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Via: Federal eRulemaking Portal:
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U.S. Environmental Protection Agency
Document Control Office (7407M)
Office of Pollution Prevention and Toxics
1200 Pennsylvania Ave., N.W.
Washington, DC 20460-0001

Re: Advance Notice of Proposed Rulemaking; Lead; Framework for Identifying and Evaluating Lead Based Paint Hazards From Renovation, Repair, and Painting Activities in Public and Commercial Buildings; Docket ID No. EPA-HQ-OPPT-2010-0173

Dear Sir or Madam:

Please find attached for filing in Docket ID No. EPA-HQ-OPPT 2010-0173 Comments of the Commercial Properties Coalition.

Please let me know if you have any questions.

Sincerely,

CLARK HILL PLC

Jane C. Luxton

Jane C. Luxton

Attachment

# COMMENTS OF THE COMMERCIAL PROPERTIES COALITION

# ON EPA'S FRAMEWORK FOR IDENTIFYING AND EVALUATING LEAD-BASED PAINT HAZARDS FROM RENOVATION, REPAIR, AND PAINTING ACTIVITIES IN PUBLIC AND COMMERCIAL BUILDINGS

**June 30, 2014**

## I. INTRODUCTION AND COALITION DESCRIPTION

Thank you for the opportunity to comment on the EPA's Framework for Identifying and Evaluating Lead-Based Paint Hazards from Renovation, Repair, and Painting Activities in Public and Commercial Buildings ("Framework"). These comments are submitted by the Commercial Properties Coalition (the "Coalition"), an informal group of trade associations the members of which are involved in almost every aspect of commercial real estate development, construction, ownership, management, contracting, renovation, and building product supply. Attachment 1 describes the mission and membership of each participating organization in more detail.[1]

The Coalition's members represent companies and other concerns (many of which are small businesses) that would be significantly affected by any renovation, repair, and painting ("RRP") program for public and commercial ("P&C") buildings. The viability of the commercial real estate sector depends on constructing, owning, and maintaining buildings in a manner to safeguard the health and well-being of employees, tenants and occupants. Above and beyond regulatory mandates, Coalition members routinely seek voluntary certification and accreditation of their offices, apartment buildings, stores, plants, hotels and other structures to ensure that they are sustainable, efficient – and healthy. Accordingly, the Coalition has a substantial interest in the Framework, any finding under section 403 of the Toxic Substances Control Act ("TSCA") regarding "dangerous levels of lead" in the building stock at issue, and any additional regulations that will expand federal authority over RRP activities within and on the exterior of P&C buildings.

The Coalition has had a longstanding interest in RRP matters. It has participated in earlier phases of public comment cycles regarding P&C buildings. We incorporate by reference our comments filed on February 4, 2014 on EPA's Proposed Information Collection Request; April 1, 2013 comments in response to EPA's request for information; 2010 comments on EPA's advance notice of proposed rulemaking; and 2010 comments regarding the review before EPA's Science Advisory Board of EPA's November 2010 Draft of its Approach for Developing Lead Dust Hazard Standards for Public and Commercial Buildings.

As the Coalition has repeatedly noted, its members have a strong interest in constructing, owning, and managing healthy, safe, and desirable commercial buildings. Their reputations depend on it, and they must be vigilant in responding to ever increasing demands of tenants and investors seeking socially and environmentally responsible leasing and investment opportunities.

[1] The Coalition's members include: Associated Builders and Contractors; Associated General Contractors of America; Building Owners and Managers Association (BOMA) International; CCIM Institute; Independent Electrical Contractors; Institute of Real Estate Management (IREM®); International Council of Shopping Centers; NAIOP, the Commercial Real Estate Development Association; NAREIT®, the National Association of Real Estate Investment Trusts®; National Apartment Association (NAA); National Association of Home Builders (NAHB); National Association of REALTORS®; National Association of the Remodeling Industry (NARI); National Federation of Independent Business (NFIB); National Multifamily Housing Council (NMHC); the Plumbing-Heating-Cooling Contractors—National Association; The Real Estate Roundtable; and Window and Door Manufacturers Association. See Attachment 1.

If genuinely toxic or hazardous conditions exist in our members' buildings, the Coalition wants to know what those hazards are, where they exist, and what should be done to address them.

## II. THE FRAMEWORK ACKNOWLEDGES CRITICAL PREREQUISITES THAT MUST BE MET, BUT ITS "ALL-IN-ONE-STEP" PROCESS IS NOT APPROPRIATE.

As the proposed Framework acknowledges, EPA's authority under TSCA section 402 to regulate RRP activities in P&C buildings is limited to those activities that create a lead-based paint hazard as defined in section 401(10). Specifically, EPA must determine whether RRP activities in P&C buildings "cause[] exposure to lead from lead contaminated dust, lead-contaminated soil, lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health ...."[2]

Because EPA may regulate only those RRP activities that create a hazard, consistent with section 403, the Agency followed a two-step process when it considered this issue in the context of target housing and child-occupied facilities ("COFs"). First, in 2001, EPA conducted a rulemaking to develop a hazard identification standard under section 403 for the residential stock. Only after the hazard identification rule was issued did EPA move, seven years later, under section 402 to regulate renovation and remodeling activities at pre-1978 housing where the hazard existed.

Here, EPA appears to propose merging the two separate proceedings. Yet there is even more justification to bifurcate the two determinations for P&C buildings than in the previous residential rulemakings. In the Framework, EPA acknowledges that, compared to target housing and COF, P&C buildings have: (1) much greater variety in potential exposure times, (2) wide diversity in size, shape, and room configurations, (3) short-term RRP activities that vary in type, and (4) differing use and occupancy patterns and cleaning frequencies.[3] For these reasons, EPA is considering developing a "tailored approach" that "would provide the ability to apply any regulatory requirements to only those situations that most closely resemble those modeled scenarios in which the probabilistic modeling predicted that an adverse health effect would occur."[4]

While the Coalition agrees with EPA that a "one size fits all" approach is not appropriate for P&C RRP activities, this observation does not support collapsing the hazard identification and RRP regulation processes into one proceeding; instead the opposite is true. Given the recognized heterogeneity in potential exposure in P&C RRP scenarios, and the expectation that not all circumstances will constitute a hazard, there is an increased need first to identify which P&C settings create a hazard and, accordingly, actually fall within EPA's regulatory authority.

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[2] Framework at 5 and n.4.

[3] *Id.* at 4, 6.

[4] *Id.* at 4.

Only those scenarios that meet the hazard standard should be considered within the scope of a rule that may regulate RRP activities in P&C buildings.

## III. EPA IS BYPASSING REQUIRED STEPS IN THE TSCA PROCESS THAT CONGRESS ESTABLISHED TO DEVELOP RRP REGULATIONS FOR PUBLIC AND COMMERCIAL BUILDINGS.

To implement the TSCA Subchapter IV "Lead Exposure Reduction" program,[5] Congress directed EPA to make certain determinations and findings, conduct certain studies, and issue certain regulations and guidelines, within the first four years after the statute's enactment. While the dates established in the legislation were not met, the sequencing Congress established and the discrete steps the legislation required remain binding on EPA. Nowhere did Congress authorize a "framework" along the lines that EPA has currently proposed as a step unto itself, or as a replacement for other steps, within the prescribed Subchapter IV chronology.

EPA (and other federal actors) must take the following actions in the following order to implement TSCA Subchapter IV:

1. **Establish An Information Clearinghouse:** "Not later than" six months after enactment, EPA "shall" consult with HUD and CDC to establish a "National Clearinghouse of Childhood Lead Poisoning" to collect and disseminate technical information on lead-based paint ("LBP") hazards, and maintain a "rapid-alert system to inform certified lead-based paint activities contractors" of significant research developments.[6] Also, "[n]ot later than" six months after enactment, EPA "shall" establish a "hotline" to provide the public with information regarding lead poisoning prevention.[7]

2. **Identify LBP Hazards by Regulation:** "Within" 18 months after enactment, section 403 states EPA "shall promulgate regulations which shall *identify* ... lead-based paint hazards, lead-contaminated dust, and lead-contaminated soil."[8] Thus, one of the first steps in the Subchapter IV process is for EPA to identify lead-based paint "hazards." And, such hazards "shall" be identified through "regulations" – not through a "framework,"[9] "guidelines," "technical document," or other means.

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[5] TSCA Sections 401-412, 15 U.S.C. §§ 2681-2692.

[6] *Id.* § 2685(e)(1).

[7] *Id.* § 2685(e)(2).

[8] *Id.* § 2683 (emphasis added).

[9] The Framework at issue is apparently a multi-purpose document. One of its myriad functions is LBP hazard identification, given its very title: "Framework for *Identifying* and Evaluating Lead-Based Paint Hazards for Renovation, Repair, and Painting Activities in Public and Commercial Buildings" (emphasis added).

