1993 (laboratory operations, laboratory assessor training, model MOU)
- ◆ Federal Register Notice July 1993—announcing availability of NLLAP requirements; soliciting accrediting organizations to participate in NLLAP

- ◆ At least two accrediting organizations interested--(AIHA and A2LA); Anticipate establishing MOUs September 1993
- ◆ List of ELPAT laboratories and NLLAP guidance documents available through National Lead Information Center Clearinghouse.

TSCA Section 405(d), Public Education

TSCA Section 405(e), Technical Assistance

- ◆ Requires EPA to sponsor education and outreach activities to increase public awareness of many different aspects of lead poisoning.
- ◆ Establish a clearinghouse and hotline for dissemination of information on lead poisoning.
- ◆ Hotline and Clearinghouse to be established by April 23, 1993 (six months after enactment of Title X)

Status: TSCA Section 405(d), Public Education

TSCA Section 405(e), Technical Assistance

- ◆ National Lead Information Center - Federal Lead Hotline has been operational since November 1992 (1-800-LEAD-FYI).
- ◆ The clearinghouse portion of the National Lead Informational Center (1-800-424-LEAD) opened in April 1993.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT REQUIREMENTS

- ◆ Provide grants to states to reduce lead-based paint hazards in non-Federally owned or assisted housing [\$90M appropriated in FY 1993, \$125M authorized in FY 1993, \$250M authorized in FY 1994].
- ◆ Provide grants to states to establish training, certification, or accrediting programs [\$3M in FY 1993 and FY 1994].
- ◆ Evaluate and reduce lead-based paint hazards in Federally assisted housing programs.
- ◆ Establish a task force of Federal agencies and private sector housing groups.
- ◆ Issue guidelines for risk assessment, inspections, interim controls, and abatement of lead-based paint hazards.

OTHER FEDERAL AGENCY REQUIREMENTS

- ◆ OSHA - issue final interim regulation on occupational exposure to lead in the construction industry.
- ◆ EPA and NIOSH - make grants for training workers and supervisors.
- ◆ HHS and NIOSH - conduct a study on means to reduce hazardous occupational exposures.
- ◆ CDC and NIEHS - conduct a study on sources of lead exposure in children.
- ◆ EPA, HUD, CPSC, and ATSDR - sponsor public education and outreach activities.
- ◆ President - establish methods to ensure effectiveness of evaluation and hazard reduction products.
- ◆ GAO - conduct a study on Federal implementation and insurance activities.

Lead: Requirements for Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards in Housing; Final Rule (24 CFR Part 35, 40 CFR Part 745)

- ◆ Section 1018 of Title X required EPA and HUD to jointly issue regulations requiring disclosure of known lead-based paint and/or lead-based paint hazards by persons selling or leasing housing constructed before the phase-out of residential lead-based paint use in 1978.
- ◆ On March 6, 1996, the agencies issued the disclosure rule which is called: **Lead: Requirements for Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards in Housing; Final Rule.**

It's effective date depends on the number of housing units owned.

- ◆ For owners of more than 4 dwelling units, the effective date is September 6, 1996.
- ◆ For owners of 4 or fewer dwelling units, the effective date is December 6, 1996.

This rule applies to all housing defined as "target housing," including:

- ◆ private housing
- ◆ public housing
- ◆ housing receiving Federal assistance
- ◆ Federally owned housing built before 1978.

Housing not affected by this rule includes:

- ◆ "O-bedroom dwellings," such as lofts, efficiencies, and studios
- ◆ leases of dwelling units of 100 days or fewer, such as vacation homes or short term rentals
- ◆ designated housing for the elderly and the handicapped unless children reside or are expected to reside there
- ◆ rental housing that has been inspected by a certified inspector and found to be free of lead-based paint.

40 CFR Part 745 Lead: Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities; Final Rule

◆ 745.225 Accreditation of Training

Training programs may first apply to EPA for accreditation on or after August 31, 1998. After March 1, 1999, all training programs offering lead training must be accredited by EPA and/or EPA authorized states or tribes.

◆ 745-226 Certification of individuals and firms engaged in lead-based paint activities for target housing and child-occupied facilities

Individuals or firms that perform lead-based paint activities may first apply to EPA for certification on or after March 1, 1999.

◆ Training, education and experience prerequisites:

Inspectors:

(1) Complete a Lead Inspector Training course offered by a training provider accredited by EPA under the provision of 745.225;

(2) Within 6 months of completing the accredited training, must pass a **certification exam** offered by EPA;

(3) No additional education and experience requirements other than taking an accredited course and passing EPA's certification exam.

