1. AEC Policy Regarding Lead-Related Construction Work

1.1. The Association of Environmental Contractors (AEC) wants to ensure that construction work disturbing lead-containing material is done in a safe manner. This document is designed to identify the roles and responsibilities of building owners, environmental consultants, general/prime contractors, environmental contractors, and architects regarding the safe and legal disturbance of lead-containing material in California. Working together, we can ensure that the disturbance of lead during construction work does not endanger workers, building occupants, or their children.

Lead-related construction work[1] is done safely when it is done in compliance with regulations. The Environmental Protection Agency (EPA) has a variety of regulations that currently apply to the disturbance of painted surfaces in residential or child-occupied facilities built before 1978. One of these regulations may be expanded to cover the exterior, and possibly the interior of public and commercial buildings.[2] California has comprehensive regulations designed to protect workers and building occupants during lead-related construction work. State regulations and practical considerations require building owners and employers to determine if lead might be disturbed by construction work prior to contracting for work.[3] In addition, State law requires all paint on California structures built before 1978 to be treated as Lead-Based Paint unless it is sampled and proven to be otherwise.[4]

The EPA's Renovation, Repair, and Painting Program (RRP) regulation is designed to prevent renovation and maintenance work from contaminating properties with lead dust.[5] This regulation requires companies (firms) and supervisors to be EPA certified if the firm and/or supervisor is compensated for work that will disturb more than a minimum amount of pre-1978 paint. The "firm" must pay a fee to the EPA and promise in writing to comply with the regulation. The supervisor must attend a one day course, provide occupants a notification pamphlet regarding lead, ensure a proper containment system and lead-safe work practices are used during the work, verify the final cleaning meets a "cleaning verification test," and provide records that document compliance with the rule. There are unusually high fees for noncompliance.[6]

The primary California regulations governing lead-related construction work are enforced by the California Division of Occupational Health and Safety (DOSH, commonly known as Cal/OSHA) and by the California Department of Public Health (CDPH).

Cal/OSHA addresses lead-related construction work in Title 8 of the Labor Code, Section 1532.1.[7] This standard requires employers to train and protect workers who may disturb lead during construction work. Depending on several factors, the employer may have to provide respirators and protective clothing, test the air the workers are breathing and test their workers' blood lead levels. Lead-contaminated dust must not be allowed to accumulate on building surfaces, and if vacuums are used to clean up dust, they must be equipped with High Efficiency Particulate Air (HEPA) filters.

CDPH designed Title 17 of the California Health and Safety Code[8] to protect California residents from being poisoned by lead during lead-related construction work. While portions of this regulation apply only to public and residential buildings, many aspects also apply to industrial and warehouse facilities.[9] Title 17 has extensive training and State certification requirements for those who conduct lead investigations or conduct lead

abatement as defined in the standard. It also mandates special work practices designed to protect building occupants, construction workers, and their families from the lead released during construction work. For example, this regulation requires proof of the use of a “containment” system for all work disturbing lead and that the area was clean upon completion of the work.[10]

Everyone involved in lead-related construction work has a duty to ensure that the work is done safely and in compliance with the applicable regulations. While building owners, environmental consultants, general/prime contractors, environmental contractors, and architects have different duties and responsibilities, all must work together to ensure that the disturbance of lead is done safely and legally.

2. Responsibilities of Building Owners Regarding Lead-Related Construction Work

2.1. Building owners must treat paint on structures built before 1978 as Presumed Lead-Based Paint unless it is sampled and proved to be otherwise.

2.2. Building owners must ensure that lead hazards do not exist in their buildings and are not created by construction work. Lead hazards are defined as elevated levels of lead in dust or soil, damaged or deteriorated Lead-Based Paint (or Presumed Lead-Based Paint), or disturbing lead without a containment, resulting in lead contamination.[11] If lead hazards exist or are created, building owners are responsible for their cleanup.[12]

2.3. Building owners should identify hazardous materials that may be impacted during construction prior to contracting for construction services. Failure to identify hazardous materials such as lead prior to construction contracting may result in the creation of lead hazards, as well as hazards from materials such as asbestos, that might endanger building occupants.[13] In addition, failure to identify lead prior to issuing construction contracts may result in expensive change orders.[14]

2.4. Building owners should contract with construction companies who are capable of safely and legally conducting lead-related construction work. This includes verifying that construction companies have the proper training, equipment, experience, and insurance to disturb lead prior to contracting for lead-related construction work.[15]

2.5. Building owners with employees are obligated under the California Labor Code to protect their employees from hazards created by employers in adjacent areas. Employers who allow their employees to be exposed to lead hazards if a contractor improperly disturbs lead in an adjacent area may be cited by Cal/OSHA as an "Exposing Employer" under the "Multi-Employer Worksite Rules."[16]

2.6. Building owners should take appropriate steps to verify that lead-related construction work being done in their buildings is being done in compliance with regulations. At a minimum, periodic inspections should be made to determine the contractor's compliance with containment, decontamination, and dust suppression requirements. Failure to verify compliance with regulations may result in the creation of lead hazards, contamination of areas adjacent to the construction, and possible hazardous lead exposure to building occupants.[17]

2.7. The U.S. Environmental Protection Agency (EPA) requires owners of residential properties built before 1978 to provide a lead warning pamphlet to all tenants and prospective buyers.[18]

2.8. The U.S. Environmental Protection Agency (EPA) requires owners hire certified firms if the work will disturb more than the minimal amounts of paint in pre-1978 residential or child-occupied facilities.[19]

3. Responsibilities of Environmental Consultants Regarding Lead-Related Construction Work

3.1. Environmental consultants should warn their clients about common environmental hazards that may be created by construction work even if the client initially contracts for only limited advice and service.[20] This includes informing clients about the regulatory and practical requirements for identifying hazardous materials prior to construction work.[21] For example, consultants should advise clients about lead and the problems associated with its improper handling during construction even if the consultant is initially hired to provide advice only for other hazards such as asbestos or mold.

3.2. Environmental consultants should include inspection for lead in paint and other materials as an integral part of their pre-construction survey work.[22] Environmental consultants providing service for pre-1978 buildings and structures should inform their clients about the applicability of the EPA's Renovation, Repair, and Painting Program rule, as well as the key lead-related construction requirements of Title 17. This includes treating all paint in pre-1978 structures as Presumed Lead-Based Paint, utilizing and documenting a dust containment system, and avoiding the creation of lead hazards as defined in the standard.[23]

3.3. Environmental consultants should ensure that their clients understand the need to utilize contractors with the qualifications and skill to safely and legally conduct lead-related construction work. Contractors unfamiliar with regulatory requirements and proper work practices may contaminate the building and poison their workers.[24]

3.4. Environmental consultants should help their clients determine the appropriate contractor for lead-related construction work depending on the type of work, the size of the job, the hazard associated with the work, and whether or not the work is defined as abatement under Title 17. This process includes evaluating the competency of general and environmental contractors to conduct lead-related construction work. For example, will the contractor be able to comply with the Cal/OSHA 1532.1 training, air sampling, personal protection, and work practice requirements? Does the contractor have the necessary equipment such as High Efficiency Particulate Air (HEPA) filtered vacuums, air sampling pumps, and proper cartridge respirators?[25]

3.5. Environmental consultants should encourage their clients to take active steps to verify that contractors actually implement the required containment systems and lead-safe work practices during lead-related construction work. The client may be asked by CDPH to prove a containment system was used, and that the area was cleaned at the end of the work.[26] In addition, improper disturbance of lead may result in their clients being cited as exposing employers under Cal/OSHA's Multi-Employer Worksite rules.[27]

3.6. Environmental consultants should assist their clients in navigating through the confusing regulatory requirements of lead-related construction work and lead hazardous waste testing. For example, they must advise their clients whether the work is defined as abatement by Title 17 since that affects who may conduct the work and whether or not clearance dust sampling is required.[28] They must advise their clients that, contrary to common previous practice, lead-contaminated construction debris must undergo hazardous waste testing. Failure to do this testing may result in criminal hazardous waste violations for the client.[29]

4. Responsibilities of General/Prime Contractors Regarding Lead-Related Construction Work

4.1. General/prime contractors must comply with Cal/OSHA Multi-Employer Worksite rules at construction sites. Cal/OSHA will usually consider general/prime contractors to be one or more of the following: exposing employer, creating employer, controlling employer, or correcting employer.[30]

4.2. General/prime contractors will likely be held responsible by Cal/OSHA for any health and safety violations by their subcontractors[31] unless the general/prime can provide an affirmative defense.[32]

4.3. General/prime contractors should ensure that hazardous materials such as lead are identified prior to the start of work, preferably before construction contracts are finalized. This includes, but is not limited to, the recognition that Title 17 requires all paint on structures built before 1978 to be treated as Presumed Lead-Based Paint[33] and Cal/OSHA's lead in construction regulation requirement mandating employers determine if employees might be exposed above the Action Level for lead.[34]

4.4. General/prime contractors should ensure that their employees and subcontractors conducting lead-related construction work are fully in compliance with Title 17, including the requirement to provide proof of adequate containment and cleanup.[35] Likewise, general/prime contractors must fully comply with Cal/OSHA Title 8, Section 1532.1 (lead in construction) regulations.[36]

4.5. General/prime contractors must provide tenants and owners the required EPA lead notification pamphlet if they are disturbing paint in pre-1978 residential properties.[37]

4.6. General/prime contractors working in pre-1978 residential or child-occupied facilities must become EPA certified firms under the EPA's Lead; Renovation, Repair & Painting Program found in 40 CFR Part 745.81. They must use certified subcontractors, and must ensure that all subcontractors are in compliance with the rule.[38]