For purposes of LBP hazards in residential settings, EPA issued its section 403 hazard identification regulation in 2001. The section 403 residential hazard identification rule states it has no relevance to public and commercial buildings: "[I]t is important to emphasize that this rule only applies to pre-1978 target housing and certain child-occupied facilities, and that *these standards were not intended to identify potential hazards in other settings.*"[10]

3. **Promulgate Rules for Worker Training, Program Accreditation and Contractor Certification Regarding "Lead-Based Paint Activities":** "Not later than" 18 months after enactment, EPA "shall" consult with HUD and HHS to "promulgate final regulations governing *lead-based paint activities.*"[11] These regulations pertain to worker training, and accreditation of programs to certify qualified contractors (hereafter the "Training, Accreditation, and Certification (TAC) Rules").[12]

   The TAC Rules' focus is to ensure sufficient training for skilled workers to become certified contractors for performing LBP activities. "[C]ertified contractors" must perform "all risk assessment, inspection, and abatement activities … in target housing."[13] The TAC Rules "shall contain specific requirements for the accreditation of … training programs for workers, supervisors, inspectors and planners, and other individuals involved in [LBP] activities."[14]

   Notably, the TAC Rules govern "lead-based paint activities" and must contain "standards for performing lead-based paint activities …."[15] "Lead-based paint activities" – in the case of P&C buildings – means "*identification* of lead-based paint and materials containing lead-based paint, deleading, removal of lead from bridges, and demolition."[16] The TAC Rules thus call for worker training, program accreditation, and contractor certification to identify lead-based paint and materials in commercial buildings, engage in building demolition and deleading, etc.

   The specific type of activities pertinent to the TAC Rules —"lead-based paint activities" – should not be confused with "renovation and remodeling activities," an

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[10] *Lead; Identification of Dangerous Levels of Lead,* 66 Fed. Reg. 1,206, 1,211 (Jan. 5, 2001) (emphasis added).

[11] 15 U.S.C. § 2682(a)(1) (emphasis added).

[12] *Id.* (regulations govern LBP activities to "ensure that individuals engaged in such activities are properly trained; that training programs are accredited; and that contractors engaged in such activities are certified").

[13] *Id.*

[14] *Id.* § 402(a)(2).

[15] *Id.* § 402(a)(1).

[16] *Id.* § 402(b)(2) (emphasis added). Notably, "lead-based paint activities" for "target housing" are different. In the residential context, the term "lead-based paint activities" is specifically defined to mean "risk assessment, inspection, and abatement …." § 402(b)(1).

undefined term used elsewhere in Subchapter IV. In terms of Subchapter IV's chronology, it makes sense for "lead-based paint activities" in P&C buildings to first focus on *identification* of lead-based paint hazards – as both the 402(c)(1) TAC Rules, and 403(b) hazard identification rule, are concurrently due 18 months after enactment. The sequence established by Congress thus calls for initial regulations regarding hazard identification. After hazards are identified, studied, and made known to affected stakeholders, final rules follow at a later point to regulate renovation and remodeling activities to the extent they create such hazards.[17]

In 1996, EPA promulgated TAC Rules under the authority of section 402(a)(1) to train workers, accredit programs, and certify contractors – but only for "lead-based paint activities" in target housing and COFs.[18] These residential TAC Rules cannot substitute for training, accreditation, and certification rules for the P&C stock. This is because under TSCA's definitions, "lead-based paint activities" – which provide the scope of the TAC Rules – are different for target housing than for P&C buildings. For target housing, "lead-based paint activities" are defined to mean "risk assessment, inspection, and abatement."[19] In the case of P&C buildings, however, "lead-based paint activities" means "identification of lead-based paint and materials containing lead-based paint, deleading, removal of lead from bridges, and demolition."[20] Thus, while the 1996 TAC Rules provide training, accreditation and certification for activities like abatement and risk assessment in pre-1978 homes, EPA has *never* issued a set of TAC rules for LBP hazard identification, deleading, or demolition – which are the relevant activities for the P&C stock.

Moreover, as explained above, the only section 403 hazard rule issued to date is, by its terms, not applicable to P&C buildings.[21] The fact that EPA has failed to identify LBP hazards in P&C buildings underscores the need for tailored TAC Rules to train

[17] See *infra* notes 41-43. As discussed in more detail below, Congress envisioned a process in which EPA would subsequently "revise" initial TAC Rules governing "LBP activities" (like hazard identification), and later "apply" those rules to RRP activities – but only insofar as RRP activities "create lead-based paint hazards" that would have been previously identified under section 403, by qualified and trained workers under section 402(a)'s TAC Rules. Section 402(c)(3) states: "Within 4 years after [enactment, EPA] shall *revise the regulations under subsection (a) of this section to apply the regulations* to renovation or remodeling activities in target housing, public buildings constructed before 1978, and commercial buildings that create lead-based paint hazards." *Id.* § 2682 (c)(3) (emphasis added).

[18] See Final Rule, "Lead; Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities," 61 Fed. Reg. 45,778 (Aug. 29, 1996). As the summary section in the preamble states: "Today's final rule is intended to ensure that individuals conducting lead-based paint inspections, risk assessments and abatements in target-housing and child-occupied facilities are properly trained and certified, and that training programs providing instruction in such activities are accredited." *Id.*

[19] 15 U.S.C. § 402(b)(1).

[20] *Id.* § 402(b)(2).

[21] *Supra* note 10.

and certify workers with accredited programs for the very purpose of hazard identification in commercial structures.

4. **Issue Guidelines for RRP Activities:** "Within" 18 months after enactment, EPA "shall promulgate *guidelines* for the conduct of [RRP] activities which *may* create a risk of exposure to dangerous levels of lead."[22] The recipients of these guidelines are persons "engaged in such renovation and remodeling."[23] The guidelines are to be disseminated through outlets where renovation contractors would ordinarily expect to receive such information, such as "hardware and paint stores, employee organizations, [and] trade groups ...."[24]

   While the TAC Rules required by section 402(a)(1) are duly promulgated *regulations* to govern worker education and certification on LBP hazard identification, section 402(c)(1) directs EPA to issue *guidelines* for RRP activities[25] that may create a risk of exposure to unsafe lead levels. Both the TAC Rules and the RRP Guidelines are due no later than 18 months after enactment. Subchapter IV thereby envisions a chronology in which the TAC Rules are promulgated to educate and train workers in identifying hazards. These *regulations* are concurrent with the issuance of *guidelines* for conducting RRP activities that "may" create exposure to hazards. That is, with rules in place to train and certify a workforce to identify LBP hazards, Subchapter IV's first foray regarding RRP activities (through section 402(c)(1)) was to sensitize that workforce with "guidelines" on how to conduct renovations that possibly create LBP hazards. Under TSCA's chronology, final rules governing RRP activities – that

[22] 15 U.S.C. § 402(c)(1) (emphasis added). The use of the word "may" in connection with the guidelines is in contrast with the more stringent "would result in adverse human health effects" standard embedded in the section 401(10) term "lead-based paint hazard" – the operative term in section 403 – further illustrating the differences between sections 402(c)(1) and 403.

[23] *Id.*

[24] *Id.*

[25] Unlike "LBP activities," "RRP activities" are not separately defined in TSCA. Ultimately (as discussed below), the statute requires RRP regulations insofar as they "create lead-based paint hazards." *Id.* § 402(c)(3).[25] A LBP "hazard" means "any condition that causes exposure to lead from [dust, soil, or paint] that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces ...." *Id.* § 2681(10). EPA regulations define the term "renovation" as "the modification of any existing structure, or portion thereof, that results in the disturbance of painted surfaces .... The term renovation includes (but is not limited to): The removal, modification or repair of painted surfaces or painted components (*e.g.*, modification of painted doors, surface restoration, window repair, surface preparation activity (such as sanding, scraping, or other such activities that may generate paint dust)); the removal of building components (*e.g.*, walls, ceilings, plumbing, windows); weatherization projects (*e.g.*, cutting holes in painted surfaces to install blown-in insulation or to gain access to attics, planing thresholds to install weather-stripping), and interim controls that disturb painted surfaces." 40 C.F.R. § 745.83.

In short, "RRP activities" disturb or modify painted surfaces in a manner that may create hazardous conditions, such as by generating lead-contaminated dust. "RRP Activities" are not "LBP activities," which concern the identification of hazards in the first place (insofar as P&C buildings are concerned).

are indeed found to create hazards – are only due well after these early guidelines for conducting renovations that "may" create lead exposures at dangerous levels.[26]

Based on a Federal Register and internet search, the Coalition could not locate any RRP Guidelines issued by EPA for potentially hazardous RRP activities as required by section 402(c)(1). We respectfully request EPA to identify guidelines for P&C buildings that it has issued under the authority of section 402(c)(1).