Risk Assessors:

(1) Complete a Lead Inspector Training course offered by a training provider accredited by EPA under the provision of 745.225;

(2) Complete a Lead-Based Risk Assessment course offered by a training provider accredited by EPA under the provision of 745.225;

(3) Within 6 months of completing the accredited training, must pass a certification exam offered by EPA,

(4) Meet or exceed the following experience/education requirements:

- ◆ Bachelor's degree and 1 year of experience in a related field (lead, asbestos, environmental remediation work, construction)

-or-

- ◆ Associate's degree and 2 years in experience in a related field

-or-

- ◆ Hold certification as an industrial hygienist, professional engineer, registered architect or be certified in a related engineering/health/environmental field (i.e. Certified Safety Professional, etc.)

-or-

- ◆ High School Diploma (or equivalent) and 3 years experience in a related field.

Supervisors:

(1) Complete a Lead-Based Paint Abatement Training for Supervisors & Contractors course offered by a training provider accredited by EPA under the provision of 745.225;

(2) Within 6 months of completing the accredited training, must pass a certification exam offered by EPA;

(3) Meet or exceed the following experience/education requirements:

- ◆ One year of experience as a certified lead-based paint abatement worker;

-or-

- ◆ Two years experience in a related field (lead, asbestos, environmental remediation work) or in the building trades.

Project Designers:

(1) Complete a Lead-Based Paint Abatement Training for Supervisors & Contractors course offered by a training provider accredited by EPA under the provision of 745.225;

(2) Meet or exceed the following experience/education requirements:

- ◆ Bachelor's degree in engineering, architecture or related profession, and 1 year experience in building construction and design or a related field;
- Or-
- ◆ 4 years experience in building construction and design or a related field.

Workers:

(1) Complete a Lead-Based Paint Abatement Training course offered by a training provider accredited by EPA under the provision of 745.225;

(2) No additional education and experience requirements other than taking an accredited course.

Refresher Training requirements

EPA stipulates an 8 hour Refresher Course for Inspectors, Risk Assessors, Supervisors, and Workers; and, a 4 hour Refresher Course for Project Designers. You must take a refresher Course:

- ◆ Every 3 years if completed a training course that included a course test and hands-on assessment.
- ◆ Every 5 years if completed a training course with a proficiency test.

Training Course Completion and Interim Certification

At the conclusion of an accredited training course, individuals who pass the course test will be issued a certificate that stipulates that they have "Interim Certification" for a period of six months. In that time, they are expected to apply to an EPA-authorized state or to the EPA program for certification.

Those individuals applying for certification in the Inspector, Risk Assessor, and Supervisor disciplines are required to take the EPA Certification Exam within that 6 month period.

Applicants can take the EPA exam no more than 3 times within that 6 month period. If they fail to get certified within the 6 month period, they must take the training course again from an EPA accredited training provider.

Workers and Project Designers have 6 months in which to apply to EPA (or an authorized state for certification. These disciplines do not have to take the certification exam; however, Project Designers do have to take the Supervisor Course as well as the Project Designer course to be certified.

Certification based on prior training

If you have already taken or will take lead-based paint training in the period October 1, 1990 --- March 1, 1999 (prior to the EPA accreditation program going into effect), the following criteria established:

Inspectors, Risk Assessors, and Supervisors:

- ◆ demonstrate that you successfully completed training or on-the-job training;
- ◆ demonstrate that you meet or exceed the education and experience requirements;
- ◆ successfully complete an accredited refresher course;
- ◆ successfully pass the EPA Certification Exam.

Workers, Project Designers

- ◆ same as above, except for taking the EPA Certification Exam

745.320 State and Tribal Programs

States and Tribes may begin applying to EPA for authorization to operate their own certification and accreditation programs on October 28, 1996. The provisions of the EPA accreditation and certification program will apply for any state that does not have an authorized program by August 31, 1998.

Lead in Construction



U.S. Department of Labor
Occupational Safety and Health Administration

OSHA 3142
1993

Background

Although Occupational Safety and Health Administration (OSHA) regulations for occupational lead exposure have been in effect since 1971 for the construction and general industries, the agency recognized the need to provide better protection and revised the regulations for general industry in 1978. The 1978 lead standard, however, excluded the construction industry from coverage because of insufficient information regarding lead use in construction.

