

Fairfield Public Schools

Fairfield, CT 06825

TO: Dr. David Title and Members of the Board of Education

FROM: Thomas P. Cullen

DATE: December 8, 2011

RE: **Fairfield Ludlowe High School Window Replacement Project**

The Town Facilities Commission (TFC) is working with architectural firm George C. Wiles as part of their work and investigation on this proposed project. There have been several evening meetings of the commission to discuss the procedures for this project. As part of their work they will need to come up with a funding request for all the town bodies to review for approval. As part of their investigation for a funding request, testing was performed to determine if any hazardous materials would be disturbed during the project. This is standard procedure and is something that will be required by the State of Connecticut, Department of Energy and Environmental Protection and Department of Public Health should the project receive approval for the windows to be replaced.

On November 7, 2011 we received an e-mail notification from a Town Facilities Commission member that the initial hazardous material testing report was ready for review by the TFC. We are notifying you that we are in receipt of the initial testing report and are attaching the information for you with this letter. We will also be posting the information on our website for the public to view. On November 28, 2011 the TFC discussed the hazardous material testing report and made a decision to request more funding to conduct further testing as identified throughout the report.

At this time, I want to provide you with some background information on the initial testing and I also want to assure you that the Fairfield Ludlowe High School building is safe. The hazardous materials identified are in direct contact with the existing windows and are not a problem until disturbed during removal. The information provided in the report is based on the windows being removed and the openings prepared for new windows as identified by the project scope.

The testing report was performed by AMC Environmental, LLC, based out of Stratford, Connecticut. Central Office is very familiar with this firm and we have used them with many of our own internal projects. The materials testing report explains the testing for asbestos containing materials, lead paint containing materials, and PCB (Polychlorinated Biphenyls) containing materials. All of these items are related to the caulking, sealant, and in some cases the glazing used on and around the windows.

The State of Connecticut, Department of Energy and Environmental Protection and Department of Public Health have strict requirements on the testing of these existing conditions and removal of materials which relate to older buildings. We will be following these requirements.

We will continue to follow the progress of this project as well as the hazardous material testing report and future additional testing reports and keep you informed along the way.

If you have any questions please feel free to contact me.

Thank you

c: Beverly Dyer
Central Office Administration

**PRE-RENOVATION HAZARDOUS MATERIALS INSPECTION
For Window Replacement Project**

PERFORMED AT:

**Roger Ludlowe High School
785 Unquowa Road
Fairfield, CT**

PREPARED FOR:

**Mr. Craig Wiles
Wiles Architects
155 Brooklawn Avenue
Bridgeport, CT 06604**

PREPARED BY:

**AMC ENVIRONMENTAL, LLC
P. O. BOX 423
STRATFORD, CONNECTICUT 06615
(203) 378-5020**

**Inspection Date: October 3, 11, 13, 17 and 18, 2011
Report Date: October 21, 2011**

1.0 INTRODUCTION

On October 3, 11, 13, 17 and 18, 2011, AMC Environmental, LLC conducted a pre-renovation hazardous materials inspection at Roger Ludlowe High School, located at 785 Unquowa Road in Fairfield, CT. The purpose of the Inspection was to identify potential hazardous building materials that may be associated with the various types of window systems present throughout the building. The inspection included only window systems scheduled to be replaced during this project. The scope of this inspection is limited to the materials described below.

Asbestos Containing Materials (ACM)

The asbestos inspection was conducted in accordance with the Asbestos Hazard Emergency Response Act (AHERA), a provision of the Toxic Substances Control Act, which became law in 1986. Connecticut Regulations for Asbestos Work in Schools section 19a-333a states that schools must inspect any suspect material prior to disturbing it.

Asbestos inspection performed by: Richard Onofrio
State of Connecticut licensed Asbestos Inspector
License # 000715

Lead Based Paint

The lead-based paint screen was performed to satisfy the requirements set by the State of Connecticut Department of Environmental Protection (DEP), Bureau of Waste Management "Guidance for the Management and Disposal of Lead-Contaminated Materials Generated in the Lead Abatement, Renovation, and Demolition Industries".

Additionally, OSHA regulates lead dust exposure to workers in the construction industry under 29 CFR 1926.62 Lead in Construction.

The lead based paint screen was performed by Richard Onofrio; a State of Connecticut Licensed Lead inspector/Risk Assessor (License # 002217).