5. **Promulgate Model State Program:** "Within" 18 months after enactment, EPA "shall" promulgate a model program that a State may elect to adopt to administer and enforce Subchapter IV.[27] Congress's focus for the Model State Program is on worker training and program accreditation.[28]

6. **Develop and Disseminate a Lead Hazard Pamphlet to the Public:** "Not later than" two years after enactment, EPA "shall" consult with HUD and HHS to publish a lead hazard informational pamphlet.[29] "Within 2 years" after enactment, EPA "shall" promulgate regulations that require the pamphlet's dissemination by paid renovators of target housing to affected homeowners and occupants.[30]

7. **Certify Labs Accredited to Test for Lead Content:** "Within" 2 years after enactment, EPA "shall establish a program" (in consultation with HHS) to certify laboratories "as qualified to test substances for lead content" (unless an effective voluntary lab accreditation program is in place).[31] "Not later than" 24 months after enactment, EPA shall publish a list of "certified or accredited" labs.[32]

8. **President to Ensure Availability of Reliable LBP Testing Products:** "Not later than 30 months" after enactment, the President is required by rulemaking to establish criteria, testing protocols, and performance characteristics to ensure that effective LBP "hazard evaluation and detection products" are available on the market.[33]

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[26] *Supra* note 17, and *infra* notes 41-43.

[27] 15 U.S.C. § 2684(d).

[28] "Such model program shall, to the extent practicable, encourage States to utilize existing State and local certification and accreditation programs and procedures. Such program shall encourage reciprocity among the states with respect to the certification under section 2682 of this title." *Id.* EPA promulgated a model state program concurrently with its TAC Rules for target housing and COFs, at 61 Fed. Reg. 45, 778 (Aug. 29, 1996).

[29] 15 U.S.C. § 2686(a).

[30] *Id.* § 2686(b).

[31] *Id.* § 2685(b)(1).

[32] *Id.*

[33] *Id.* § 2685(f).

In the context of Subchapter IV's sequence for federal actions, it is logical that Congress would ensure commercial availability of reliable LBP hazard detection products – before rules could require contractors and workers to deploy those products for a particular renovation or remodeling project.

9. **Report to Congress on Sources of Lead Exposure and Abatement:** "Not later than 30 months" after enactment, HHS is directed to submit a report to Congress on (1) a study regarding sources of lead exposure in children who have elevated blood lead levels, and (2) a study of means to reduce hazardous occupational lead abatement exposures.[34] Congress accordingly sought to be informed about child exposures to lead sources, and how to abate those exposures, before charging EPA with responsibilities to regulate hazardous RRP activities in buildings.

10. **Publish a Study of Contractor Certification:** "Within" 30 months after enactment, EPA "shall" complete and publish the results of a "Study of Certification," as required by section 402(c)(2).[35] The Study of Certification's scope is to assess "the extent to which persons engaged in various [RRP activities] … are exposed to lead in the conduct of such activities or disturb lead and create a lead-based paint hazard on a regular or occasional basis."[36]

    A key purpose of the 402(c)(2) study – as the very heading of the statutory section states[37] – is to determine which categories of contractors are engaged in activities that do (or do not) create LBP hazards, and thus do (or do not) require *certification.* As subsection (c)(3) explains, the (c)(2) study provides the basis for EPA to ultimately issue rules that determine what categories of contractors must be certified to conduct lead-safe RRP activities.[38]

    In terms of the Subchapter IV chronology of EPA's statutory responsibilities, the section 402(c)(2) "study" logically precedes the (c)(3) "determination"[39] – as the study provides the basis for the ultimate determination. But, the subsection (c)(2)

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[34] *Id.* § 2685(c).

[35] *Id.* § 2682(c)(2).

[36] *Id.*

[37] The heading of section 402(c)(2) is "Study of Certification."

[38] Section 402(c)(3) states: "In determining which contractors are engaged in [RRP activities that create LBP hazards, EPA] *shall utilize the results of the study under paragraph (2)* and consult with representatives of labor organizations, lead-based paint activities contractors, persons engaged in remodeling and renovation, experts in lead health effects, and others. If [EPA] determined that any category of contractors engaged in renovation and remodeling does not require certification, [EPA] shall publish an explanation of the basis for that determination." *Id.* § 402(c)(3) (emphasis added).

[39] RRP Guidelines: within 18 months after enactment; Study of Certification: within 30 months; Revised TAC Rules for Contractor Certification Determination: within 4 years. *Id.* § 402(c)(1), (2), (3).

"study" comes after the (c)(1) "guidelines" – because the guidelines addressed activities that "may"[40] create dangerous lead level exposures. The study would accordingly serve as the basis for EPA to assess what kinds of RRP activities *do* in fact pose hazards.

In any event, following an internet search, the Coalition could not locate any "study" under the authority of section 402(c)(2) regarding whether persons engaged in RRP activities are themselves exposed to LBP hazards. If EPA did conduct and publish a section 402(c)(2) study, we respectfully request the Agency to identify it.

11. **Revise TAC Rules, and Determine Categories of Contractors that Require Certification to Conduct LRRP Activities:** As the last step in the Subchapter IV process, "within 4 years" after enactment, section 402(c)(3) directs that EPA "shall revise" the TAC Rules and "apply [those] regulations to [RRP] activities … that create lead-based paint hazards."[41]

Considering the scope of the initial TAC Rules, the process set forth by Congress is plain and logical. First, the TAC Rules focused on worker training, program accreditation, and contractor certification for "lead-based paint activities" directed to initial identification of LBP hazards (for P&C buildings). After hazard identification, the Subchapter IV chronology progresses to study (through section 402(c)(2)), and then regulate (through (c)(3)), RRP activities that are hazardous. By the time that Subchapter IV's regulatory end point is reached through the promulgation of final RRP rules, the statute contemplates that EPA and affected stakeholders would have gained an adequate understanding of – and that certified contractors would be able to identify – the presence of LBP hazards in buildings. That is, the starting point TAC Rules (with their emphasis on early hazard identification) are EPA's predicate action coincident with the release of RRP "guidelines," followed by a penultimate RRP study, and then finally a set of ultimate regulations that apply to RRP activities to the extent they create hazards.

In this context, the overriding thrust of the ultimate RRP rules – like the previous TAC Rules, RRP guidelines, and the Study of Certification – concern worker training and contractor certification. Section 402(c)(3) contains an explicit direction for EPA to "revise" the prior TAC rules to train and accredit contractors on how to identify LBP hazards – and then "apply" those same rules to RRP activities. Based on the statutory text, the "Certification Determination" required by subsection (c)(3) is a determination of "which contractors are engaged in" hazard-creating RRP activities, which likewise authorizes EPA to categorically exclude certain "contractors engaged in renovation or remodeling" which do "not require certification."

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[40] *Supra* note 22.

[41] Section 402(c)(3) states: "Within 4 years after [enactment, EPA] *shall revise the regulations under subsection (a) of this section to apply the regulations to renovation or remodeling activities* in target housing, public buildings constructed before 1978, and commercial buildings that create lead-based paint hazards." *Id.* § 402(c)(3) (emphasis added).

In the residential context, more than seven years *after* publication of the final 403 hazard rule for "target housing" EPA eventually issued separate regulations for renovation activities in residences ("Residential LRRP Rule").[42] The Agency stated that section 402(c)(3) specifically gave it the authority to issue the Residential LRRP Rule.[43]

Thus, for the target housing regulatory program, EPA first issued TAC Rules in 1996 (Step 3), which were supposed to be coincident with a 403 hazard rule (Step 2). But only in 2001 did EPA complete Step 2 with a hazard identification rule for the residential stock. Then, seven years later, EPA issued a final RRP rule under section 402(c)(3) for target housing and COFs, thus completing Step 11. (As noted above, it is not apparent to the Coalition as to whether EPA ever completed Step 4 by issuing 402(c)(1) RRP guidelines, or Step 10 by completing a 402(c)(2) "Study of Certification.")

* * *

In summary, Congress set forth in Subchapter IV a detailed and deliberative process to ultimately result in final RRP regulations for target housing and P&C buildings:

- The first part of the sequence – as expressed in steps 1-5, above – requires EPA to take a series of actions in the first 18 months after the statute's enactment. Activities and rules required from EPA in the first 18 months focus on the identification of LBP hazards, with an emphasis to ensure that hazard information is made available to the public[44] – and that a workforce of contractors is trained and certified to identify hazards.[45]

- Then, after hazards are identified, the Subchapter IV chronology (as expressed in Steps 6 – 10) shifts to a series of federal actions in the first 30 months after enactment. This middle series is designed to study how exposures to LBP hazards are created, how commercially available products might best evaluate and detect hazards,

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[42] The Section 403 hazard rule for target housing was published in 2001, *Lead; Identification of Dangerous Levels of Lead,* 66 Fed. Reg. 1,206 (Jan. 5, 2001). The final Residential LRRP Rule was published in 2008, *Lead; Renovation, Repair, and Painting Program; Final Rule*, 73 Fed. Reg. 21,692 (April 22, 2008).

[43] The Residential LRRP Rule states it is issued "under the authority of section 402(c)(3)." *Id.* at 21,692.

[44] For example, a National Clearinghouse must be created to inform the public regarding LBP hazards (Step 1); and Section 403 requires EPA to issue a rule identifying LBP hazards (Step 2).