In 1990, the National Institute for Occupational Safety and Health (NIOSH) set a national goal to eliminate worker exposures resulting in blood lead concentrations greater than 25 micrograms per deciliter (25 µg/dl) of whole blood. Consequently, OSHA began developing a proposal for a comprehensive standard regulating occupational exposure to lead in construction. In October 1992, the Congress passed Section 1031 of Title X of the Housing and Community Development Act of 1992 (P.L. 102-550) requiring OSHA to issue an interim final lead standard for the construction industry, effective until OSHA issues a final standard.

The interim final rule, published on May 4, 1993,¹ amends the OSHA standards for occupational health and environmental controls in Subpart D of Title 29 Code of Federal Regulations (CFR) 1926 by adding a new section 1926.62, containing employee protection requirements for construction workers exposed to lead.

Scope and Application

For the purpose of this standard, lead includes metallic lead, all inorganic lead compounds, and organic lead soaps.

OSHA's lead in construction standard applies to all construction work where an employee may be occupationally exposed to lead. All work related to construction, alteration, or repair—including painting and decorating—is included. Under this standard, construction includes, but is not limited to, the following:

- demolition or salvage of structures where lead or materials containing lead are present;
- removal or encapsulation of materials containing lead;
- new construction, alteration, repair, or renovation of structures, substrates, or portions containing lead, or materials containing lead;
- installation of products containing lead;
- lead contamination from emergency cleanup;
- transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and
- maintenance operations associated with construction activities described above.

Provisions of the Standard

The standard establishes maximum limits of exposure to lead for all workers covered, including a permissible exposure limit and action level.

Permissible Exposure Limit

The permissible exposure limit, or PEL, sets the maximum worker exposure to lead. For example, no employee may be exposed to lead at airborne concentrations greater than 50 $\mu\text{g}/\text{m}^3$ averaged over an 8-hour period. If employees are exposed to lead for more than 8 hours in any workday, the following formula must be used to reduce exposure as a TWA:

Employee exposure (in $\mu\text{g}/\text{m}^3$) = 400 divided by hours worked in the day.²

Action Level

An action level is the level at which an employer must begin certain compliance activities outlined in the standard. The action level, regardless of respirator use, for the lead in construction standard is an airborne concentration of 30 $\mu\text{g}/\text{m}^3$ calculated as an 8-hour TWA.

Exposure Monitoring and Medical Surveillance

Assessing Exposures

Where initial employee exposure³ is at or above the action level, the employer must collect personal samples representative of a full work shift, including at least one sample for each shift or for the shift with the highest exposure level for each job classification in each work area. These samples must represent the monitored employee's regular, daily exposure to lead. Measurements made within the previous 12 months also may be used to determine how far above the action level employee exposure may be.

An initial determination of whether employees are exposed to lead at or above the action level and the results of that determination must be made available based on the following:

- any information, observation, or calculation that indicates employee exposure to lead;
- any previous measurements of airborne lead;
- any employee complaints of symptoms attributable to lead exposure; and
- objective data regarding materials, processes, or operations.

The employer may discontinue required monitoring when at least two consecutive measurements—taken at least 7 days apart—are below the action level.

Monitoring for the initial determination whether employers are exposed at or above the action level may be limited to a representative sample of those employees exposed to the greatest concentrations of airborne lead. Measurements made within the preceding 12 months, which were performed by the same employer and applicable to the same employee tasks, may be used.

The employer must establish and maintain an accurate record documenting the nature and relevancy of previous exposure data. Instead of performing initial monitoring, the employer may rely on objective data that demonstrate that a particular lead-containing material or product does not result in employee exposure at or above the action level when processing, using, or handling.

Until the employer performs an exposure assessment and documents that employees are not exposed above the PEL, the employer must treat employees performing certain operations as if they were exposed above the PEL. This means providing respiratory protection, protective work clothing and equipment, change areas, hand washing facilities, biological monitoring, and training—as required by the standard—for the following tasks:

- manual demolition of structures (e.g., dry wall), manual scraping, manual sanding, and use of heat gun where lead-containing coatings or paints are present;
- abrasive blasting enclosure movement and removal;
- power tool cleaning;
- lead burning;
- using lead-containing mortar or spray painting with lead-containing paint;
- abrasive blasting, rivet busting, or welding, cutting, or burning on any structure where lead-containing coatings or paint are present;

²When respirators are used to limit employee exposure to lead, the measured exposure can be considered at the level provided by the protection factor of the respirator for those periods worn. Those periods may be averaged with exposure levels during periods when respirators are not worn to determine the employee's daily TWA exposure.