5. Responsibilities of Environmental Contractors Regarding Lead-Related Construction Work

5.1. Environmental contractors should ensure that hazardous materials such as lead are identified prior to the start of work, even if their initial contract only identifies other hazards such as asbestos or mold. This includes, but is not limited to, the recognition that Title 17 requires all paint on structures built before 1978 to be treated as Presumed Lead-Based Paint.[39]

5.2. Environmental contractors must comply with Cal/OSHA Multi-Employer Worksite rules at construction sites. This responsibility includes notifying general/prime contractors when other subcontractors are improperly disturbing lead, asbestos, or other hazardous materials on the same job site.[40]

5.3. Environmental contractors should ensure that their employees conducting lead-related construction work are fully in compliance with Title 17, including providing proof of adequate containment and cleanup.[41] Likewise, environmental contractors must fully comply with Cal/OSHA Title 8, Section 1532.1 (lead in construction) regulations.[42]

5.4. Environmental contractors must provide tenants and owners the required EPA lead notification pamphlet if disturbing paint in pre-1978 residential properties.[43]

5.5. Environmental contractors working in pre-1978 residential or child-occupied facilities must comply with the requirements of the EPA's Lead; Renovation, Repair & Painting Program, found in 40 CFR Part 745.81.[44]

6. Responsibilities of Architects Regarding Lead-Related Construction Work

6.1. Architects must consider and incorporate into their work compliance with applicable governmental regulations.[45] This includes the need to comply with Federal and California regulations regarding lead since they will affect the architect's contractual responsibilities to the owner. For example, the presence of lead may affect the design process, will certainly affect the cost estimating process, and will also affect the architect's advice to the owner regarding the type of contractor allowed to bid on the work. If lead is not identified in the initial construction documents and contracts, and is discovered during the project, the contractor disturbing the materials must stop work and the owner must implement and issue a new contract and bidding process.[46]

6.2. The architect is not responsible for determining the presence or absence of lead in or on a structure. However, the architect is required to demonstrate professional care and skill in advising the owner. Both Federal and California laws and regulations require the presumption of lead in specific buildings.[47] In addition, California law penalizes the building owner with additional bidding responsibilities if lead is discovered after work has begun. [48] Therefore architects must be familiar with and incorporate these basic requirements into their advice to the owner and during the design and bidding phase.

6.3. Architects must assume paint on structures built before 1978 contains high levels of lead unless it is sampled and proved to be otherwise.[49] In addition, architects should assume paint on structural steel and ceramic tile glaze is likely to contain high concentrations of lead.[50]

6.4. Architectural firms contracting for work in pre-1978 residential or child-occupied buildings may need to be certified by the EPA under the Renovation, Repair, and Painting Rule (RRP Rule). This regulation covers any firm compensated to conduct a renovation in "target housing" and "child-occupied facilities" constructed before 1978. The need for "RRP Firm Certification" is required regardless of whether any of the compensated firm employees actually disturb lead.[51]

6.5. The failure of an architect to consider lead, especially in situations where Federal and California law specify lead must be presumed present, will likely indicate that the architect is not demonstrating professional care and skill in advising the owner. The failure to address lead issues at the start of a project may have a profound effect on the pricing and schedule of renovation work. Therefore the architect may be held at least partly responsible for delays and costs that should have been anticipated had lead issues been initially discussed with the owner.[52]

END NOTES

1. AEC Policy Regarding Lead-Related Construction Work

[1] Section 35040 of Title 17 of the California Health and Safety Code defines Lead-Related Construction Work as: "any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of any residential or public building, including preparation and cleanup that, by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead."

[2] The EPA has a variety of regulations designed to prevent childhood lead poisoning from damaged or disturbed lead paint. The key regulations are listed below.

- 40 CFR Part 745 Lead; Identification of Dangerous Levels of Lead; Final Rule
  Defined hazardous levels of lead in paint, dust, and soil. These numbers were eventually adopted by California in Title 17 of the California Health and Safety Code.

- 40 CFR Part 745 Lead; Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities; Final Rule
  Developed training and accreditation programs for lead inspectors and abatement professionals. The California Department of Public Health (CDPH) runs this program in California through the requirements of Title 17 of the Health and Safety Code.

- 40 CFR Part 745 Lead; Lead; Requirements for Hazard Education Before Renovation of Target Housing
  Requires contractors disturbing more than a minimum amount of paint to provide the owner and tenants with an EPA lead hazards warning pamphlet.

- 40 CFR Part 745 Lead; Requirements for Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards in Housing
  Triggers the provision of an EPA lead hazards warning pamphlet and contractual language prior to the sale or rent of pre-1978 residential properties.

- 40 CFR Part 745 Lead: Renovation, Repair, and Painting Program Lead Hazard Information Pamphlet; Notice of Availability; Final Rule
  Comprehensive regulation designed to protect the occupants of pre-1978 residential and child-occupied facilities from childhood lead poisoning hazards created during renovation work.

As of June, 2016, the EPA is studying the potential health effects of lead on adults who may be exposed to lead during the renovation of public and commercial buildings. The EPA has not given a timeline for the results of this study. The results are expected to lead to a decision as to whether or not to extend the Renovation Repair and Painting Rule (RRP) to the exterior and/or interior of public and commercial buildings. As of June 2016, the latest EPA documents on this issue are found at https://www.epa.gov/lead/approach-estimating-exposures-and-incremental-health-effects-lead-due-renovation-repair-and.

[3] Regulations and practical considerations require building owners to identify hazardous materials prior to contracting for construction work.

Regulatory requirements triggering the identification of lead prior to construction work include:

- Section 25914 of the California Health and Safety Code: “The Legislature hereby finds and declares that it is the public policy of the state to ensure that work performed on behalf of the public or private entity or person be done properly to safeguard the public health and safety when removing asbestos and hazardous substances.”

  This regulation lists two very important requirements. First, any asbestos-related work and hazardous substance removal must be done under a separate contract from the other work if the material is not disclosed in the bid or contract documents. Second, if a contractor encounters a hazardous substance (not identified in the bid package or contract,) and the material has not been “rendered harmless,” the contractor must: "immediately cease work on the area affected and report the condition to the owner... in writing."

- The Injury and Illness Prevention Program (IIPP) requirements stated in Title 8 of the Labor Code, Sections 3203 and 1509, require employers to inspect the work areas for hazards. This certainly would include the identification of lead that will be disturbed by construction work.

- The Cal/OSHA lead standard for the construction industry, found in Title 8 California Code of Regulations, Section 1532.1, has extensive requirements. The identification of lead is a prerequisite to compliance with this regulation.

Practical considerations to identify lead prior to construction work include the desire to prevent unnecessary change orders required upon the discovery of lead.

[4] Title 17, California Code of Regulations, Division 1, Chapter 8, Accreditation, Certification, and Work Practices For Lead-Based Paint and Lead Hazards, Section 35043 states: “Presumed lead-based paint” means paint or surface coating affixed to a component in or on a structure constructed prior to January 1, 1978. “Presumed lead-based paint” does not include paint or surface coating that has been tested and found to contain an amount of lead less than one milligram per square centimeter (1.0 mg/cm^2) or less than half of one percent (0.5%) by weight.

[5] The EPA’s Renovation, Repair, and Painting Program regulation went into effect on April 22, 2010. It is found in 40 CFR Part 745. It currently applies to residential (target housing) and “child-occupied” properties constructed before 1978. Aspects of it are expected to be extended to at least the exterior of public and commercial buildings within the next few years.

“Target Housing” is defined as:

> “in TSCA section 401 as any housing constructed before 1978, except housing for the elderly or persons with disabilities (unless any child under age 6 resides or is expected to reside in such housing) or any 0-bedroom dwelling.”

“Child-occupied” facilities are defined as:

> "*Child-occupied facility* means a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, under 6 years of age, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visits last at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may include, but are not limited to, day care centers, preschools and kindergarten classrooms. Child-occupied facilities may be located in target housing or in public or commercial buildings."

On May 6, 2010, the EPA announced that it is proposing to expand the regulation to cover the exterior of public and commercial buildings, and to study whether to expand it to the interior of these buildings. (See page 24848 Federal Register / Vol. 75, No. 87 / Thursday, May 6, 2010.)

[6] Firms must be certified by the EPA if they conduct or are compensated for renovation work that will disturb more than six square feet of paint in an interior room, 20 square feet of a painted surface on an exterior side of a building, or conduct window removal and replacement work.

The need for "firm" certification includes general contractors who hire subcontractors who disturb paint, and of course the actual employer (subcontractor) of those that disturb paint. The need for "firm" certification probably includes property management companies (since they are compensated to conduct renovations) even though they, like many general contractors, may not have employees disturb lead. The firm pays a $300 fee to the EPA and completes forms where the firm promises to comply with the regulation. The firm must be re-certified every five years.

The supervisor of a project that disturbs more paint than the minimum amounts must attend a one-day "Certified Renovator" training course from an EPA-approved training provider. The certified renovator (who completes the one-day course) must re-certify every five years. He or she is required to be present on the job site to ensure compliance with the provision of a lead notification pamphlet to the property owner or residents. He or she must also verify that the containment system is set up correctly and is appropriate for the work. He or she must also be present at the end of the job to implement the "Cleaning Verification" procedure.

The certified supervisor is responsible for training any workers on the site in the work practices necessary to comply with the regulation.

The containment requirements can be summarized by the following:

- Interior Work: post warning signs; poly sheeting out six feet on the floor; close windows, doors, HVAC vents within six feet of work area.
- Exterior Work: post warning signs and restrict access 20 feet out from the work area; cover the ground out ten feet; close windows, doors, and vents within 20 feet of work area.