[45] For example, one of the functions of the National Clearinghouse is to alert contractors to research developments in lead hazard identification (Step 1); the TAC Rules' purpose is to train workers, accredit training programs, and certify contractors (Step 3); guidelines for RRP activities that may prove to be hazardous must be developed for persons "engaged in" renovation and remodel projects, and disseminated to them through hardware stores and "trade" groups (Step 4); and EPA must develop a model state program for the purpose of contractor certification (Step 5).

and how exposures may be minimized[46] – with heightened attention to RRP activities and whether they indeed create exposures to LBP hazards.[47]

- Finally, the very last step in the Subchapter IV chronology – that is, within four years after enactment -- is the issuance of final rules that "revise" the earlier TAC Rules, and "apply" those rules specifically to renovation and remodeling activities.[48]

Plainly, the Subchapter IV process is iterative. Each step builds on prior actions, studies, and findings. Without the underpinning of prior steps in the chronology, subsequent actions – if not supported by the foundation of prior steps – become suspect.

The Coalition cautions that EPA must not skip over key steps in the Subchapter IV process in issuing final RRP rules for P&C buildings. At a minimum, the failure of EPA to *first* identify LBP hazards in P&C buildings – by rule as the statute requires under section 403[49] – would undermine the soundness of any ultimate RRP regulations for those structures.

From the Coalition's vantage point, the Framework at issue appears to collapse and avoid discrete steps in the Subchapter IV chronology. The Framework envisions a process that simultaneously enables both hazard "identification," and hazard "evaluation," for P&C buildings. The agency acknowledges that in the residential context, in 2001 it separately "promulgated a uniform standard under TSCA 403" – that is, Step 2, above – "defining a level of lead in various media … that EPA would consider to be dangerous."[50] The Framework goes on to state that in 2008 EPA ultimately took action under section 402(c)(3) "to evaluate whether or not renovation activities create lead-based paint hazards"[51] – that is, Step 11 above. However,

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[46] For example, labs must be accredited to test for lead content in paint and other substances contained in buildings and disturbed by RRP activities (Step 7); products must be available on the market to test for lead in paint and other substances (Step 8); and Congress must received a report on sources of lead exposure, and how exposures can be reduced (Step 9).

[47] For example, a lead hazard pamphlet is disseminated in the context of RRP projects in "target housing" (Step 6); lead detection products must be made available for use by RRP contractors (Step 8); and EPA must complete a "Study of Certification" to determine whether persons engaged in RRP activities are exposed to LBP hazards, and what categories of contractors should be certified to conduct lead-safe RRP activities (Step 10).

[48] That is, Step 11.

[49] It warrants re-stating that the only 403 hazard identification rule that EPA has issued to date – in 2001, for "target housing – has no relevance to P&C buildings. *Supra* note 6. Moreover, as the Coalition explained in comments filed on April 1, 2013, several "studies" cited by EPA as potentially relevant to lead-based paint hazards from renovation activities expressly state they have *no* applicability to P&C buildings. (Comments at 21-24). The inadequacy of these studies was also raised at EPA's June 26, 2013 public meeting. (See meeting transcript at 128-135, available at http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPPT-2010-0173-0194.) Based on the Coalition's review, the only non-residential buildings considered across the many studies offered by EPA to the Senate were a 1967 school building and a 150-year old business. Certainly, these studies could not form the basis for section 403 hazard determination rule, or any other kind of rule, regarding either LBP activities or RRP activities in public and commercial buildings.

[50] Framework at 3.

[51] *Id.*

the "scenario-specific approach" for P&C buildings proposed in the Framework would identify LBP hazards and define them as "any condition that causes exposure to lead-based paint dust that would result in health effects that the Agency finds to be adverse."[52] At the same time, the Framework would "evaluate whether or not leaded dust from specific renovation scenarios" in P&C buildings would create adverse health effects, through modeling methods using a Monte Carlo analysis that predicts incremental IQ decrements for children.[53] The Framework thus conflates Subchapter IV's separate, sequential, and deliberative steps for LBP hazard identification, study, reports, and evaluation into an inexact and commingled process – a process that TSCA does not authorize.

Moreover, it appears (at least at this juncture) that EPA has completely avoided its responsibilities to promulgate TAC Rules for "lead-based paint" activities in the case of P&C buildings – that is, Step 3 in the process. No rules have ever been issued to train workers and certify contractors through accredited programs geared to identify LBP hazards in commercial buildings, or deleading or demolition of such structures. The 1996 TAC Rules for target housing and COFs are not a substitute; they cover a different set of LBP activities (as defined in section 402(b) of TSCA) for a building stock in which hazards have been identified by a duly promulgated section 403 rule.[54]

The Coalition emphasizes its agreement with EPA that P&C buildings, compared to more homogeneous target housing and COFs, "vary greatly" (in terms of their sizes, shapes, configurations, uses, occupancies, and cleaning frequencies) and that a "different approach" is thus needed address LBP hazards, exposure risks and RRP activities in commercial buildings.[55] However, while a different approach is warranted specifically geared to the P&C stock, EPA does not have the authority to circumvent steps or avoid rulemakings and studies that Congress clearly set forth in Subchapter IV. EPA cannot shortcut a section 403 hazard identification *rulemaking*, whether it uses a Framework as a tool or not, for purposes of Step 2. TAC Rules for workers and contractors to become trained and certified to identify hazards in P&C buildings, as required by section 402(a)(1) and discussed in Step 3, cannot be avoided. Step 10's section 402(c)(2) "Study of Certification" must be completed and published as TSCA directs, because it would provide the basis for any Step 11 RRP rules for P&C buildings issued under section 402(c)(3).

In short: Relative to the 11-step sequence that Congress set forth in TSCA Subchapter IV, EPA has been poised to jump right ahead to Step 11 and complete the process by issuing RRP

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[52] *Id.* at 5.

[53] *Id.* at 6-8.

[54] See *supra* notes 10, 16-21.

[55] Framework at 4.

rules for P&C buildings.[56] Now, the agency proposes to simultaneously address Step 2 (due 18 months after enactment) and Step 11 (due four years after enactment) through the conflated Framework – even though Step 2 rules to achieve the fundamental objective of LBP hazard determination were due under Congress's vision well before completion of Step 11. And, other actions within Subchapter IV's sequence – notably, Step 3 TAC Rules for P&C buildings, Step 4 RRP guidelines, and the Step 10 "Study of Certification" – all important steps to build EPA's and stakeholders' knowledge base regarding LBP issues in P&C buildings, and to ensure a trained and qualified workforce to identify hazards and conduct RRP activities in the commercial stock – appear nowhere on the agency's regulatory horizon.

The Coalition urges that EPA carefully follow the chronology that Congress outlined in Subchapter IV. A cavalier treatment of this sequence would raise serious questions about the technical, legal, and policy bases for any final RRP rules regarding P&C buildings issued under section 402(c)(3).

## IV. THE FRAMEWORK's TECHNICAL ASPECTS HAVE NOT BEEN PEER-REVIEWED AND LEAVE MANY QUESTIONS UNANSWERED.

The methodology proposed in the Framework represents a novel approach that has not been independently peer reviewed, validated, or even explained. EPA admits that the Framework does not provide significant detail regarding intended modeling parameters, how EPA might apply the results of any analyses, or what magnitude of deleterious health effect (or even what endpoint or endpoints) would be considered to be adverse.[57] As set forth in the attached Exponent, Inc. Technical Review of EPA "Framework for Identifying and Evaluating Lead-Based Paint Hazards from Renovation, Repair and Painting Activities in Public and Commercial Buildings" ("Technical Review") (Attachment 2), what discussion the Framework does offer raises many questions about the efficacy and sufficiency of this approach.

As a further concern, the Framework does not identify what underlying exposure data would be used in running the proposed models, and without reliable data, the models cannot be expected to produce useful results. The lack of exposure data for P&C RRP activities and their relationship to potential adverse health effects was noted by the SAB in its 2011 Review of EPA's 2010 Approach for Developing Lead Dust Hazard Standards for Public and Commercial Buildings[58] and EPA does not appear to have overcome this critical data gap in the intervening years.

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[56]EPA has negotiated a deadline to issue a proposed LRRP rule (if such activities are hazardous) for P&C Buildings by July 20, 2015, through a litigation settlement agreement (dated September 7, 2012) with environmental groups, See 77 Fed. Reg. at 76,997 (Dec. 31, 2013).

[57] Framework at 2.

[58] EPA, Science Advisory Board, *Review of EPA's Approach for Developing Lead Dust Hazard Standards for Residences (November 2010 Draft) and Approach for Developing Lead Dust Hazard Standards for Public and Commercial Buildings*, at 3 (July 7, 2011), *available at* *http://yosemite.epa.gov/sab/sabproduct.nsf/0/9c733206a5d6425785257695004f0cb1!OpenDocument&TableRow=2.0.*

While the Coalition appreciates EPA's willingness to share its thinking as it evolves, it appears that the Framework's methodology is far from ready for use in a rulemaking. The Framework would benefit from fuller development of its methodology and inputs, independent peer review, and EPA's consideration of technical reviewers' comments before soliciting public comment or proceeding to rely on this approach.