³For the purpose of this section, exposure is considered to be the level occurring if the employee is not using a respirator.

- cleanup activities where dry expendable abrasives are used; and
- any other task the employer believes may cause exposures in excess of the PEL.

For an initial determination that indicates no employee is exposed at or above the action level ($30 \mu\text{g}/\text{m}^3$), the employer must keep a written record of the determination, including the date, location within the work site, and the name and social security number of each monitored employee. (See "Recordkeeping" section elsewhere in this publication for more information.)

Monitoring and Observing

If the initial determination proves employee exposure is below the action level, further exposure determination need not be repeated unless there is a change in processes or controls.

If employee exposure is at or above the action level, but at or below the PEL, the employer must perform monitoring at least every 6 months and continue until at least two consecutive measurements—taken at least 7 days apart—are below the action level.

If employee exposure is above the PEL, the employer must perform monitoring quarterly and continue until at least two consecutive measurements—taken at least 7 days apart—are at or below the PEL but at or above the action level. The employer then must repeat and continue monitoring every 6 months to bring the exposure to or below the action level as described above.

When there has been a change of equipment, process, control, personnel, or a new task has been initiated that could increase employee lead exposure at or above the action level, the employer must conduct additional monitoring.

The employer must notify each employee in writing of employee exposure assessment results within 5 working days after their receipt. Whenever the results indicate that the representative employee exposure, without the use of respirators, is at or above the PEL, the employer must include a written notice stating that the employee's exposure was at or above that level and describing the corrective action taken or to be taken to reduce exposure to below that level.

The employer must provide affected employees or their designated representatives an opportunity to observe any monitoring of employee lead exposure. The employer must provide the observer with and ensure the use of respirators and protective clothing and equipment when monitoring requires entry into an area where they are necessary. The observer, who must comply with all applicable safety and health procedures, is entitled to receive an explanation of the measurement procedures, observe all steps related to lead monitoring performed at the place of exposure, and record the results obtained or receive copies of the results when returned by the laboratory.

Medical Surveillance and Multiple Physicians' Review

Employers must make available, at no cost to the employee, initial medical surveillance for employees occupationally exposed to lead at or above the action level for more than 1 day per year. For employees with exposure more than 30 days per year and who have a blood lead level over $40 \mu\text{g}/\text{dl}$, full medical surveillance is required. All medical exams must be performed by or under the supervision of a licensed physician. In addition, full medical examinations with extensive testing must be made available to those employees exposed at or above the action level for more than 30 days per year.

Initial medical surveillance must include biological monitoring in the form of blood sampling and analysis for lead or zinc protoporphyrin levels. Biological monitoring tests must be conducted in an OSHA-approved lab and be accurate (to a confidence level of 95 percent) within plus or minus 15 percent, or $6 \mu\text{g}/\text{dl}$, whichever is greater. The tests must be performed as follows:

- at least every 2 months for the first 6 months and every 6 months thereafter for employees exposed at or above the action level for more than 30 days annually;
- at least every 2 months for employees whose last blood sampling and analysis indicated a blood lead level at or above $40 \mu\text{g}/\text{dl}$; and
- at least monthly during the removal period for each employee removed from exposure due to an elevated blood lead level.

Within 5 days of receiving biological monitoring results, the employer must notify each employee, in writing, of his/her blood lead levels. Employees whose blood lead levels exceed $50 \mu\text{g}/\text{dl}$ must be removed temporarily with medical removal protection as pay, seniority, and other rights.

- the purpose, proper selection, fit, use, and limitations of respirators;
- the purpose and a description of the medical surveillance program, and the medical removal protection program;
- the engineering and work practice controls associated with employees' job assignments;
- the contents of the compliance plan in effect;
- instructions to employees that chelating agents must not be used routinely to remove lead from their bodies and when necessary only under medical supervision; and
- the right to access records under "Access to Employee Exposure and Medical Records," 29 CFR 1910.20.

All materials relating to the training program and a copy of the standard must be made readily available to all employees.