Polychlorinated Biphenyls (PCBs)

The PCB inspection was performed to satisfy the Toxic Substances Control Act (TSCA) of 1976. This authorized U.S. EPA to control substances that were determined to cause unreasonable risk to public health or the environment. In 1979 the U.S. EPA banned the manufacture of new products containing PCBs and developed regulatory requirements for the storage, labeling, use, and disposal of materials containing PCBs at levels above the regulatory thresholds. As a result, caulking materials with concentrations above 50-ppm must be managed as PCB wastes and removed following special procedures. PCB

concentrations below this threshold of 50 ppm are overseen on the state level and regulated by the State of Connecticut Department of Environmental Protection (DEP).

2.0 BUILDING DESCRIPTION

Roger Ludlowe High School is a four level building located at 785 Unquowa Road in Fairfield, Connecticut. The school has been occupied since 1963. AMC sampled and assessed the window systems and their components throughout the school prior to the start of a proposed window replacement project. AMC referenced Wiles Architects Window Survey Report dated July 25, 2011. The report identified approximately 30 types of windows that are in need of replacement/repair. Grouping the windows into homogeneous areas was difficult due to the variability of the materials found present. Many windows, tracks, locks, hinges, etc. have been replaced, repaired or reclaimed over time. This lack of consistency makes categorizing the building materials challenging.

All windows assessed were of metal clad construction with either a stone or concrete sill. All windows were installed within painted concrete block or brick construction. Typically, all windows contained interior and exterior window glazing compound and window frame caulk. A given room may have a combination of window types and materials present, and in many cases show little to no consistency overall.

3.0 ASBESTOS CONTAINING MATERIALS

Inspection

This asbestos-containing materials inspection included interior and exterior caulking, window wrap, and glazing associated with several different window systems within Roger Ludlow High School in Fairfield, CT. Semi-destructive testing techniques are utilized during the inspection process. Suspect building materials that are inaccessible for inspection and sampling are assumed to be ACM for the purpose of this report. Suspect materials for a project of this nature are generally located under windowsills, behind window panels or covers, behind window jambs, or in otherwise concealed areas of the window system.

During the inspection, the Inspector documents the location, quantity, class, and friability of each suspect material. Friability is an industry term that measures a materials resilience. Material that can be easily crumbled, pulverized, or reduced to powder (by hand) when dried is defined as being friable. Estimated quantities of identified ACM's are provided for positive material only. Each material is either quantified in square or linear footage, depending on the type of material. For a full list of ACM and Materials needing to be re-tested or assumed *see table 1*. For a full list of all non-asbestos containing materials tested *see table 2*.

Bulk Sampling

The United States Environmental Protection Agency (USEPA) has separated ACM into three categories. These categories are: Thermal System Insulation (TSI), Surfacing Materials, and Miscellaneous materials. TSI includes all materials that are used to prevent heat loss or gain, or water condensation on mechanical systems. Examples of TSI are pipe covering, boiler insulation, duct wrap, and mudded fitting cement. Surfacing includes any material that sprayed, toweled, or otherwise to an existing surface. Surfacing applications are commonly used in fireproofing and acoustical applications. All other material fall into the miscellaneous category such as vinyl floor tiles, ceiling tiles and drywall. All sampling methods and sampling quantities are collected at AMC's discretion and meet or exceed requirements set by the USEPA.

Bulk Sample Analysis

Samples of suspect materials are transmitted directly to an independent, State of Connecticut Department of Public Health (DPH), laboratory for analysis by Polarized Light Microscopy (PLM). PLM is the acceptable method of analysis in accordance with the Environmental Protection Agency (EPA) "Interim Method for the Determination of Asbestos in Bulk Insulation", 40 CFR 763, Subpart F, Appendix A EPA 600/M4-82-020. The Inspector collected "sets" of samples for each homogenous material sampled. Each sample is analyzed in the set until one sample is determined to contain asbestos (more than 1%). Sample analyses are reported in percentage of asbestos. The USEPA defines ACM as any material that contains more than 1 % asbestos, by way of PLM. "NAD", refers to "No asbestos Detected", and "DNA" refers to "Did Not Analyze" due to stop at first positive. The State of Connecticut Department of Public Health, the USEPA, as well as the United States Department of Labor regulate any material determined to contain greater than 1% of asbestos.