## V. CONCLUSION

The Framework sets forth a good understanding of the important differences between P&C RRP activities and those in previously examined types of properties. But EPA's plan to undertake hazard identification and evaluation at the same time along with other "steps" in the Subchapter IV process – or skip certain steps altogether – is misguided. Further, the Framework's technical aspects are novel, not fully developed, and open to question, as detailed in the attached Technical Review. EPA should proceed by identifying whether a P&C RRP hazard exists, subjecting its proposed Framework methodology to peer review, satisfying other prerequisites established in TSCA Subchapter IV, and only after completion of these essential steps move to develop proposed regulations to address any P&C RRP hazards that have been found to exist.

## ATTACHMENT 1

## LIST OF ORGANIZATIONS IN COMMERCIAL PROPERTIES COALITION

**Associated Builders and Contractors (ABC)** is a national construction industry trade association with 22,000 chapter members. Founded on the merit shop philosophy, ABC and its 70 chapters help members develop people, win work and deliver that work safely, ethically and profitably for the betterment of the communities in which they work. ABC member contractors employ workers, whose training and experience span all of the 20-plus skilled trades that comprise the construction industry. Moreover, the vast majority of our contractor members are classified as small businesses. Our diverse membership is bound by a shared commitment to the merit shop philosophy in the construction industry. The philosophy is based on the principles of nondiscrimination due to labor affiliation and the awarding of construction contracts through open, competitive bidding based on safety, quality and value. This process assures that taxpayers and consumers will receive the most for their construction dollar.

**Associated General Contractors of America (AGC)** is the leading trade association in the construction industry. It dates back to 1918, and it currently represents 33,000 firms in nearly 100 chapters across the United States. AGC's members include 7,500 of the nation's leading general contractors, nearly 12,500 specialty contractors and more than 13,000 material suppliers and service providers to the construction industry. These members engage in the construction of commercial buildings, hospitals and laboratories, schools, shopping centers, factories, warehouses, highways, bridges, tunnels, airports, levees, water works facilities and multi-family housing units, and they prepare sites and install the utilities necessary for housing development. AGC Building Contractors represent large and small contractors, from those that offer a wide variety of pre-construction and post-construction services to those that offer only traditional construction services. In 2012 nonresidential construction spending in the U.S. totaled $570 billion ($273 billion public, $298 billion private). In December 2013, nonresidential building and specialty trade contractors accounted for 2.8 million of the industry's 5.8 million employees.

**Building Owners and Managers Association (BOMA) International** is a federation of 93 BOMA U.S. associations, BOMA Canada and its 11 regional associations and 13 BOMA international affiliates. Founded in 1907, BOMA represents the owners and managers of all commercial property types including nearly 10 billion square feet of U.S. office space that supports 3.7 million jobs and contributes $205 billion to the U.S. GDP. Its mission is to advance the interests of the entire commercial real estate industry through advocacy, education, research, standards and information. BOMA International is a primary source of information on building management and operations, development, leasing, building operating costs, energy consumption patterns, local and national building codes, legislation, occupancy statistics, technological developments and other industry trends.

**CCIM Institute** is an affiliate of the NATIONAL ASSOCIATION OF REALTORS® (NAR). The Institute confers the Certified Commercial Investment Member (CCIM) designation through an extensive curriculum and experiential requirements. The CCIM designation was established in 1969 and is recognized as the mark of professionalism and knowledge in commercial investment real estate. Membership includes qualified professionals in all disciplines of commercial investment real estate, including brokers, leasing professionals, investment counselors, asset managers, appraisers, corporate real estate executives, property managers, developers, institutional investors, commercial lenders, attorneys, bankers, and **other** allied professionals. Of the approximately 125,000 commercial real estate practitioners nationwide, 9,000 currently hold the CCIM designation, with an additional 6,000 candidates pursuing the designation. Founded upon the principles of education, networking, and ethical practice, the CCIM Institute, as an affiliate of the 1.2 million-member NATIONAL ASSOCIATION OF REALTORS®, helps shape policy and legislation affecting the industry and safeguards the interests of commercial investment real estate practitioners.

**The Independent Electrical Contractors (IEC)** is a national trade association for merit shop electrical and systems contractors representing over 3,000 member companies and 56 chapters nation-wide. Over 50 percent of IEC members are small business owners. With over $14 billion in annual sales, our members are a driving force in the electrical and systems contracting industry. IEC serves as the voice of the industry on policies affecting our membership and attempts to further our economy through skilled manpower and the principle of free enterprise. IEC has more than 50 chapter training centers nationwide that provide training to approximately 10,000 apprentices each year. IEC's training program offers participants the knowledge, technical skills, and practical experience necessary to succeed in today's electrical trade.

**Institute of Real Estate Management (IREM®)** is an international community of real estate managers dedicated to ethical business practices, maximizing the value of investment real estate, and promoting superior management through education and information sharing. An affiliate of the National Association of REALTORS®, IREM is the home for all industry professionals connected to real estate management – and the only organization serving both the multi-family and commercial sectors. We believe that good management matters, and that well-managed properties pay dividends in terms of value and in the quality of life for residents, tenants and customers. We believe in professional ethics. We believe in the power of knowledge and the importance of sharing it. IREM offers a variety of membership types for professionals of every experience level, from on-site managers to high-level executives. Our credentials, earned by meeting high standards of education, experience, and ethical business practices, include: CERTIFIED PROPERTY MANAGER® (CPM®), ACCREDITED RESIDENTIAL MANAGER® (ARM®), ACCREDITED COMMERCIAL MANAGER (ACoM), or ACCREDITED MANAGEMENT ORGANIZATION® (AMO®). Since 1933, IREM has set the standard for best practices in real estate management. Today, IREM® membership includes more than 18,000 individuals and 560 corporate members.

Founded in 1957, the **International Council of Shopping Centers (ICSC)** is the premier global trade association of the shopping center industry. Its more than 60,000 members in over 90 countries include shopping center owners, developers, managers, marketing specialists, investors, retailers and brokers, as well as academics and public officials. As the global industry trade association, ICSC links with more than 25 national and regional shopping center councils throughout the world.

**NAIOP, the Commercial Real Estate Development Association,** is the leading organization for developers, owners and related professionals in office, industrial and mixed-use real estate. NAIOP comprises 15,000 members in North America, with over 50 local chapters. NAIOP advances responsible commercial real estate development and advocates for effective public policy.

**NAREIT®, the National Association of Real Estate Investment Trusts®**, is the worldwide representative voice for REITs and publicly traded real estate companies with an interest in U.S. real estate and capital markets. NAREIT's members are REITs and other businesses throughout the world that own, operate, and finance income-producing real estate, as well as those firms and individuals who advise, study, and service those businesses.

For more than 20 years, the **National Apartment Association (NAA) and the National Multifamily Housing Council (NMHC)** have partnered on behalf of America's apartment industry. Drawing on the knowledge and policy expertise of staff in Washington, D.C., as well as the advocacy power of 170 NAA state and local affiliated associations, NAA and NMHC provide a single voice for developers, owners and operators of multifamily rental housing. Apartments and their 35 million residents support more than 25 million jobs and contribute $1.1 trillion to the economy.

**The National Association of Home Builders (NAHB)** is a trade association organized for the purpose of promoting the general commercial, professional, and legislative interests of its membership. NAHB consists of more than 140,000 builder and associate members organized into approximately 800 affiliated state and local associations in all 50 states, the District of Columbia, and Puerto Rico. These members are involved in home building, remodeling, multifamily construction, property management, subcontracting, design, housing finance, building product manufacturing and other aspects of residential and light commercial construction. Founded in 1982, NAHB Remodelers of the National Association of Home Builders represents and serves the interests of more than 24,000 remodeling industry members.

**The National Association of REALTORS®,** The Voice for Real Estate®, is America's largest trade association, representing over 1 million members involved in the residential and commercial real estate industries. NAR is strategically poised to work on behalf of America's property owners providing a facility for professional development, research and exchange of information among its members and to the public and government for the purpose of preserving the free enterprise system, and the right to own, use, and transfer real property.

**The National Association of the Remodeling Industry (NARI)** is structured as a federation with almost 60 independent chapters located in most major metro areas throughout the country and with headquarters located in Des Plaines, IL (Northwest Chicago suburbs). NARI is a trade association whose 6,500 company members voluntarily subscribe to a Code of Ethics and Standards of Practice. Membership is comprised of general and specialty remodeling companies and local and national suppliers to the industry. NARI is the only national organization dedicated exclusively to the remodeling industry. With aging of the country's housing stock and double digit growth in home improvement spending expected through mid-2014, NARI members perform a vital public purpose.

**The National Federation of Independent Business (NFIB)** is the nation's leading small business advocacy association, representing members in Washington, D.C., and all 50 state capitals. Founded in 1943 as a nonprofit, nonpartisan organization, NFIB's mission is to promote and protect the right of its members to own, operate, and grow their businesses. NFIB represents about 350,000 independent-business owners who are located throughout the United States.

**The Plumbing-Heating-Cooling Contractors—National Association** is America's premier trade group for the p-h-c professional. PHCC has more than 3,500 open and union shop contractor members who successfully manage businesses in residential service and new construction, commercial and industrial markets.