The "Cleaning Verification Procedure" is currently limited to using a wet cleaning cloth (such as a "Swiffer" type cleaning cloth) to wipe the work area. The cloth is then compared to a visual standard. If the cloth is at least as clean as the comparison card, the area passes. If it is not, the area must be re-cleaned.

The renovator must create a final report documenting the firm certification, the certified renovator's certification, the training of the workers, the result of the cleaning verification procedure, and a statement that the containment and work practices used were in compliance with the regulation. This record must be given to the building owner or resident and the firm must keep a copy for three years. (The requirement to provide the report to the building owner or resident was added to the rule in May 2006.) The fee for noncompliance is currently a maximum of $37,500 per violation, per day. This regulation is enforced by the U.S. EPA.

[7] The Cal/OSHA lead standard for construction is found in Title 8 of the California Labor Code, Subchapter 4, Article 4, Dusts, Fumes, Mists, Vapors, and Gases, Construction Safety Orders, Section 1532.1.

[8] The primary California Department of Public Health (CDPH) regulation designed to protect the citizens of California from lead hazards is found in Title 17, California Code of Regulations, Division 1, Chapter 8, Accreditation, Certification, and Work Practices for Lead-Based Paint and Lead Hazards

[9] Title 17, Article 16, Section 36000, **"**Requirements for Lead Hazard Evaluation for Public and Residential Buildings," and Section 36100 "Requirements for Abatement for Public and Residential Buildings" apply only in Public and Residential Buildings as defined in the standard. However, Section 35043, the definition of Presumed Lead-Based Paint, and Section 36050, "Lead-Safe Work Practices" apply to all structures and locations in California. In summary, "Lead-Safe Work Practices" must be used on public, residential, industrial, and warehouse facilities and their grounds, and paint on surfaces constructed before 1978 must be treated as Lead-Based Paint.

[10] Title 17 of the California Health and Safety Code says that a containment system must be used when conducting lead-related construction work, and that the area must be cleaned after completion of the work. Proof of this containment system and cleanliness of the work area following completion of the work must be provided to the CDPH upon request.

These requirements are found in Title 17, Section 36050:

"(a) Any individual conducting lead activities, excluding lead hazard evaluation, shall:

(1) Use containment;

(2) Ensure that the work area has no visible dust or debris following the completion of a project;

(3) Demonstrate compliance with (a)(1) and (a)(2) to the Department or local enforcement agency, as defined in section 105251 of the Health and Safety Code, upon request."

2. Responsibilities of Building Owners Regarding Lead-Related Construction Work

[11] Title 17, Section 35037 defines "lead hazard" as: "deteriorated lead-based paint, lead contaminated dust, lead contaminated soil, disturbing lead-based paint or presumed lead-based paint without containment, or any other nuisance which may result in persistent and quantifiable lead exposure."

[12] The requirement that a building owner will be held responsible for the cleanup of lead hazards is found in Section 17920.10 of the California Health and Safety Code.

> Section 17920.10 says:
> "(a) Any building or portion thereof including any dwelling unit, guestroom, or suite of rooms, or portion thereof, or the premises on which it is located, is deemed to be in violation of this part as to any portion that contains lead hazards. For purposes of this part, "lead hazards" means deteriorated lead-based paint, lead-contaminated dust, lead-contaminated soil, or disturbing lead-based paint without containment, if one or more of these hazards are present in one or more locations in amounts that are equal to or exceed the amounts of lead established for these terms in Chapter 8 (commencing with Section 35001) of Division 1 of Title 17 of the California Code of Regulations or by this section and that are likely to endanger the health of the public or the occupants thereof as a result of their proximity to the public or the occupants thereof."

Later in the Section 17980 (b)(1), the Health and Safety Code says:

> "Whenever the enforcement agency has inspected or caused to be inspected any building and has determined that the building is a substandard building or a building described in Section 17920.10, the enforcement agency shall commence proceedings to abate the violation by repair, rehabilitation, vacation, or demolition of the building."

[13] Building owners are responsible for identifying hazardous materials such as asbestos and lead prior to contracting for construction work. Health and Safety Code, Section 25914, requires building owners identify "asbestos and other hazardous materials" prior to construction work and Section 35043 requires all paint on structures built before 1978 to be treated as Lead-Based Paint. There is a similar "presumption" of "Asbestos-Containing Materials" found in Title 8 of the Labor Code, Section 1529. This standard states that all "Surfacing Materials" and "Thermal System Insulation" applied before 1981 are "Presumed Asbestos-Containing Materials" (PACM).

In general, the time frames for the use of lead, particularly in paint, mimic the time periods when asbestos was common in building materials. Many building owners are familiar with the extensive requirements for the discovery and management of asbestos in buildings prior to the conduction of construction work. For example, building owners are responsible for ensuring that a thorough inspection for asbestos is done prior to any renovation (or demolition) in order to comply with the local requirements of the National Emission Standard for Hazardous Air Pollutants (NESHAP).

In summary, Cal/OSHA requires the presumption of asbestos in many building materials applied before 1981, and the Department of Public Health requires the presumption of Lead-Based Paint prior to 1978. <u>When asbestos is a concern for building owners, so will be lead and vice versa!</u>

[14] Failure to identify hazards prior to bidding construction work may result in contract change orders if lead is discovered once the work has begun. Almost all general construction contracts will include a contract clause waiving responsibility for the management of hazardous materials. If a hazardous material such as lead is discovered, the building owner will normally be required to agree to the change orders necessary to address the hazard.

Building owners who fail to identify hazardous materials prior to the construction contracting process will often face three potentially negative outcomes.

- Building owners will have to agree to change orders to fund the additional expense of regulatory compliance once the lead hazard is identified. This unexpected cost may be significant and affect the price of the entire project.

- Building owners who failed to identify hazardous materials prior to contracting may have hired contractors who may conduct the work in a manner out of compliance with regulations and in a manner that will potentially contaminate the buildings. This will bring additional liability to the building owner and may endanger the health of the construction employees and the building occupants. The building owner may be held responsible if a "lead hazard" is discovered after the construction work. For example, if the building owner did not notify the contractor of the hazard, and the contractor excluded hazardous materials from the contract, the owner will may be held responsible for the cleanup associated with the lead hazard.

- Building owners who refuse to accept change orders for lead compliance work may find their contractor walking away from the job rather than facing the liability of violating State regulations.

In summary, if a building owner fails to identify lead prior to construction, contractor change orders to address the lead may have a significant impact on the price of the work. If lead was not identified in the contract documents and is disturbed improperly by the contractor, the owner will often stand alone in being responsible for cleaning up the practical and legal mess.

[15] Building owners should verify that construction companies have the proper training, equipment, experience, and insurance to disturb lead prior to contracting for lead-related construction work. Construction companies conducting lead-related construction work must, at a minimum, be able to comply with the Cal/OSHA requirements listed in Title 8, Section 1532.1. In summary, the employer must provide:

- respirators and protective clothing in compliance with a written respirator and medical approval program;
- a lead medical surveillance program including employee blood sampling;
- capability to conduct required personal air sampling of their employees;
- vacuums equipped with High Efficiency Particulate Air (HEPA) filtered vacuums;
- annual lead training for all employees exposed to lead.

Contractors disturbing lead must also be familiar with Title 17 requirements for training, containment systems and notification requirements.

Since April 22, 2010, those working in pre-1978 residential or child-occupied facilities must be in compliance with the EPA's Renovation, Repair, and Painting Program rule.

A general contractor's general liability insurance normally includes a "pollution exclusion" for the environmental risks associated with substances such as lead or asbestos. Therefore most general contractors will not have insurance protection for the costs associated with problems associated with lead cleanups or liability. Building owners should evaluate their insurance needs and determine whether specialized environmental insurance coverage is necessary for a particular project that disturbs lead.

[16] Employers are obligated under the California Labor Code to protect their employees from hazards created by employers in adjacent areas. This is best discussed under the "Multi-employer Worksite" rules. For example, Cal/OSHA can fine an employer for being a "Creating Employer" or an "Exposing Employer." A Creating Employer will likely be a construction company whose employees disturb lead without an effective containment. This may result in lead contamination in adjacent areas where another employer's employees are exposed to the lead dust and debris. Their employer may be cited by Cal/OSHA as an "Exposing Employer" if that employer didn't take appropriate steps to avoid the exposure to their employees. Therefore, building owners with employees in areas adjacent to improperly conducted lead work may be cited by Cal/OSHA as an Exposing Employer since their workers were improperly exposed to lead.

[17] Building owners should verify that lead-related construction work is actually being done in compliance with regulations. It is generally accepted that some contractors may not comply with applicable building codes unless there is a verification system to ensure compliance. The quality of normal construction work is verified through the building inspection permit process. However, no government agency routinely inspects the work practices involved in lead-related construction work. It is very unlikely that a government enforcement agent from Cal/OSHA or CDPH will visit a work site to verify proper compliance. Therefore the building owner needs to conduct this verification of proper work practices to ensure that improper work doesn't endanger building occupants and adjacent spaces.

The verification can be done by an environmental consultant or other agent of the owner. This does not have to be a sophisticated review or audit, but should, at a minimum, involve periodic unannounced site visits. The purpose of the visits is to verify that the contractor is using an adequate containment system and no visual dust or debris is escaping the area. The verification should also include a review of the contractor's personnel and equipment decontamination process. Finally, is the contractor using appropriate dust suppression such as wet methods and HEPA-filtered vacuums and not allowing lead dust to accumulate on surfaces?

Title 17, Section 36050 "Lead Safe Work Practices" (a)(3) states that the CDPH may request proof of containment and proof that there was no visible dust and debris following the completion of a project. This requirement for proof could be satisfied by written documentation from a consultant (or other representative of the building owner) that documented the use of a containment system and the visible cleanliness of the area following the project.