Friable ACM

Other analytical methods are recommended for certain friable material samples. The Point Count Method can further analyze friable materials shown to contain less than 10% asbestos by PLM analysis. Recommended, by the United States Environmental Protection Agency, the Point Count Method is accepted as providing accurate analytical results when determining the percent content of bulk samples with very low asbestos concentrations. Friable material containing less than 1 % asbestos must be analyzed by the (PLM) Point Count Method.

Non-Friable ACM

Non-friable asbestos samples showing percentages containing less than 1%, NAD, or "TRACE", should be confirmed by the "NOB TEM ELAP 198.4 Method". This procedure is recommended by the USEPA. If the results from this analysis determine asbestos content to still be less than 1 %, the sample is considered not to be asbestos containing.

4.0 Conclusion

During the course of the building inspection, a total of ninety (90) samples of suspect ACM were collected, all of which were analyzed by PLM "stop on first positive".

From the ninety (90) samples, thirteen (13) ACM samples were identified. The materials identified included several different gray window-glazing compounds, black window glazing-compound, several different gray window frame caulks, brown window frame caulk, brittle black window frame caulk, replacement window glazing caulk, brittle gray window glazing compound, exterior gray window wrap, exterior gray window-glazing compound and interior window sealant found beneath the metal window cover. Samples obtained are representative and may not fully represent all materials present within each window type. It is evident that repairs and replacements have occurred over time and that many windows have been re-caulked or glazed (see **Table 1** for a complete list of ACM and their locations).

Additionally there were several samples of window-glazing compound and window frame caulk that documented <1% asbestos. AMC recommends these samples be re-tested using a stronger analysis known as the TEM NOB method, to confirm or deny the presence of asbestos in these materials. Generally, when samples documenting trace amount of asbestos (<1%) are analyzed under further magnification (TEM), asbestos is typically detected significantly higher than shown by PLM analysis. Due to budget restraints on this project the additional analysis was not performed, therefore these materials are considered to be non-asbestos containing. However OSHA standards and regulations still apply with any detectable amount of asbestos (see **Appendix A** for Analytical Results).

All regulated friable and non-friable asbestos containing material must be removed prior to demolition or renovations in which these materials will be disturbed. A State of Connecticut Licensed Abatement Contractor must be used to perform the removal work. A visual inspection must be performed by a Licensed Project Monitor at the completion of the abatement for each work area. Re-occupancy air clearance is required prior to any person re-entering the area.

The Abatement Contractor must submit a 10 day notice for asbestos abatement exceeding 10 linear feet or 25 square feet, to the State of Connecticut Department of Public Health. This notification can be hand delivered or postmarked 10 days prior to the start of asbestos abatement. For abatement jobs involving less than these threshold quantities, only a demolition notification is required.

5.0 RECOMMENDATIONS CONCERNING ASBESTOS

Laws govern all asbestos activities undertaken in the State of Connecticut. AMC Environmental, LLC suggests the following to ensure compliance with state, federal, or local asbestos regulations and to reduce possible liabilities.

- State of Connecticut, Department of Public Health; Standards for Asbestos Abatement (19a-332-1a through 19a-332a-16).
- State of Connecticut Licensure and Training Requirements for Persons Engaged in Asbestos Abatement and Consultation Services Section 20-440-1 through 20-440-9.
- The Federal Regulation governing asbestos is Title 40 of the Code of Federal Regulations (40 CFR), Part 61, Subpart M, Demolition and/or Renovation of Facilities with Asbestos-Containing Materials.

The following recommendations pertain to asbestos removal projects.

- A Licensed Asbestos Project Designer should develop a plan or specification to ensure asbestos is removed in a safe and proper manner. At a minimum, these specifications should include an effective asbestos removal plan, a thorough health and safety plan, reference to applicable legal standards, necessary regulatory notification, adequate insurance requirements and proper bidding procedures.
- A Licensed Project Monitor should monitor the asbestos removal. At a minimum, monitoring activities should include air sampling (before, during and after), inspection of contractor work practices and maintaining a daily monitoring log to thoroughly document removal activities.
- A Licensed Contractor must perform the asbestos removal.

Inaccessible Areas

The school was occupied during the inspection and the windows may not have been fully inspected, i.e. behind the casing or on the inside jambs. Also, due to budget restraints, the sample budget was restricted and further testing will be required to accurately categorize ACM from non-ACM based on homogeneous areas.