**The Real Estate Roundtable** (www.rer.org) brings together leaders of the nation's top publicly-held and privately-owned real estate ownership, development, lending and management firms with the leaders of major national real estate trade associations to jointly address key national policy issues relating to real estate and the overall economy. Collectively, Roundtable members' portfolios contain over 5 billion square feet of office, retail and industrial properties valued at more than $1 trillion; over 1.5 million apartment units; and in excess of 1.3 million hotel rooms. Participating trade associations represent more than 1.5 million people involved in virtually every aspect of the real estate business.

**Window and Door Manufacturers Association (WDMA)** defines the standards of excellence in the residential and commercial window, door and skylight industry and advances these standards among industry members while providing resources, education and professional programs designed to advance industry businesses and provide greater value for their customers.

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## Attachment 2

## Technical Review of EPA "Framework for Identifying and Evaluating Lead-Based Paint Hazards from Renovation, Repair, and Painting Activities in Public and Commercial Buildings"

# Technical Review of EPA "Framework for Identifying and Evaluating Lead-Based Paint Hazards from Renovation, Repair, and Painting Activities in Public and Commercial Buildings"

At the request of the Commercial Properties Coalition, scientists within Exponent performed a technical review of the *Framework for Identifying and Evaluating Lead-Based Paint Hazards From Renovation, Repair, and Painting Activities in Public and Commercial Buildings* (Framework). The Exponent team assembled for the review comprises individuals with specialized expertise in air modeling, Monte Carlo analyses, health effects of lead exposures, and industrial hygiene practices.

The May 30, 2014 Federal Register contained an advance notice of proposed rulemaking (2014 ANPR [U.S. EPA 2014]) and requested comments on the Framework. The Framework contains some discussion of the general procedures proposed for use in evaluating potential hazards associated with renovation, repair, and painting (RRP) activities in public and commercial buildings. These procedures include air dispersion modeling to estimate impacts of RRP activities downwind of renovated buildings, Monte Carlo procedures to characterize exposure and risk, health effects/risks at low levels of lead exposure, and risk modeling procedures. Each of these topics was reviewed by one or more members of the Exponent team. Our review of each of these procedures is provided below. We begin first with a comment related to the need for a technical Framework to deal with EPA's concerns about lead exposures associated with renovation.

## Need for Framework is not Established

The Framework is premised on the need for a relatively sophisticated analytical approach to assessing exposures that may occur as a result of building RRP activities. The Framework acknowledges that other aspects of lead exposures are already addressed, but that there is or may be a need to address the specific topic of lead exposure associated with public and commercial buildings. However, the case for needing an evaluation of these buildings has not been established by EPA. In fact, the Framework specifically states that exposures from the sources being considered are likely to be very small. In light of the current lack of data on hazards and on the preliminary judgment by EPA that risks are likely to be small, it would be prudent for EPA to employ the commonly accepted approach of applying a phased method for assessing hazard and/or risk. This would logically begin with evaluating or confirming whether renovation of buildings poses a substantive risk of contributing to lead exposures. If confirmed, then subsequent exposure analyses might be employed, including, if appropriate, the detailed and complex analysis that is proposed in the Framework. The process of determining whether there is a need for a special approach to the evaluation of commercial buildings should be based, in part, on a reliable technical assessment of potential risk and/or hazard. This would be a ***Strategic Plausibility Analysis*** or ***Informed Bounding Evaluation*** that might provide EPA with insight into possible risks/hazards and indicate whether more sophisticated and complex probabilistic evaluations are even warranted. This type of bounding analysis could entail commonly-used "backward" risk assessment to determine whether intermittent exposures could even get close to resulting in exposures of health concern. EPA states in the Framework that they expect exposures to be very small, so it would make sense to confirm that before undertaking a large-scale evaluation. This assessment would still require that EPA identify blood lead levels against which incremental exposures could be judged. At present, there are two conceptual views on this, and it would be worthwhile to consider both.

As discussed above, we believe that the need for the highly detailed process proposed in the Framework is questionable, and that there are simpler, more direct methods that would fulfill EPA's obligation to address public and commercial buildings. However, specific comments focused on technical areas of the Proposed Framework are provided below. These indicate some of the limitations of the proposed Framework, and illustrate the technical limitations that would be encountered if this type of approach is undertaken.

## Reliability of Framework in Light of Data Limitations

As we discuss in subsequent sections, a principal concern with the use of the Framework is that it will generate unreliable results. The approach requires a substantial number of input parameters. While data may be available for some variables, information is likely lacking for others. We describe later some of the more significant data limitations with respect to source terms, air modeling, and implications for Monte Carlo analysis. No amount of probabilistic analysis can overcome these data limitations, and the results of such analyses conducted with weak data can be very misleading. In the absence of data for input parameters, estimates would likely be used, and these would be based on professional judgments or sparse information. Combining these into a probabilistic approach can result in an enormous spread of results that would likely overestimate exposures, because estimates would necessarily be conservative to ensure that the tails of distributions are not missed. A problem associated with the use of a probabilistic approach where data are very limited is that an appearance is created that a reliable and useful analysis has been completed in which uncertainties and variability have been taken into account. However, the lack of knowledge embedded in the uncertainties can simply inflate the results and yield an output that does not approximate reality.

## Understanding Incremental Exposures and Baseline Conditions

Background conditions and associated levels of lead in blood can vary considerably and can confound and confuse analyses and interpretations. Blood lead levels in children reflect the aggregate of exposures. However, where elevated baseline levels occur, there are usually one or a few predominant sources. Current health practices involve identifying and managing those sources. To our knowledge, there is no evidence to suggest that RRP activities in public and commercial buildings are a significant source of lead to children, and EPA states that it views this potential source as a small contributor to exposure. We also recognize that there are geographic locations and/or urban conditions (e.g., areas with high natural background and older urban centers) where baseline blood lead levels are elevated relative to other areas. Presuming that RRP activities are very small incremental sources, the ***relative contribution*** of RRP to blood lead levels in areas with more elevated blood lead levels is actually a smaller fraction of the total burden than for areas where baseline blood lead levels are already very low. This underscores the importance of: (1) understanding the predominant sources of lead in areas of concern; (2) employing an incremental and relative risk approach for judging specific sources, such as RRP activities for public and commercial buildings; and (3) directing lead management programs in areas where they are needed and to sources that are predominant contributors to exposure.

Estimating lead dust loading from RRP work tasks in public and commercial buildings requires information from real-world studies of these tasks. While we are aware of studies of worker exposure in designated work spaces, we are unaware of any comprehensive study of dust loadings from work spaces to building areas outside these work areas.

## Dispersion Modeling Procedures

Although the Framework mentions that the EPA AERMOD model will likely be used to model the dispersion of lead-containing dust from renovated buildings as part of the exterior analysis, and mentions some of the parameters that will incorporated in associated Monte Carlo analyses, the notice and the Framework both acknowledge that the Framework "does not provide significant detail regarding modeling inputs and results" and that "further details … would be provided for review and comment in any future proposal." Consequently, it is not possible at this time to provide detailed comments on the proposed modeling approach, because it is not yet well defined. Indeed, it is not even clear whether EPA has a good idea of how it intends to model the downwind transport of dust emissions that would be generated by RRP activities.

One of EPA's specific criteria for the models to be used is to be consistent with the analysis used for the 2008 RRP rule. However, neither the April 22, 2008, final rulemaking notice nor the January 10, 2006, proposed rulemaking notice for the RRP rule provide any information regarding any air dispersion modeling that may have been conducted to support development of that rule. Indeed, there is no mention of air dispersion modeling in these prior notices, and there is no sign that any was conducted. However, in an earlier ANPR published on May 6, 2010 (2010 ANPR), EPA requested public comment on several issues that may provide some insight into EPA's thinking regarding the dispersion modeling.

Given the lack of detail regarding dispersion modeling inputs and procedures in the Framework, our comments focus on the suitability of the general approach, the appropriateness of the model proposed for use (AERMOD), and issues that should be taken into account in any modeling analysis that might be used to support rule development.

The use of a dispersion model, like AERMOD, to describe the downwind transport of dust emissions from a source is well established for various regulatory purposes. However, if AERMOD is used to predict dust concentrations and/or deposition downwind of RRP activities, and if the results are to be used in an absolute (rather than relative) sense (which appears to be the case here), then the results will be no better than the accuracy with which the modeled emission rates can be specified. Therefore, how EPA intends to estimate dust emission rates is a critical consideration.

Emissions to the outdoor environment due to dust generated by indoor RRP activities will likely be small, particularly if containment measures are used in accordance with standard workplace practices. Emissions to the outside environment from dust generated by exterior RRP activities would likely be larger. The 2010 ANPR references a 2007 report ("Characterization of Dust Lead Levels After Renovation, Repair, and Painting Activities") that includes information on the amount of lead collected per square foot for various types of interior and exterior RRP jobs. EPA could consider using these data to estimate dust generation rates if the underlying data are suitable and reasonably representative of the activities to be analyzed. It's unclear whether this is EPA's intention.