[18] The EPA's real estate disclosure regulation triggering the distribution of a lead pamphlet prior to the lease or sale of residential property built before 1978 is found in Title 24 of the Code of Federal Regulations, Part 35, Subpart H, Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards Upon Sale or Lease of Residential Property. The pamphlet is titled "Protect

Your Family From Lead in Your Home." This pamphlet can be downloaded from www.epa.gov/lead/pubs/leadbase.htm.

[19] The Renovation, Repair, and Painting Program rule found in 40 CFR Part 745 requires certified firms conduct work in target housing and child-occupied facilities. The firms and supervisors doing the work must be EPA certified and can be penalized by the EPA if they are not and/or do not comply with the rule. The rule does not appear to allow the EPA to cite the owner for hiring non-certified firms.

3. Responsibilities of Environmental Consultants Regarding Lead-Related Construction Work

[20] Environmental consultants should inform their clients of potential hazards that might be created during construction work. Building owners may initially hire consultants for advice regarding one specific hazard, such as asbestos or mold. However, as health and safety professionals, consultants should ensure that clients are aware of additional common environmental hazards that might arise during construction. This principle is best stated in the American Board of Governmental Industrial Hygienists (ABGIH) "Code of Ethics." It states that their members are to "Follow appropriate health and safety procedures, in the course of providing professional services, to protect clients, employers, and employees and the public from conditions where injury and damage are reasonably foreseeable."

For example, lead will commonly be involved in construction projects dealing with asbestos, and vice versa. Or, if a consultant is initially hired for advice regarding biological contaminants such as mold on building surfaces, the consultant should advise the client regarding the potential disturbance of lead and asbestos during mold remediation. Failure to provide clients information about the potential for disturbing these common materials may be considered negligence on the part of the consultant.

[21] Consultants must ensure that their clients understand the regulatory and practical reasons for identifying lead and other potentially hazardous materials prior to contracting for construction work. Briefly, Health and Safety Code, Section 25914, requires building owners identify "asbestos and other hazardous materials" prior to construction work. Failure to identify these materials prior to construction may result in significant construction change orders, or worse, serious environmental contamination of a building.

[22] Environmental consultants should routinely include the inspection for lead-containing construction materials into their pre-construction inspection process. This includes evaluating materials such as ceramic tile and lead sheeting in addition to simply testing paint. Many aspects of construction work including manual demolition, paint preparation work, welding and torch-cutting are known to create potential airborne lead exposure above the Cal/OSHA Permissible Exposure Limit (PEL) for airborne lead. Failure to identify these potential hazards may be considered negligence.

The ramifications for not identifying lead prior to construction are severe and should be explained to clients. Failure to identify lead may result in violations of Title 17 and expose building occupants to lead hazards. In addition, the failure to identify lead will likely lead construction contractors to violate the requirements of Cal/OSHA 1532.1 and improperly expose their employees to lead. Finally, failure to identify lead prior to construction will often result in expensive construction change orders that could have been avoided through proper communication of hazards.

[23] Consultants must recognize and communicate to their clients the importance of the EPA's Renovation, Repair, and Painting Program regulation that went into effect on April 22, 2010. It is found in 40 CFR Part 745 and currently applies to residential (target housing) and "child-occupied" properties constructed before 1978. Aspects of it are expected to be extended to at least the exterior of public and commercial buildings within the next few years.

This regulation is designed to change the work practices currently employed by most contractors when they disturb lead-containing surfaces. We expect the requirements of this regulation to eventually be considered minimal professional practice for how renovation work disturbing lead must be conducted.

"Target Housing" is defined as:

> "in TSCA section 401 as any housing constructed before 1978, except housing for the elderly or persons with disabilities (unless any child under age 6 resides or is expected to reside in such housing) or any 0-bedroom dwelling."

"Child-occupied" facilities are defined as:

> *"Child-occupied facility* means a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, under 6 years of age, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visits last at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may include, but are not limited to, day care centers, preschools and kindergarten classrooms. Child-occupied facilities may be located in target housing or in public or commercial buildings."

On May 6, 2010, the EPA announced that it is proposing to expand the regulation to cover the exterior of public and commercial buildings, and to study whether to expand it to the interior of these buildings. (See page 24848 Federal Register / Vol. 75, No. 87 / Thursday, May 6, 2010.)

The Renovation, Repair, and Painting Program rule requires only certified firms conduct work in target housing and child-occupied facilities. The firms and supervisors doing the work must be EPA certified and can be penalized by the EPA if they are not and/or do not comply with the rule. The rule does not appear to allow the EPA to cite the owner for hiring non-certified firms.

Consultants need to inform their clients of the key components of Title 17 in order for their clients to not inadvertently create lead hazards. In summary, lead hazards are defined as disturbing lead without a dust containment system or leaving measureable amounts of lead dust and debris after the completion of work. In addition, clients must understand the Title 17 requirement to treat all pre-1978 paint on structures as Presumed Lead-Based Paint. These aspects of Title 17 apply to all structures in California, not just to public and residential buildings.

[24] Consultants should ensure that their clients understand the need to utilize qualified contractors to conduct lead-related construction work. Contractors without the necessary training and work practices may contaminate the building with lead dust and debris. This may result in lead exposure hazards to the building occupants and improper exposure to lead for the contractors' employees.

Consultants must explain to their clients that compliance with Cal/OSHA Section 1532.1 training, air sampling, and personal protective equipment requirements will be difficult for the average construction contractor. While in most cases, the development of proper Title 17compliant dust containment barriers is not difficult, most general contractors do have difficulty rigidly enforcing decontamination procedures designed to keep workers from transporting lead-contaminated dust off the containment drop sheets.

[25] Consultants should assist their clients in determining an appropriate contractor to conduct lead-related construction work. Most construction contracts involve language where the contractor promises to "comply with all applicable regulations." The consultant must advise the client on whether the contractor is reasonably likely to be able to comply with that language.

Lead-related construction work can involve simple work that a general contractor can successfully conduct with minimal training and minimally changed work practices. For example, minimal training and work practices are required for those simply attaching objects to lead-painted surfaces or using heavy equipment to demolish lead-containing structures. On the other hand, common construction work, such as demolishing lead-containing tile walls during restroom remodeling projects, has the potential for releasing a great deal of lead-containing dust into adjacent areas. Similarly, numerous building owners have spent a great deal of money in cleanup and litigation costs after contractors conducted power washing of loose and peeling paint without adequately containing the areas.

Many clients and contractors believe, in error, that the Cal/OSHA and CDPH regulations apply only to lead over the concentrations defining Lead-Based Paint. Consultants must explain to clients that the Cal/OSHA lead in construction regulation (Section 1532.1) applies when lead in any measureable concentration will be disturbed during construction. In addition, clients need to understand that lead hazards, as defined in Title 17, may be created by any lead-containing material, not just Lead-Based Paint.

Many general construction contractors will have difficulty complying with the requirements of the Cal/OSHA Section 1532.1. This will include having trouble meeting the training, personal protection, air sampling, and equipment requirements necessary to comply with the standard.

For example, the contractor's employees must, at a minimum, meet the training requirements expressed in 1532.1(l). While this section does not specify a specific time frame for the training, the training must include all subjects discussed in this section of the standard. Most lead-related construction work will not require the workers and supervisors to have CDPH certification since the work will usually not be considered abatement according to the Title 17 definition of abatement. However, Section 1532.1(l)(3) does require certification if the employees are exposed over the PEL in public buildings. All lead training must be repeated on an annual basis.

Most lead-related construction work will involve at least one of the activities described in 1532.1(d)(2)(A-E). These activities are commonly described as "trigger tasks." These tasks include, at the lowest expected exposure, paint preparation work such as sanding and scraping, manual demolition of lead-containing surfaces, and the use of HEPA-vacuum-shrouded tools. Work with expected higher exposure includes not using HEPA-filtered grinding/sanding tools, abrasive blasting and cleanup, and the heating of lead through torch cutting and welding. Those conducting trigger tasks must have blood lead testing, must be wearing personal protective equipment including HEPA-filtered respirators, collect air samples, and meet the training requirements.

In summary, except for the most minimal disturbance of lead, many general contractors will be unlikely to comply with Section 1532.1 requirements. Environmental consultants need to advise building owners of this fact before allowing their clients to sign construction contracts that will likely result in noncompliant work.

[26] Environmental consultants must remind their clients that contractors may sign contracts promising compliance with regulatory requirements, but fail to implement those precautions once work begins. The quality of normal construction work is verified through the building inspection permit process. However, no government agency routinely inspects the work practices involved in lead-related construction work. Therefore the building owner needs to conduct this verification of proper work practices to ensure improper work doesn't endanger building occupants and adjacent spaces.

At a minimum, a representative of the client, such as the consultant, should make unannounced visits to the work site to verify proper containment systems and work practices. These visits should evaluate the effectiveness of the containment system and the decontamination process for personnel and equipment, and the proper use of dust suppression techniques such as wet methods and HEPA-filtered vacuums. Should the contractor not be complying with the regulatory requirements, the client's representative can report to the client that the contractor is violating the contract and is not in compliance with applicable regulations.

Title 17, Section 36050 "Lead Safe Work Practices" (a)(3) states that the CDPH may request proof of containment and proof that there was no visible dust and debris following the completion of a lead-related construction project. The existence and effectiveness of the containment should be documented in written notes, and when feasible, should be supported by photographic evidence. The client should also arrange for a final visual inspection to verify that the work area has been properly cleaned. This too should be documented in written notes, and when feasible, with photographic evidence.

[27] Clients with employees in the building may be cited as an exposing employer under Cal/OSHA Multi-Employer Worksite rules. The relevant Multi-Employer Worksite regulation is found in Chapter 3.2, Subchapter 1, Article 4.5. The employer of employees exposed to a hazard is defined as an exposing employer.