Methods of Compliance

Compliance Program

Prior to each job where employee exposure exceeds the PEL, the employer must establish and implement a written compliance program to reduce employee exposure to the PEL or below. The compliance program must provide for frequent and regular inspections of job sites, materials, and equipment by a competent person.⁵ Written programs, which must be revised and updated at least every 6 months, must include the following:

- a description of each activity in which lead is emitted (e.g., equipment used, material involved, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices);
- specific plans to achieve compliance and engineering plans and studies where engineering controls are required;
- information on the technology considered to meet the PEL;
- air monitoring data that document the source of lead emissions;
- a detailed schedule for implementing the program, including copies of documentation (e.g., purchase orders for equipment, construction contracts);

- a work practice program including regulations for the use of protective work clothing and equipment and housekeeping and hygiene facility guidelines;
- an administrative control schedule for job rotation, if used;
- a description of arrangements made among contractors on multi-contractor sites to inform affected employees of potential exposure to lead and their responsibility to comply with this standard; and
- any other relevant information.

Engineering, Work Practice, and Administrative Controls

The lead in construction standard requires employers to use—when feasible—engineering, work practice, and administrative controls to reduce and maintain employee lead exposure to or below the PEL. When all feasible controls have been instituted but are not sufficient to reduce employee exposure to or below the PEL, they must be used to reduce exposure to the lowest feasible level and supplemented by respirators.

Engineering controls reduce employee exposure in the workplace either by removing or isolating the hazard or isolating the worker from exposure through the use of technology. Under the lead in construction standard, mechanical ventilation may be used to control lead exposure. If used, the employer must evaluate, as necessary, the mechanical performance of the system in controlling exposure to maintain its effectiveness.

Work practice controls reduce the likelihood of exposure by altering the manner in which a task is performed. Safe work practices under the lead in construction standard include but are not limited to maintaining separate hygiene facilities (i.e., change rooms, showers, hand washing facilities, and lunch areas) and requiring proper housekeeping practices (i.e., cleanup methods).

Housekeeping

All surfaces must be maintained as free as practicable of accumulations of lead. Compressed air must not be used to cleanup floors and other surfaces where lead accumulates unless it is used in conjunction with a ventilation system designed to capture the airborne dust created by the

⁵A competent person is one who can identify existing and predictable lead hazards in the surroundings or working conditions that are hazardous or dangerous to employees, has authorization to take prompt corrective measures to eliminate those

compressed air. Shoveling, dry or wet sweeping, and brushing must be used only where vacuuming and other equally effective methods have been tried and found to be ineffective.

Vacuums must be equipped with high-efficiency particulate air (HEPA) filters and used and emptied in a manner that minimizes the reentry of lead into the workplace.

Hygiene Facilities and Practices

Food, beverages, tobacco products, and cosmetics are prohibited in all areas where employees are exposed to lead above the PEL regardless of respirator use.

Employers must provide clean change areas and hand washing and shower facilities, where feasible, for employees who work in areas where airborne exposure to lead is above the PEL regardless of respirator use, or as interim protection (except for showers) for employees performing tasks specified in the "Assessing Exposures" section of this publication. Change areas must be equipped with separate storage facilities for protective work clothing and equipment and for street clothes to prevent cross-contamination. Shower facilities must contain an adequate supply of cleansing agents and towels for those employees required to shower. Employees required to shower must not leave the workplace wearing any protective clothing or equipment worn during the work shift.

Where showers are not provided by the employer, employees must wash their hands and face at the end of the workshift. The employer must provide adequate handwashing facilities—including an adequate supply of water, soap, and clean towels—for employees.

Employers also must provide lunchroom facilities or eating areas for employees who work in areas where their airborne exposure to lead is above the PEL regardless of respirator use. These facilities must be as free as practicable from lead contamination and be easily accessible to all employees. Employees must wash their hands and face prior to eating, drinking, smoking or applying cosmetics in eating

areas. In addition, employees are prohibited from entering these areas when wearing personal protective clothing or equipment unless surface lead dust has been removed by vacuuming, downdraft booth, or other cleaning method.

Administrative Controls can be used to reduce employee exposure by removing the employee from the hazard (i.e., job rotation). If administrative controls are used to reduce employee exposure to lead, the employer must establish and implement a job rotation schedule. The program must identify by name or number each affected employee; specify the duration and exposure level at each job or work station where each affected employee is located; and include other information useful to assess the reliability of administrative controls to reduce employee lead exposures.

Respirators

The employer must provide respiratory protection, at no cost to the employee, and must ensure its use when:

- employee exposure to lead exceeds the PEL;
- engineering and work practice controls are not sufficient to reduce exposure levels to or below the PEL;
- an employee requests a respirator; and
- as interim protection for employees performing the tasks listed under the "Assessing Exposures" section of this publication and section (d)(2) of the standard.

An appropriate respirator, which has been approved by the Mine Safety and Health Administration (MSHA) and NIOSH must be selected to protect against lead dust, fumes, and mists. (See the table for recommended respiratory protection.)