Another possible approach would be to use some sort of mass-balance approach, as implied by Figure 3 and Appendix B of the Framework, based on the listing of factors such as the fraction of paint emitted in bulk and aerosol form and the containment efficiency. However, the Framework text mentions the use of a mass-balance approach with respect to the interior, not the exterior, analysis.

Another possible approach would be to use exiting AP-42 factors for certain types of activities, such as abrasive blasting and some construction activities. However, the associated emission factor ratings are likely not good enough (e.g., the abrasive blasting emission factor is "E" [poor]) to provide meaningful emissions estimates.

The important factor is whether emission rates associated with interior and exterior RRP activities can be estimated accurately enough to provide a means of obtaining meaningful predicted downwind impacts for use in other portions of the analysis. Without this, estimates of exposure and impacts on blood lead become highly uncertain.

Other concerns relate to source characterization. In the 2010 ANPR, EPA asked whether dust drifting from exterior renovations would resemble smelter plumes. Because of differences in the sources, we know that this would not be the case. Plumes from smelters are hot and buoyant and typically emitted from high stacks or from roof monitors. Smelter emissions would be modeled either as point sources (for stacks) or as buoyant line sources (for roof monitors). In contrast, emissions of dust from renovations, particularly from exterior work, would be expected to be largely non-buoyant and would not likely be released from an identifiable chimney, stack, or vent. The emissions would be fugitive in nature and would be best characterized as a volume source, not as a point source.

In the Framework, EPA specifically mentions the ability of AERMOD to incorporate consideration of "obstruction adjustment." We assume that EPA is referring to the building downwash algorithms within AERMOD. However, these algorithms are invoked only for point sources, not for volume sources. Therefore, one of the attributes that EPA cites for selecting AERMOD may not be compatible with or relevant to the likely nature of the sources that would be modeled. The only adjustment that might be applied to volume sources is characterizing the initial horizontal and vertical plume dispersion or size as a function of building size. Although this will account to some extent for enhanced initial dilution due to the source building, it will not account for any subsequent dilution associated with downwind structures. If the downwind target structures where impacts are to be estimated are tall or in clusters, AERMOD will treat the plume as if it moves through (rather than around) those structures, and the associated plume dilution will be underestimated. This could lead to an overestimation of downwind concentrations.

Another potential issue relates to the treatment of wet and/or dry deposition in the exterior analysis. It's not clear whether EPA intends to use AERMOD to explicitly predict deposition of dust generated by RRP activities, or if the consideration of deposition is limited to the use of the separate dust model cited for use in the interior analysis. It would seem that estimates of deposition would be relevant to tracking in dust from the outdoors downwind of public and commercial buildings and residences. However, given the relatively short downwind region of impact that would be expected from most RRP activities, the amount of dust that would be deposited in the near-field area is likely to be small. If AERMOD is used to estimate deposition, then additional parameters (such as the particle size distribution and/or a mean particle size) would be needed. This sort of information may not be readily available.

RRP activities are often of fairly short duration and generally would be expected to occur during daylight hours. If this is the case, then any modeling conducted by EPA to support rulemaking should account for the expected times of occurrence and duration of these activities. If the RRP activities under consideration will not occur at night but are modeled as if they do, then the AERMOD results will likely significantly overestimate actual impacts. Studies have shown, and EPA has acknowledged, that AERMOD, in its regulatory default mode, greatly overestimates actual impacts from low-level sources during light wind and stable hours (i.e., the conditions that tend to occur at night). Therefore, it will be important to use model options in AERMOD that can account for variations in emissions with time of day and season, if applicable. In addition, it would be advisable to use certain "beta" (non-default) options within AERMOD and the associated AERMET meteorological pre-processor to help reduce the degree of model over-prediction that has been observed during light-wind, stable hours. Otherwise, impacts from RRP activities may be overestimated significantly, and the analyses may reach spurious conclusions regarding associated hazards.

EPA does not indicate the averaging times of concern for potential health effects. The National Ambient Air Quality Standard for lead has a rolling 3-month average basis. Is this the averaging time associated with potential health effects from RRP activities? Many RRP activities are of relatively short duration, so any modeling to determine impacts should account for the duration of the activities of interest, as well as the averaging time for any potential associated health effects.

The Framework mentions a variety of factors that may be incorporated in the Monte Carlo analyses. These include climate region, rain frequency, and obstruction adjustment, as well as several "receptor building characteristics" that include distance of receptor from renovated building, receptor use type, area of building, receptor location (urban or rural), location of receptor relative to renovated building, and height of receptor building. Issues associated with obstruction adjustment have already been discussed. Issues associated with climate regime and rain frequency could be addressed by selecting a variety of meteorological data sets that would span a range of geographic locations and climate categories. AERMOD can be run with urban or rural dispersion coefficients to account, to some extent, for receptor location. AERMOD can also account for local surface characteristics and effects on meteorology through the specification of representative values of albedo, surface roughness, and Bowen ratio.

## Interior Modeling

EPA has stated in the framework document that they will likely use a mechanistic mass-balance model together with Monte Carlo analysis to evaluate lead hazards from RRP activities in public and commercial buildings. This model assumes that the indoor air is well mixed and contains no concentration gradients in the space.

Mage and Ott (1996) have stated that there is no scientific basis to adjust modeling calculations with a simple mixing factor to account for rooms that are not well mixed. Rooms undergoing renovation, repair, and painting (i.e., the source rooms) will have significant concentration gradients during the lead-dust-generating work tasks, and this will likely invalidate the assumption of a well-mixed room. In addition, other work spaces in buildings will also have concentration gradients created by particle resuspension from foot-traffic areas and HVAC zones, and workstation design or layout. While there are some modeling techniques that can be used to overcome this issue, they will significantly add to the complexity of the models and overall uncertainties of the results. For example, use of multiple zones or compartments or use of computational fluid dynamics (CFD) modeling, as recommended by Mage and Ott, can be attempted. However, the framework document does not discuss the use of multi-zone modeling or CFD modeling as a likely option.

The model must provide an inventory of dust in the air and on the floor through time in order to arrive at lead dose. The large size and time-dependent nature of concentration gradients found in commercial buildings negate the assumption of heterogeneous environments, which assumption is necessary to estimate exposure over time under the static conditions assumed by the model.

Furthermore, the model as it stands now is very complex and requires estimates of central tendencies for some parameters, and distributions for others, that are the most sensitive to estimating exposure. Notwithstanding the large number of parameters that exist in commercial buildings that affect particle transportation and deposition on a daily basis, estimating values for renovations will be extremely difficult, due to the paucity of empirical data that could be used to validate an estimated distribution(s). Also, the model purposely ignores HVAC filtration, which is an important sink for particulates in commercial buildings.

In summary, predicting particle behavior and deposition with mathematical modeling from interior sources, such as from RRP in public and commercial buildings, has not been fully developed to the point where one can reliably use models to estimate exposures for purposes of hazard or risk assessment, as proposed in the Framework.

## Monte Carlo Procedures to Characterize Exposure and Risk

The proposed Framework indicates that "EPA would assess elevations in lead exposure resulting from a broad range of scenarios, considering variations in types of renovation activities, building types, sizes and configurations, use and occupancy patterns, cleaning frequencies, etc., which are designed to be reflective of actual P&CB settings … in both children and adults," and that because the scenarios are not equally likely, "EPA would provide a discussion of the relative frequency of these high incremental IQ changes," and the "hazard finding would be made based on an overall judgment of the frequency and magnitude of incremental health effect changes resulting from P&CB renovations." For example, Appendix B of the 2014 ANPR lists four categorical (scenario-type) and >30 continuously distributed ("MC" or Monte Carlo-type) input variables to be considered in a probabilistic characterization of exposure and risk associated with exterior RRP activities. Each "MC"-type variable would be modeled from an estimated applicable distribution, presumably based on a statistical analysis or empirical characterization of available relevant data. The related scenarios within each set all pertain to a specified renovation characteristic, and Appendix B lists four such sets for exterior RRP activities. Because selection of each member of any of the related sets of scenarios can itself be modeled as the realization of a sample from a continuous uniform variable, applicable to the corresponding renovation characteristic, Appendix B effectively lists >35 input variables for exterior RRP activities that are all proposed to be analyzed probabilistically using (effectively) Monte Carlo methods to estimate exposure and corresponding risk (i.e., "hazard"). To perform this last step, the Framework explains:

> To analyze potential hazards, EPA would examine the various distributions across percentiles in a single scenario (Figure 1A) and across different scenarios (Figure 1B). The collection of these distributions helps account for the total variability in exposure owing to environmental, lifestyle, and biokinetic differences across the population. EPA would place the less frequent, high incremental IQ changes within the context of expected (mean) incremental IQ changes. Because each scenario is not equally likely, EPA would provide a discussion of the relative frequency of these high incremental IQ changes. The hazard finding would be made based on an overall judgment of the frequency and magnitude of incremental health effect changes resulting from P&CB renovations. … To perform the Monte Carlo analysis, each scenario would be run 20,000 times (where each run is referred to as an "iteration"). Preliminary testing indicates that 20,000 iterations would be appropriate in order to optimize the combination of accuracy and run-time efficiency.