In Section 336.11, the regulation states that the exposing employer will be cited unless they had no authority to correct the hazard. Clearly the client who contracts for lead-related construction in an adjacent area has the authority to ensure that the work is done correctly. Therefore the

consultant's client will be cited by Cal/OSHA if the client's employees are improperly exposed to lead.

[28] Title 17 requirements can be confusing, particularly in regards to when CDPH lead-certified supervisors and workers must be used, and when clearance dust wipe sampling must be conducted at the completion of the work. The environmental consultant must assist the client in determining when work is abatement, and this decision must be defined in contract documents.

The definition of "abatement" in Title 17 is "any set of measures designed to reduce or eliminate lead hazards or lead-based paint for public and residential buildings, but does not include containment or cleaning." Abatement is distinguished by the "intent" of the work.

Title 17 was developed in response to the U.S. EPA training requirements specified in Title 40, Part 745, Lead-Based Paint Poisoning Prevention In Certain Residential Structures, Subpart L, Lead-Based Paint Activities. This was where the "intent" concept of "abatement" was developed in order to distinguish "abatement" from "renovation" and "maintenance" work. Section 745.223 Definitions, (4), specifically excludes maintenance and renovation work from the definition of "abatement" work.

In California, all abatement work triggers a notification form to be sent to the CDPH prior to the work. All abatement work designed to last more than twenty years must be done by CDPH certified workers and supervisors, and a certified inspector/assessor, project monitor, or sampling technician must collect clearance dust wipe samples at the completion of the work. Therefore, particularly in regards to abatement designed to last over twenty years, there can be significantly increased costs due to the certification and clearance testing requirements.

Unfortunately, Title 17 is not as clear as the EPA in clarifying that "abatement" does not include maintenance and renovation work. In California, is the "intent" of the work designed to reduce or eliminate a lead hazard? If the answer is yes, then the work may be considered abatement under Title 17. However, there are some major exceptions to this simple analysis.

The language in the Title 17 definition of abatement can be interpreted in several ways. A very broad interpretation would indicate that the removal of lead from a building is almost always "abatement" because it is usually removed to eliminate a lead hazard to someone. For example, lead-containing paint (as well as any paint) must be removed from a metal beam prior to welding to that beam. Some would say that paint removal process is abatement as defined by Title 17 since the paint was removed partially to prevent a lead hazard to the welder from the vapors released during the welding process. (The paint was also removed to create a clean surface to increase the effectiveness of the weld.) Another common construction practice is to have an environmental contractor remove lead-containing ceramic tile during a restroom remodel process. The environmental contractor removes the ceramic tile because the general contractor does not have the proper equipment, training, and personal protective gear to comply with Title 8 1532.1. Once that initial lead removal work is complete and cleaned up, the general contractor conducts the normal restroom remodel work. Since the environmental contractor is removing a "lead hazard" to the general contractor, some would consider this to be abatement as defined by Title 17.

Among other problems associated with this interpretation is that if it is abatement designed to last over twenty years, only certified people can conduct the work and there must be clearance dust

sampling done at the end. Many lead health and safety professionals consider this to be unnecessary and often counterproductive in the two examples given.

CDPH has not issued written clarification regarding what constitutes abatement. However, verbal discussions with them lead to the following clarification. Abatement is more accurately described as an action done to reduce a lead hazard to building occupants (including both children and adults) but not one done solely for the purpose of reducing a hazard to maintenance or construction workers conducting construction or maintenance work. Therefore, the removal of the paint prior to welding, or the removal of ceramic tile prior to general construction work <u>are not</u> abatement work.

Painting work disturbing lead-containing paint may be "abatement" depending on the intent of the work. For example, painting work done as part of a renovation is lead-related construction work requiring a containment system, but it is <u>not</u> abatement, since it is not being done to correct a lead hazard. On the other hand, it would be abatement if the client specifically asked the painter to repaint the structure out of a concern for the hazard created by the lead-containing paint. Then the painting work would be abatement designed to last less than twenty years as defined by Title 17.

CDPH will utilize contract documents to determine whether or not lead-related construction work is abatement. Consultants must advise clients about the correct use of the term "abatement" in contract documents. For example, it normally would be improper for a contract to read "abate the lead paint on the steel beams" prior to welding or "abate the lead-containing ceramic tile" on the restroom walls. This terminology implies that the paint on the beams and the lead-containing ceramic tile are being removed because the client thought they were lead poisoning hazards to the occupants of the building. That language would trigger the use of CDPH certified workers and supervisors, and the collection of dust wipe samples by a third-party certified person following completion of the work. While the collection of clearance dust wipe samples may be desired by the client in specific situations, it usually is not appropriate for general construction work in areas not soon to be occupied by the public.

For example, it would generally be inappropriate and counterproductive to conduct clearance dust wipe sampling for lead in areas near where lead paint was removed from beams prior to welding or where ceramic tile walls and floors were removed down to the substrates prior to additional remodeling work. The welding work and ongoing construction work may still create lead hazards. Should the client desire the legal liability protection provided by the collection of dust wipe sampling, the sampling should be done after all the construction work is completed, and just before the area will be reoccupied.

[29] Lead hazardous waste testing and disposal may be confusing to most clients. Therefore it is the responsibility of a consultant to ensure that the agents of the client (contractors) are properly handling potential hazardous waste. Failure to properly manage hazardous waste may result in criminal prosecution of the client since the client will often be deemed the generator of the waste, and thus responsible for its handling.

Consultants need to advise clients that, in general, construction debris containing lead, including debris with intact paint, must undergo hazardous waste testing prior to disposal. This conflicts with a common misconception in the construction industry that intact lead-containing paint on debris does not need to be tested. This misunderstanding is due to a Department of Toxic

Substances Control (DTSC) advisory issued in the 1990s that was generally interpreted to mean testing of construction debris wasn't necessary. Many contractors (and consultants) are not aware that DTSC rescinded that policy in the early 2000s. In summary, construction debris contaminated with lead must undergo the hazardous waste testing process prior to determining proper disposal options.

4. Responsibilities of General/Prime Contractors Regarding Lead-Related Construction Work

[30] The relevant Multi-Employer Worksite regulation is found in Chapter 3.2, Subchapter 1, Article 4.5. Section 336.10 Determination of Citable Employer. This section states:

> "On multi-employer worksites, both construction and non-construction, citations may be issued only to the following categories of employers when the Division has evidence that an employee was exposed to a hazard in violation of any requirement enforceable by the Division.
> (a) The employer whose employees were exposed to the hazard (the exposing employer);
> (b) The employer who actually created the hazard (the creating employer):
> (c) The employer who was responsible, by contract or through actual practice, for safety and health conditions on the worksite; i.e., the employer who had the authority for ensuring that the hazardous condition is corrected (the controlling employer); or
> (d) The employer who had the responsibility for actually correcting the hazard (the correcting employer.)
> Note: The employers listed in subsections (b) through (d) may be cited regardless of whether their own employees were exposed to the hazard."

General/prime contractors having employees conduct lead-related construction that results in their employees being improperly exposed to lead will likely be cited at least as an exposing, creating, and controlling employer.

[31] The trend in Cal/OSHA enforcement is to hold the general/prime contractor responsible for the safety and health violations of their subcontractors. The general/prime contractor is considered the "controlling employer" under Section 336.10. (The general/prime may also be cited as an exposing, creating, or correcting employer.) As the controlling employer, the general/prime is responsible for ensuring that their subcontractors comply with the Cal/OSHA lead in construction regulation found in Title 8, Section 1532.1.

The Cal/OSHA Appeals Board ruling in *C. Overa & Co.* found that general/prime contractors are strictly liable for their subcontractors' violations. This case involved a general/prime contractor who was cited as a controlling authority for a subcontractor's failure to shore a trench. The general/prime was not aware of the failure to shore the trench, but was cited anyway as a controlling employer. (For a further discussion of this issue and *C. Overa & Co.*, see the Volume 35, Number 3, March 2006, issue of *California Constructor.)* In summary, it seems very likely that Cal/OSHA will cite general/prime contractors if they fail to adequately supervise the disturbance of lead by their subcontractors.

[32] Section 336.11 Determination of Applicable Defenses identifies the criteria Cal/OSHA must use to cite an exposing employer under the Multi-Employer Worksite rule. The process by which Cal/OSHA determines whether or not a general/prime contractor is a controlling employer for safety and health violations by their subcontractors has been controversial. In an attempt to clarify this issue both for the public and for Cal/OSHA enforcement personnel, Cal/OSHA will soon implement a new Section 336.12 that will identify the criteria for determining a controlling employer. This section, while currently still in a draft phase, is likely to become part of the standard in the near future. The following section quotes heavily from the February 9, 2009 Cal/OSHA draft of this new section:

"336.12 Affirmative defense for controlling employers at construction worksites.

(a) Application, purpose, and pre-issuance procedures.

(1) Sole defense to allegation of controlling employer status. This section applies only to construction worksites and specifies procedures to be followed by controlling employers that, if followed, shall constitute a complete affirmative defense to any allegation that the employer is citable as a controlling employer as defined in section 336.10(c). No other defense shall be recognized at construction worksites with respect to the employer's status as a controlling employer."

"(c) Elements of the Controlling Employer Affirmative Defense. The controlling employer shall not be considered citable for a violation pursuant to section 336.10(c) if the employer can demonstrate that, as of the time of the violation, all of the following conditions were met:

(1) Reasonable steps to prevent exposure to reasonably anticipated serious hazards. The employer took reasonable steps, through one or more designated persons, to prevent employees at the worksite from being exposed to reasonably anticipated serious hazards by doing all of the following:

(A) Before allowing a subcontractor to begin work for the first time on the project, conducting or causing to be conducted a review of the subcontractor's procedures and requiring the subcontractor to address, through those procedures, those serious hazards to which (i) the subcontractor's employees were reasonably anticipated to be exposed on the job and (ii) other employees were reasonably anticipated to be exposed on the job as a result of work to be performed by the subcontractor."