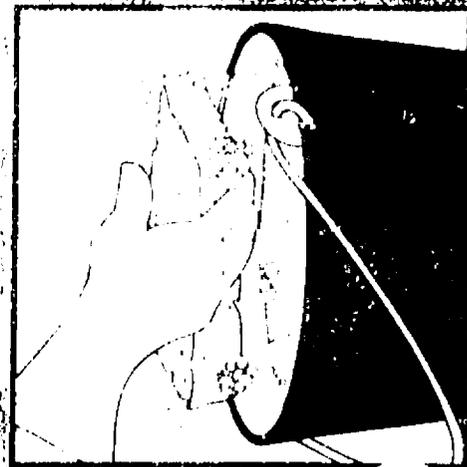
Respirators issued to employees must exhibit minimum facepiece leakage and fit the employee properly. Employers must perform either quantitative or qualitative (for half-mask respirators only) face fit tests at the time of initial fitting and at least every 6 months for each employee wearing a negative-pressure respirator. If the employee shows signs of breathing difficulty during the fit test or during use, the employer must make available an examination in accordance with the medical surveillance requirements of the standard.

How to Protect Your Family From Lead Hazards

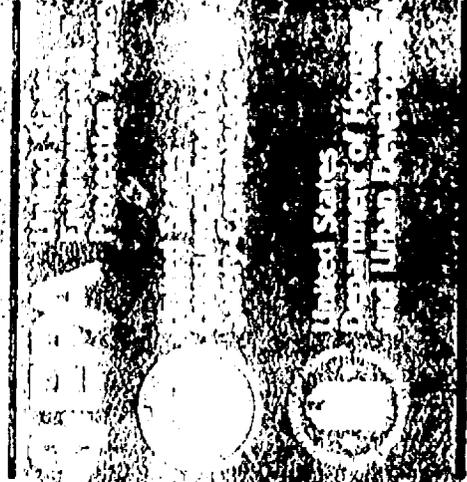
If you think your home has high levels of lead:

- ◆ Test your family children tested for lead, even if you are not sure of the results.
- ◆ Wash your hands, bottles, pacifiers, and toys.
- ◆ Make sure children eat healthy, low-fat foods.
- ◆ Get your home checked for lead hazards.
- ◆ Regularly clean floors, window sills, and other surfaces.
- ◆ Wash your shoes before entering house.
- ◆ Do not use old lead-based paint surfaces with lead-based paint.
- ◆ Do not use lead-based paint on toys or lead-based paint on children's furniture.
- ◆ Do not use lead-based paint on yourself.

CONTACT STATE LIBRARY TO BORROW
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Protect Your Family From Lead in Your Home



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Government and Veteran Affairs Committee
Testimony of Senator Tim Mathern, April 3, 2001

Chairman Klein and Members of the Committee. My name is Tim Mathern. I am the Senator from District 11 in Fargo. Thank you for taking the time today to talk about lead based paint as noted in SCR 4049. Lead based paint is a hazard, (refer to page three of the booklet attached). Also I refer you to Lead Hazards Fact Sheet attached which I asked the ND Department of Health to prepare for me.

I initially wished to introduce a delayed bill to address the statute of limitations for actions relating to abatement of lead-based paint in public buildings. This issue is similar to the asbestos abatement problem for which legislation was addressed in 1993. A copy of the bill that I had considered introducing is attached to my testimony. The Senate Majority Leader, following discussions with the Attorney General suggested a study instead, which is why in I am before you today.

Lead is a toxin. It is in our public buildings. An extremely small amount of lead can have a negative effect on humans. I am told that if you were to take a nickel and break it into 2 million pieces, only 15 of these pieces spread over a square foot of space would be enough to act as an intoxicant to a child. We need to deal with this hazard. Responsibility for costs involved may accrue to taxpayers and may need to accrue to some paint manufactures if there is responsibility there. The costs can be substantial, attached find a cost sheet.

I introduced this matter to address the statute of limitations on when actions can be brought regarding the removal of this paint from public buildings. I think it is good for the state, our political subdivisions, and paint manufacturers to have a definite date at which time public building owners in North Dakota must bring a cause of action for removal or other abatement costs associated with lead based paint. This study resolution directs the legislative council to study the matter and to bring forth recommendations to the next legislative session.

Thank you for your consideration and attention to this matter. I am willing to address questions you may have. I ask you to recommend a Do Pass on SCR 4049.