The Framework thus makes clear that EPA intends to evaluate percentiles, as well as the mean value, of hazard estimated probabilistically using Monte Carlo methods.

The entire probabilistic approach to hazard characterization, summarized above, raises the following questions, all of which must be resolved before a general approach such as that proposed can be evaluated to assess its scientific merits and technical feasibility.

1. What is being represented by each of the input distributions to be used for probabilistic hazard analysis? Specifically, how would input variable distributions representing uncertainty be distinguished systematically from those representing inter-individual

variability, as were recommended previously to be required for this type of probabilistic analysis (Bogen and Spear 1987; Bogen et al. 2009; NRC 1994; U.S. EPA 2011). If the Framework intends all input variables to represent inter-individual variability, this should be stated explicitly and justified with an explanation of why none of the variables are considered to involve uncertainty relevant to the analysis. If not, how are joint uncertainty and variability to be evaluated in order to distinguish acceptable from unacceptable scenarios? The proposed Framework offers no details concerning how it proposes to address this general issue.

2. With so many input variables, what specific statistical test(s) would be required to ensure that intended multidimensional statistical independence (i.e., lack of significant inter-correlations) is actually realized in each Monte Carlo calculation performed? Algorithms (e.g., Iman and Conover 1982) that are typically applied to induce a target correlation (including a target of zero-correlation) among multivariate random samples contain no built-in objective test to assess the magnitude of the extent to which a realized correlation matrix deviates from a user-specified target correlation matrix or from a default identity (i.e., zero-correlation) matrix. The more Monte Carlo calculations are performed, the more likely it is that at least some will have realized correlations that deviate statistically significantly from any target correlation. For example, the Jennrich (1970) chi-square test can be used to assess the statistical significance of any realized deviation from a target correlation matrix.

3. What is the basis for the statement that preliminary EPA tests have indicated that a Monte Carlo sample size of $N = 20{,}000$ would be appropriate to optimize the combination of accuracy and run-time efficiency? This conclusion needs to be peer reviewed, because this claim is dubious given the very large number of input variables considered. It is possible that one or more combinations of relatively unlikely values of some subset of input variables may produce a very large upward shift in the value of the modeled hazard. It is consequently impossible to characterize an upper (e.g., 95$^{th}$ or 99$^{th}$) percentile, or even the mean value, of estimated hazard with any guaranteed degree of reliability using Monte Carlo methods, unless the number ($n$) of input variables is small, or the sample size ($N$) used is very large (e.g., $N \gg 20{,}000$). This is true regardless of the Monte Carlo sampling technique used (e.g., Latin Hypercube vs. uniform sampling). The reason is that the sample space that must be undertaken to achieve such reliability is very large, given the relatively large number ($n$) of variables (and corresponding sampling dimensions) involved. This problem is referred to as the "curse of dimensionality" in Bayesian statistical literature, and it arises because the volume of sample hyperspace grows (hence, its sample density shrinks) exponentially as a function of the sampling dimension $n$ (Bellman 1961). Mathematically, this dimensionality problem is related to the classic "coupon collector" problem of determining occupancy waiting times (Feller 1971; Bogen 2003).

   To illustrate the dimensionality problem, suppose each of $n$ input variables is known *a priori* only to be related positively and monotonically to predicted (e.g., mean or upper-bound) hazard. Suppose further that relatively high values of a subset of $m$ (i.e., $m$-tuple subset) of these $n$ variables, which all fall within a commonly defined upper $P$-percentile tail of the $m$ corresponding probability distributions used to model variation in the subset of $m$ variables, may potentially interact greatly (e.g., highly synergistically) to increase the value of corresponding hazard. Under these assumptions, any reasonably reliable assessment of uncertainty in estimated risk must be based on *N* risk realizations that jointly reflect ≥1 sample of each *m*-tuple combination of upper tail values. The likelihood that such a specific "upper-bound combination" (UBC) occurs clearly becomes very small quickly as *m* increases (e.g., for values of $P \leq 20\%$). For *m* equal to just 2 or 3, this small likelihood might possibly be balanced by a large upward shift in corresponding predicted hazard.

Therefore, absent *a priori* knowledge about the true distribution of hazard, there is no way of knowing that such a disproportionately increased risk level could be produced by a particular combination of *m* upper *P*-percentile tail values for *m* corresponding inputs, without actually sampling each potentially relevant combination at least once. For example, with $n = 30$, there are a total of $2^{30}$ or approximately one billion possible unique combinations of upper- vs. lower-bound values for all 30 variables. Only C(*n*,*m*) potentially relevant *m*-tuple UBCs need be sampled to include each at least once, assuming that the Latin hypercube method of random sampling is used, where C(*n*,*m*) is the number of unique combinations of *n* different items taken *m* at a time. For example, C(30,*m*) = 4,060, 27,405, and 142,506 for values of *m* equal to 3, 4, and 5, respectively. The requirement of investigating such large samples can be avoided only if it can be established *a priori* that substantial synergism cannot possibly affect the hazard-response model, as would be true, for example, in the case of an entirely linear multivariate model.

To add power to addressing the dimensionality issue, an approximating (e.g., even two-point) probability mass function can be used to replace each continuous-variable input distribution, and then discrete probability calculus can be used instead of Monte Carlo sampling to obtain a probabilistic characterization of exposure or risk (e.g., Bogen 1995). However, even this approach fails when the number (*n*) of input variables becomes even moderately large (e.g., $n > 10$), unless the sample size (*N*) used is also very large (e.g., $N >> 20{,}000$) (Bogen 2003). Although a mathematical "stopping rule" was proposed to define an appropriate sample size (*N*) that addresses the dimensionality problem with any specified degree of statistical confidence (Woo 1991), the mathematical proof offered for this rule is defective (Bogen 2003). Consequently, any generic specification of *N* by the proposed Framework will need to be justified using rigorous, peer-reviewed methods.

4. How will the output be used to distinguish between acceptable and unacceptable conditions? The specific combination(s) of population mean response and upper-bound individual response that would be used to distinguish acceptable from unacceptable scenarios are not specified in the proposed Framework. If the rationale for using any other response measure besides population mean response is an equity concern, how will the issue be addressed that extremely rare exposure scenarios (associated with very little likelihood) may have an unacceptably high level of risk to a 99%ile child at risk, but the number of such children expected to be at risk is so low that it is, for example, 99% certain that zero actual cases will arise?

## Monte Carlo Case Study

The Framework provides a case study for which Monte Carlo methods were used to estimate blood lead levels in children. While this was intended as an example, it is unfortunate that EPA included this material, because it depicts unrealistic conditions and an approach that is largely grounded on judgment. Appendix C states that:

> The metrics are incremental IQ change, averaged over ages 1 through 7, for a child who experiences a renovation at age 1. In other words, the hypothetical child experiences the renovation at age 1, which results in a short-term spike in blood lead. The child's blood lead then returns to the pre-renovation level, typically within 1 year. For this preliminary analysis, the child's AVERAGE blood lead, over ages 1 through 7, is then used to approximate the actual long-term impact on the child's IQ.

This is essentially a "playing with numbers exercise" that does not convey reliable information and may be misleading. Not only is the scenario inappropriate and unrealistic, but it conveys information to the public about exposures that may be incorrect given the assumptions that were made. If this is an example of the approach at a preliminary level, it points to a major problem with implementing the more complex Framework and with generating results that will be useful.

## Risk Modeling Procedures

The proposed Framework specifically addresses the "short-term nature of the exposure resulting from renovation activities." For non-cancer health endpoints such as IQ-decrement associated with low-level lead exposure by the risk model(s) to be used, what is the biological basis for predicting that any biologically significant effect may occur from a transient (e.g., less than 2- or 4-week) exposure in the absence of any human or experimental-animal data demonstrating directly that such effects can possibly occur? For example, it is not clear that any such data were described in EPA's recent health assessment for lead (U.S. EPA 2013).

## Summary and Implications

Based on the limited information provided by EPA, it is not possible to provide specific feedback regarding the nature or magnitude of likely errors associated with application of the models in the context of assessing impacts on blood lead levels from the RR&P activities. However, the technical comments on specific components of the modeling proposed in the Framework, provided above, illustrate the myriad challenges that EPA will face in implementing the Framework. In evaluating the application of both the proposed air modeling approach and the probabilistic exposure modeling, it is clear that the absence of strong input data and cautious application of the modeling methods could result in spurious or biased results. Due to the tendency to make "conservative assumptions" in the face of uncertainty, the modeling could then result in suggesting significant risk where none exists. Or it could well become clear that the effort is so fraught with uncertainty as to make it unusable. These considerations reinforce the recommendations provided in the early sections of this document that EPA would be well advised to perform a simple "bounding evaluation" or "plausibility analysis" to determine whether any more complex or sophisticated evaluation is even warranted. In the Proposed Framework, EPA states that "the impact ... to total blood lead and bone lead from P&CB renovation scenarios is expected to be quite small." Given this anticipated outcome, EPA has failed to provide a robust technical basis to justify undertaking a highly uncertain and labor-intensive modeling effort in this context.

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