"(B) Inspecting the worksite at least once per work week and at least once during the duration of each subcontractor's work, for serious hazards during all periods when the worksite was active, documenting the inspections and corrective measures taken as a result, and ensuring that each subcontractor performing high-hazard work performed all inspections as required by applicable OSH standards."

"(C) Coordinating the work to prevent, to the extent practicable, exposure of all workers and contractors at the site to serious hazards.

(D) Requiring employers engaged in high-hazard operations to comply with requirements to utilize a competent person as defined in section 1504(a) to conduct inspections of those operations as required by regulation for that operation.

(2) Prompt action to correct hazards when discovered. If the controlling employer knew of the violative condition, the controlling employer did all of the following as soon as practicable upon discovering or being notified of it:

(A) Took all practicable steps to make sure that employees would not be exposed to the hazardous condition or practice.

(B) If the hazard was not immediately corrected, notified all employers with employees likely to be exposed to the hazard of the presence of the hazardous condition or practice.

(C) Notified the creating and correcting employers, if applicable, of the need for corrective measures.

(D) Verified and documented that effective measures were implemented to correct the identified hazards or practices."

"(d) Review of hazard-control procedures by the controlling employer.

(1) Serious, reasonably anticipated hazards. The controlling employer's review of subcontractor hazard-control procedures required by subsection (c)(1)(A) above shall be directed to the control of serious, reasonably anticipated hazards. Examples include procedures to address the following, as applicable:"

"(J) Assurance of adequate training on the use and maintenance of personal protective equipment (PPE).

(K) Compliance with hazard communication requirements.

(L) Identification and control of exposure to hazardous substances to which employees at the site may be exposed."

In summary, general/prime contractors will be cited as controlling employers for the violations of the lead standard by their subcontractors unless they used one or more designated persons to review the subcontractors' planned lead work practices and precautions prior to the start of the work. Then, once work has begun, they must inspect the subcontractors' work practices and precautions at least once per week or at a minimum once during the subcontractors' work. This inspection must include a review of proper use of necessary personal protective equipment (such as respirators), posting of warning signs, and of course control of lead exposures at the site.

[33] Title 17, California Code of Regulations, Division 1, Chapter 8, Accreditation, Certification, and Work Practices For Lead-Based Paint and Lead Hazards, Section 35043 states: "Presumed lead-based paint means paint or surface coating affixed to a component in or on a structure constructed prior to January 1, 1978." Therefore general/prime contractors must comply with the lead-related construction requirements of Title 17 and Cal/OSHA 1532.1 unless the paint is tested and found to contain less than the threshold amounts for each regulation. In addition, Cal/OSHA pre-work notification requirements found in 1532.1(p) will apply unless the paint or lead-containing material is sampled and proved to contain less than the lead threshold amounts for this section.

[34] Construction employers must determine if their employees might be exposed to lead during construction work. Title 8, Section 1532.1(d)(1)(A) states "Each employer who has a workplace or operation covered by this standard shall initially determine if any employee may be exposed to lead at or above the action level."

[35] General/prime contractors must be sure that their employees and subcontractors conducting lead-related construction work are fully in compliance with Title 17. Compliance with the work practice requirements of Title 17 are not difficult for most contractors since the requirements primarily involve using an effective containment system and properly cleaning the area after completion of the work. However, when work is defined as "abatement" under the Title 17 definitions, then additional requirements such as the use of CDPH certified personnel and clearance dust wipe sampling may become necessary. This will limit which contractors can attempt this work.

The term abatement as used in Title 17 is based on the intent of the work. In general, abatement is an action done to reduce a lead hazard to building occupants (including both children and adults) but not one done solely for the purpose of reducing a hazard to a maintenance or construction workers conducting construction or maintenance work. Therefore, the removal of paint prior to welding, or the removal of ceramic tile prior to general construction work <u>are not</u> abatement as defined by Title 17.

CDPH will utilize contract documents to determine whether or not lead-related construction work is abatement. Therefore it is important that the general/prime use the correct terminology in contract documents. For example, it normally would be improper for a contract to read "abate the lead-containing ceramic tile" on the restroom walls. This terminology implies that the lead-containing ceramic tile is being removed because it was thought to be a lead poisoning hazard to the occupants of the building. That language would trigger the use of CDPH certified workers and supervisors, and the collection of dust wipe samples by a third-party certified person following the work. It would be more appropriate for the contract language to read "Remove the lead-containing ceramic tile on the restroom walls following lead-safe work practices in compliance with Title 17 and 8 CCR 1532.1."

In addition, Title 17, Section 36050 "Lead Safe Work Practices" (a)(3) states that the CDPH may request proof of containment and proof that there was no visible dust and debris following the completion of a lead-related construction project. General/prime contractors should ensure that they and/or their subcontractors are aware of this requirement and plan a strategy for providing that proof.

CDPH does not describe in Title 17 what they would consider adequate proof of containment or proof of a clean work site. Initial drafts for public comment included photographic proof of an adequate containment. That requirement was dropped in the final standard and no further explanation of the type of proof needed was provided.

Personal discussions with CDPH personnel led to the following conclusions regarding what would constitute adequate proof of containment and cleanliness of the worksite. Dated photographs of the contained work area showing the type and extent of the containment would probably be excellent proof. These photographs should be accompanied by dated, written job

notes describing the location of the work, the type of work conducted, and a description of the type of containment utilized and its effectiveness. A simple photograph alone, for example, of a poly drop sheet next to a wall, would probably not be adequate proof of containment. Unless, of course, the photograph demonstrated discernable proof that the drop sheet was under the specifically defined work area.

A combination of job notes (either by the contractor or a third party consultant) as well as a photograph will probably be considered adequate proof of containment. A written description of the containment done by an independent third party such as a consultant, would also probably be considered adequate proof. On the other hand, a simple written description of a containment done by the contractor, with no accompanying photograph or other proof, might be considered suspect by CDPH.

The job notes should describe not only the type of containment, but a discussion of the effectiveness of the containment. For example, if the original containment was not found to be fully effective, what steps were taken to address the problem? Or, conversely, the job notes should reflect that the containment was effective in eliminating any visible dust or debris from leaving the immediate, contained work area. The results of dust wipe sampling outside the containment would certainly add to the credibility of the job notes in concluding that the containment was effective.

General/prime contractors should ensure that they or their subcontractors plan to provide similar type of proof of the cleanliness of the area following completion of the work. Again, the best proof is probably a combination of a photograph, written job notes documenting that the area was cleaned following the work, and where appropriate, clearance dust wipe sampling results.

A visual inspection for dust, debris, and general cleanliness following completion of lead-related construction work will normally be adequate if clearance dust wipe sampling is not required by regulation or contract documents. Even when not required by regulation, clearance dust wipe sampling is strongly recommended when young children will re-enter an area following completion of the work. Dust wipe sampling may also be appropriate in some settings where the public, but not necessarily children, are going to reoccupy a space. Dust wipe sampling is not generally recommended during ongoing construction work where additional subcontractors will be working in the same area, and the public will not occupy the area until after more construction work is done.

Regarding written job notes about containment and cleanliness of the areas, CDPH will probably give the most credibility to notes written by an independent third party inspector, particularly a CDPH lead-certified professional. Lacking that, written notes from a general/prime contractor validating the work of a subcontractor will probably be given more credibility than notes alone from the subcontractor regarding their own containment. That said, written documentation from the contractor conducting the work is certainly better than no documentation.

A variety of factors will affect how CDPH interprets the proof of containment and cleanliness. For example, during a standard audit of paperwork from a contractor, they may accept minimal documentation. On the other hand, if they conducted a site inspection based on a complaint from an adjacent tenant, they may issue a citation unless the contractor provides relatively comprehensive proof that disputes the original complainant.

In summary, the general/prime contractor should ensure that subcontractors disturbing lead are using an effective containment system. This should be documented on a site-by-site basis with, at a minimum, written job notes, plus when possible, photographic proof. Similarly, at the conclusion of a subcontractor's work, the general/prime should verify that the work area is at least visually clean of lead dust and debris. This should be documented with, at a minimum, written job notes, plus when possible, photographic proof.

[36] General/prime contractors must be sure that their employees and subcontractors conducting lead-related construction work are fully in compliance with Cal/OSHA Title 8, Section 1532.1 (lead in construction) regulations. Compliance with this regulation will be difficult for most non-environmental contractors. This is because most lead-related construction work will involve at least one of the trigger task activities described in 1532.1(d)(2)(A-E).

Trigger task activities include, at the lowest expected exposure, paint preparation work such as sanding and scraping, manual demolition of lead-containing surfaces, or the use of HEPA-vacuum-shrouded tools. Work with higher expected exposure includes not using HEPA-filtered grinding/sanding tools, abrasive blasting and cleanup, and the heating of lead through torch cutting and welding. Those conducting trigger tasks must have blood lead testing, must be wearing personal protective equipment including HEPA-filtered respirators, collect air samples, and meet the training requirements. Many subcontractors will be unable or unwilling to purchase the equipment and undergo the training necessary to comply with these aspects of the regulation.

The Occupational Lead Poisoning Prevention Program (OLPPP) of the CDPH provides an excellent short summary of the Cal/OSHA 1532.1 regulation. Those interested in understanding the basic requirements of this standard are best referred to this OLPPP summary dated March 6, 2007. This summary can be found at http://www.cdph.ca.gov/programs/olppp/Documents/licsumm.pdf

In summary, most subcontractors are unlikely to be able or willing to comply with the requirements of Cal/OSHA 1532.1. To comply, they must provide additional training for their employees, purchase expensive equipment such as HEPA-filtered vacuums used only for environmental work, develop a written respirator program including a medical approval process for each employee who wears a respirator, and arrange for blood lead testing for their employees exposed to lead. Therefore it is unreasonable for a general/prime contractor to assume that their normal trades' subcontractors will be able to comply with contract requirements to comply with all applicable regulations. The general/prime contractor must take additional steps to ensure that their subcontractors are qualified to conduct lead-related construction work because the general/prime contractor will ultimately be responsible for the subcontractors' compliance with these regulations.

[37] Since June 1, 1999, EPA's "Lead; Requirements for Hazard Education Before Renovation of Target Housing; Final Rule" has required contractors working in pre-1978 residential properties to provide the property owner with a lead warning pamphlet if more than two square feet of paint was going to be disturbed as part of the project. The contractor must provide the EPA pamphlet Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools available for download from the EPA at www.epa.gov/lead/pubs/renovation.htm#owners.

While not routinely enforced, the EPA does occasionally choose to enforce this notification requirement in California. For example, in May, 2009, the EPA announced that it fined a South

San Francisco painting contractor $10,000 for failure to provide this notice prior to a painting project.

[38] The EPA's Renovation, Repair, and Painting Program regulation found in 40 CFR Part 745 went into effect on April 22, 2010. It currently applies to residential (target housing) and "child-occupied" properties constructed before 1978. Aspects of it are expected to be extended to at least the exterior of public and commercial buildings within the next few years.

"Target Housing" is defined as:

> "in TSCA section 401 as any housing constructed before 1978, except housing for the elderly or persons with disabilities (unless any child under age 6 resides or is expected to reside in such housing) or any 0-bedroom dwelling."

"Child-occupied" facilities are defined as:

> "*Child-occupied facility* means a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, under 6 years of age, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visits last at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may include, but are not limited to, day care centers, preschools and kindergarten classrooms. Child-occupied facilities may be located in target housing or in public or commercial buildings."

On May 6, 2010, the EPA announced that it is proposing to expand the regulation to cover the exterior of public and commercial buildings, and to study whether to expand it to the interior of these buildings. (See page 24848 Federal Register / Vol. 75, No. 87 / Thursday, May 6, 2010.)

Firms must be certified by the EPA if they conduct or are compensated for renovation work that will disturb more than six square feet of paint in an interior room, 20 square feet of a painted surface on an exterior side of a building, or conduct window removal and replacement work.

The need for "firm" certification includes general contractors who hire subcontractors who disturb paint, and of course the actual employer (subcontractor) of those that disturb paint. The need for "firm" certification probably includes property management companies (since they are compensated to conduct renovations) even though they, like many general contractors, may not have employees disturb lead. The firm pays a $300 fee to the EPA and completes forms where the firm promises to comply with the regulation. The firm must be re-certified every five years.

The supervisor of a project that disturbs more paint than the minimum amounts must attend a one-day "Certified Renovator" training course from an EPA-approved training provider. The certified renovator (who completes the one-day course) must re-certify every five years. He or she is required to be present on the job site to ensure compliance with the provision of a lead notification pamphlet to the property owner or residents. He or she must also verify that the containment system is set up correctly and is appropriate for the work. He or she must also be present at the end of the job to implement the "Cleaning Verification" procedure.

The certified supervisor is responsible for training any workers on the site in the work practices necessary to comply with the regulation.

The containment requirements can be summarized by the following:

- Interior Work: post warning signs; poly sheeting out six feet on the floor; close windows, doors, HVAC vents within six feet of work area.
- Exterior Work: post warning signs and restrict access 20 feet out from the work area; cover the ground out ten feet; close windows, doors, and vents within 20 feet of work area.

The "Cleaning Verification Procedure" is currently limited to using a wet cleaning cloth (such as a "Swiffer" cleaning cloth) to wipe the work area. The cloth is then compared to a visual standard. If the cloth is at least as clean as the comparison card, the area passes. If it is not, the area must be re-cleaned.

The renovator must create a final report documenting the firm certification, the certified renovator's certification, the training of the workers, the result of the cleaning verification procedure, and a statement that the containment and work practices used were in compliance with the regulation. This record must be given to the building owner or resident and the firm must keep a copy for three years. (The requirement to provide the report to the building owner or resident was added to the rule in May 2006.) The fee for noncompliance is currently a maximum of $37,500 per violation, per day. This regulation is enforced by the U.S. EPA.

5. Responsibilities of Environmental Contractors Regarding Lead-Related Construction Work

[39] Title 17, California Code of Regulations, Division 1, Chapter 8, Accreditation, Certification, and Work Practices For Lead-Based Paint and Lead Hazards, Section 35043 states: "Presumed lead-based paint means paint or surface coating affixed to a component in or on a structure constructed prior to January 1, 1978."

In general, the time frames for the use of lead, particularly in paint, mimic the time periods when asbestos was common in building materials. Therefore environmental contractors must ensure that job sites have been inspected for both hazards before contracting for work. Environmental contractors may wish to bring to the attention of their clients the requirements of Health and Safety Code, Section 25914. This section requires building owners identify "asbestos and other hazardous materials" prior to construction work

[40] Not infrequently, environmental contractors subcontract to remove lead or asbestos hazards in specifically defined areas of a construction site, but note that other subcontractors are improperly disturbing those same materials elsewhere on the same construction site. Environmental contractors should notify the general/prime contractor of this issue and remind the general/prime of their responsibilities under the Multi-Employer Worksite regulation found in Chapter 3.2, Subchapter 1, Article 4.5. Section 336.10.

[41] Environmental contractors need to comply with the requirements of Title 17. They first must determine if the work is abatement as defined in Title 17 or if the work is renovation work. This will affect who can do the work, and whether or not they need to provide advance notification to the CDPH.

In brief, abatement work is work that contract documents identify as being done to reduce a lead hazard for the occupants of a building. For example, an environmental contractor may be hired to remove the windows of a daycare center that are painted with Lead-Based Paint, because the owner has determined the windows are a lead hazard to the children. That work would be abatement designed to last more than twenty years. The work may be done in advance of a window company installing the new windows, but the intent of the work was to reduce a lead hazard to the occupants of the building. In another setting, the environmental contractor may be hired to remove similar lead-painted windows in advance of their replacement by a window installer. However, in the second case, the work is being done as a modernization project, not because the windows were considered a lead hazard. The environmental contractor was hired because the window installer did not have the necessary training, equipment, and skills to disturb lead. This work would not be considered abatement because the intent of the work did not involve correcting a lead hazard for building occupants.

CDPH form 8551 Abatement of Lead Hazards must be submitted to CDPH at least five days in advance of the work and posted at the job site for all abatement work. Environmental contractors should not submit these forms for non-abatement (renovation) work since once the form is submitted, CDPH will assume abatement under their definition was actually conducted. This may create problems for the building owner since CDPH will expect them to have contracted for clearance dust wipe sampling at the end of the project. Failure to collect those clearance dust wipe samples may result in a citation to the building owner.

Environmental contractors conducting abatement work designed to last twenty or more years must utilize CDPH lead-certified workers and supervisors. A certified supervisor must also develop a written abatement plan for the project, and a certified consultant will need to collect clearance dust wipe samples for lead at the completion of the project.

Environmental contractors should comply with the work practices and containment requirements specified in Title 17. In addition, Section 36050 “Lead Safe Work Practices” (a)(3) states that the CDPH may request proof of containment and proof that there was no visible dust and debris following the completion of a lead-related construction project. CDPH does not describe in Title 17 what they consider adequate proof of containment or proof of a clean work site. A combination of job notes (either by the supervisor or a third party consultant) as well as a photograph will probably be considered adequate proof of containment.

A visual inspection for dust, debris, and general cleanliness following completion of lead-related construction work will normally be adequate if clearance dust wipe sampling is not required by contract or regulation. Ideally this visual inspection should be done by a third party inspector, but if that is not done, the environmental contractor should have their supervisor document in job notes how and when the area was cleaned. Whenever feasible, the supervisor should also document the cleaned area with a photograph, and that photograph should be kept with the job notes.

A variety of factors will affect how CDPH interprets the proof of containment and cleanliness. For example, during a standard audit of paperwork from an environmental contractor, they may accept minimal documentation as proof of a containment. On the other hand, if they conducted a site inspection based on a complaint from an adjacent tenant, they may issue a citation unless the contractor provides relatively comprehensive proof that disputes the original complainant.

[42] Cal/OSHA Title 8, Section 1532.1 (lead in construction) regulations are comprehensive. Environmental contractors will have to ensure that their field crews actually comply with all the requirements for exposure sampling, personal protection, blood testing, and required work practices.

[43] Since June 1, 1999, EPA's "Lead; Requirements for Hazard Education Before Renovation of Target Housing; Final Rule" has required contractors working in pre-1978 residential properties to provide the property owner with a lead warning pamphlet if more than two square feet of paint was going to be disturbed as part of the project. The contractor must provide the EPA pamphlet Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools available for download from the EPA at www.epa.gov/lead/pubs/renovation.htm#owners.

[44] The EPA's Renovation, Repair, and Painting Program regulation went into effect on April 22, 2010. It is found in 40 CFR Part 745. The requirements of this regulation apply regardless of whether or not the environmental contractor and its employees are certified by the state or the EPA to conduct lead abatement work. The environmental contractor must still become a "certified firm" and supervisors must still take "Certified Renovator" training.

This regulation currently applies to residential (target housing) and "child-occupied" properties constructed before 1978. Aspects of it are expected to be extended to at least the exterior of public and commercial buildings within the next few years.

"Target Housing" is defined as:

> "in TSCA section 401 as any housing constructed before 1978, except housing for the elderly or persons with disabilities (unless any child under age 6 resides or is expected to reside in such housing) or any 0-bedroom dwelling."

"Child-occupied" facilities are defined as:

> *"Child-occupied facility* means a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, under 6 years of age, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visits last at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may include, but are not limited to, day care centers, preschools and kindergarten classrooms. Child-occupied facilities may be located in target housing or in public or commercial buildings."

Elementary schools constructed before 1978 are covered by this regulation since they are child-occupied facilities.

On May 6, 2010, the EPA announced that it is proposing to expand the regulation to cover the exterior of public and commercial buildings, and to study whether to expand it to the interior of these buildings. (See page 24848 Federal Register / Vol. 75, No. 87 / Thursday, May 6, 2010.)

Firms must be certified by the EPA if they conduct or are compensated for renovation work that will disturb more than six square feet of paint in an interior room, 20 square feet of a painted surface on an exterior side of a building, or conduct window removal and replacement work.

Thus environmental contractors are very likely to exceed these minimal amounts when conducting lead or asbestos abatement work in pre-1978 facilities and must comply with the regulation.

The need for "firm" certification includes general contractors who hire subcontractors who disturb paint, and of course the actual employer (subcontractor) of those that disturb paint. The firm pays a $300 fee to the EPA and completes forms where the firm promises to comply with the regulation. The firm must be re-certified every five years.

The supervisor of a project that disturbs more paint than the minimum amounts must attend a one-day "Certified Renovator" training course from an EPA-approved training provider. The certified renovator (who completes the one-day course) must re-certify every five years. He or she is required to be present on the job site to ensure compliance with the provision of a lead notification pamphlet to the property owner or residents. He or she must also verify that the containment system is set up correctly and is appropriate for the work. He or she must also be present at the end of the job to implement the "Cleaning Verification" procedure.

The certified supervisor is responsible for training any workers on the site in the work practices necessary to comply with the regulation.

State certified lead supervisors and workers must still comply with the training requirements of this regulation. However, the supervisor may take a half-day "refresher" course rather than the full day "initial" "Certified Renovator" course in order to obtain EPA certification as a certified renovator. Workers on the site may receive training from the certified renovator supervisor regarding the work practices necessary to comply with this regulation.

The containment requirements can be summarized by the following:

- Interior Work: post warning signs; poly sheeting out six feet on the floor; close windows, doors, HVAC vents within six feet of work area.
- Exterior Work: post warning signs and restrict access 20 feet out from the work area; cover the ground out ten feet; close windows, doors, and vents within 20 feet of work area.

The "Cleaning Verification Procedure" is currently limited to using a wet cleaning cloth (such as a "Swiffer" cleaning cloth) to wipe the work area. The cloth is then compared to a visual standard. If the cloth is at least as clean as the comparison card, the area passes. If it is not, the area must be re-cleaned. This cleaning verification procedure must be done at the end of the work unless a State-certified person will be collecting clearance dust wipe samples for lead.

The renovator must create a final report documenting the firm certification, the certified renovator's certification, the training of the workers, the result of the cleaning verification procedure, and a statement that the containment and work practices used were in compliance with the regulation. This record must be given to the building owner or resident and the firm must keep a copy for three years. (The requirement to provide the report to the building owner or resident was added to the rule in May 2006.)

The fee for noncompliance is currently a maxium of $37,500 per violation, per day. This regulation is enforced by the U.S. EPA.

6. Responsibilities of Architects Regarding Lead-Related Construction Work

[45] The American Institute for Architects (AIA) Standard Form of Agreement Between Owner and Architect specifically states that the architect shall incorporate into the construction documents the design requirements of governmental authorities having jurisdiction over the project. This statement is found in AIA B101 2007 §3.4.2.

Since the California Health and Safety Code, and U. S. EPA regulations require the assumption of lead being present in numerous buildings built before 1978, the architect must consider this information in the design, estimating, and bidding process.

[46] The California Health and Safety Code in Section 25914.1-3 "Hazardous Substance Removal Contracts" states that separate contracts and a new bidding process are required if hazardous materials found on a job are not disclosed in the initial contract. Unless the lead has been "rendered harmless," work in the area containing the lead (or other hazardous materials) must stop. Therefore an architect's failure to consider lead during the design phase of the project will likely lead to major delays in the construction process. (See section 25914.2 below.)

25914.2.
(a) All asbestos-related work and hazardous substance removal shall be performed pursuant to a contract separate from any other work to be performed, ***when the presence of asbestos or hazardous substances is not disclosed in the bid or contract documents.***
(b) All asbestos-related and hazardous substance removal work which is disclosed in the bid or contract documents shall not require a separate contract from any other work to be performed.
(c) ***In the event the contractor encounters on the site materials he or she reasonably believes to be*** *asbestos or* ***a hazardous substance, and the*** *asbestos or* ***hazardous substance has not been rendered harmless****,* ***the contractor*** *may continue work in unaffected areas reasonably believed safe, and* ***shall immediately cease work on the area affected and report the condition to the*** *owner, or the owner's representative, or* ***architect in writing.***

[47] U.S. EPA and California childhood lead-poisoning regulations define "Lead-Based Paint" as paint or coatings containing more than 5000 parts per million (ppm) lead, or .5% lead by weight, or 1 milligram per square centimeter lead (mg/cm^2). In 1978, the Federal Consumer Products Safety Commission (CPSC) banned the sale of paint with more than 600 ppm for most consumer use. (In 2009 this level was reduced to 90 ppm!) Since paint over 600 ppm couldn't be sold to consumers after 1978, Federal and California childhood lead poisoning regulations use 1978 as a cutoff date for determining the likelihood of high concentrations of lead in paint.

California requires treating all paint applied to surfaces constructed before 1978 to be "Presumed Lead-Based Paint." This definition is <u>not</u> limited to residential and public buildings, but includes all structures built before 1978., California Code Of Regulations, Division 1, Chapter 8, "Accreditation, Certification, and Work Practices For Lead-Based Paint and Lead Hazards" provides a definition of "Presumed Lead-Based Paint" in Article 1 §35043. *"Presumed lead-based paint" means paint or surface coating affixed to a component in or on a structure constructed prior to January 1, 1978. "Presumed lead-based paint" does not include paint or*

surface coating that has been tested and found to contain an amount of lead less than one milligram per square centimeter (1.0 mg/cm^2) or less than half of one percent (0.5%) by weight.

The U.S. EPA requires the presumption of Lead-Based Paint in all residential and child-occupied facilities constructed before 1978. This requirement is found in 40 CFR Part 745 Lead: Renovation, Repair, and Painting Program. This regulation is discussed in detail in footnotes 5 and 6 in the first section of the End Notes of this document.

[48] The California Health and Safety Code in Section 25914.1-3 "Hazardous Substance Removal Contracts" states that separate contracts and a new bidding process are required if hazardous materials found on a job are not disclosed in the initial contract. While not specifically addressed in U.S. EPA or California childhood lead poisoning regulations, most ceramic tile glaze contains very high levels of lead in the surface glaze. (This tends to be more likely on shiny wall tiles, rather than duller finish floor tiles.) Architects should assume wall ceramic tile contains high levels of lead in the glaze, and notify the owner of that possibility prior to any work likely to disturb this type of tile.

[49] See definition of "Presumed Lead-Based Paint" in Title 17 of California Code of Regulations Article 1 §35043. See footnote number 47 in these End Notes for more information on this issue.

[50] The California Department of Industrial Relations, Division of Occupational Safety and Health (DOSH), commonly called "Cal/OSHA" is in the process of revising their lead standards. The draft (current September 2015) includes the requirement to presume the presence of Lead-Based Paint on all structures constructed before 1978 and on all metal structural components/members.

While not specifically addressed in U.S. EPA or California childhood lead poisoning regulations, most ceramic tile glaze contains very high levels of lead in the surface glaze. (This tends to be more likely on shiny wall tiles, rather than duller finish floor tiles.) Architects should assume wall ceramic tile contains high levels of lead in the glaze, and notify the owner of that possibility prior to any work likely to disturb this type of tile.

[51] The EPA's Renovation, Repair and Painting Rule is discussed at length in Footnotes 5, 6, 19, 23, 38, and 44 of these End Notes. In summary, firms must be certified by the EPA if they conduct or are compensated for renovation work that will disturb more than six square feet of paint in an interior room, 20 square feet of a painted surface on an exterior side of a building, or conduct window removal and replacement work. The EPA has clearly stated that "firm" certification is required for general contractors who hire subcontractors who disturb paint, and of course the actual employer (subcontractor) of those that disturb paint.

The EPA's RRP data bank of information and guidance on the interpretation of the Rule does not address whether or not architectural firms are exempted from the Rule. Given that they are not specifically exempted, we make the assumption that they are included. The EPA has yet to respond in writing to a formal inquiry regarding the need for architectural firms to be "certified firms" when contracting for work in residential and child-occupied facilities constructed before 1978. Verbal conversations with EPA Region IX RRP enforcement staff indicate that they would likely enforce the requirement for architectural firms to be RRP "Certified Firms" if the firm was designing the renovation of residential or child-occupied, pre-1978 structures!

To become a RRP "Certified Firm" the firm pays a $300 fee to the EPA and completes forms where the firm promises to comply with the regulation. The firm must be re-certified every five years.

[52] Architects are responsible for assisting their clients in complying with applicable regulations including the type of contractor allowed to bid on work. Architects should ensure that their clients understand the need to utilize qualified contractors to conduct lead-related construction work. Contractors without the necessary training and work practices may contaminate the building with lead dust and debris. This may result in lead exposure hazards to the building occupants and improper exposure to lead for the contractors' employees.