Disclaimer

Any work performed by AMC Environmental, LLC was done using the degree of care and skill ordinarily exercised under similar circumstances by members of the profession practicing in the same or similar capacity. The standard of care shall exclusively be judged as of the date of services rendered and not according to later standards. The

conclusions and recommendations contained in this report are based on limited environmental sampling and visual observations, and were arrived at in accordance with generally accepted standards of industrial hygiene practice. No other warranty, expressed or implied, is made.

TABLE 1

ASBESTOS CONTAINING MATERIALS SUMMARY

TABLE 1

ASBESTOS CONTAINING MATERIALS SUMMARY TABLE

Page 1

Roger Ludlowe High School
Fairfield, CT

AMC Tracking # ASB101111			Laboratory: EMSL Analytical, Inc.			Laboratory Order # 241104205			
LOCATION(S)	MATERIAL TYPE	SAMPLE #	CLASS	BULK SAMPLE ANALYSIS RESULTS			QUANTITY	F/NF	
				PLM	PLM/PC	TEM/NOB			
Room 015	Gray window glazing compound on metal window sash	9-29/RO-01 9-29/RO-02	MISC	2% chrys			YES	TBD	NF
Room 115	Soft black window glazing compound	9-29/RO-16 9-29/RO-17	MISC	5% chrys			YES	TBD	NF
Room 201	Gray window glazing compound	9-29/RO-29 9-29/RO-30	MISC	2% chrys			YES	TBD	NF
Room 205	Gray window frame caulk @ sash/mullion seam	9-29/RO-37	MISC	2% chrys			YES	TBD	NF
Room 220	Caulk behind mullion cover	9-29/RO-44	MISC	10% chrys			YES	TBD	F
Room 243	Brown window frame caulk	9-29/RO-49 9-29/RO-50	MISC	3% chrys			YES	TBD	NF
Room 255	Brittle black window frame caulk	9-29/RO-53 9-29/RO-54	MISC	3% chrys			YES	TBD	NF
Room 255	Replacement window glazing caulk	9-29/RO-55	MISC	5% chrys			YES	TBD	NF
Room 302	Interior gray window glazing compound	9-29/RO-64	MISC	4% chrys			YES	TBD	NF
Room 369	Brittle window glazing compound	9-29/RO-67	MISC	2% chrys			YES	TBD	NF
							Estimated Quantity:		
KEY:				ANALYTICAL METHODS:					
NA - Not Analyzed		SF - Square Feet		PLM PC – EPA 600/R-93/116 Quantitation 400 Point Count					
NAD - No Asbestos Detected		LF - Linear Feet		TEM NOB – New York ELAP 198.4 Method					
F - Friable		Chrys - Chrysotile		PLM – EPA 600-R-93/116 Method					
NF - Non-Friable		Amos - Amosite		PS – Previously Samples					
TSI - Thermal Systems Insulation		Anth - Anthophyllite		ACM - Asbestos Containing Material					
SURF - Type of Surfacing Material		Trem - Tremolite		ASSD – Assumed Asbestos Containing Material					
MISC - Miscellaneous Material		Croc - Crocidolite							

TABLE 1

ASBESTOS CONTAINING MATERIALS SUMMARY TABLE

Page 2

Roger Ludlowe High School
Fairfield, CT

LOCATION(S)	MATERIAL TYPE	SAMPLE #	CLASS	BULK SAMPLE ANALYSIS RESULTS	PLM	PLM PC	TEM NOB	ACM	QUANTITY	FINE
Ext. Façade C	Gray window wrap between metal panel @ casing	9-29/RO-72 9-29/RO-73	MISC	7% chrys				YES	TBD	F
Ext. Façade A	Brittle window glazing compound @ window sash	9-29/RO-83	MISC	8% chrys				YES	TBD	NF
O/S Room 138B	Window sealant between sash and casing panel	9-29/RO-90	MISC	5% chrys				YES	TBD	F
<u>ASSUME:</u> Throughout	Material under stone windowsill i.e. thin set/caulk, inaccessible caulk behind window sashes								Throughout	
Estimated Quantity:										
<u>ANALYTICAL METHODS:</u>										
NA - Not Analyzed		SF - Square Feet		PLM PC - EPA 600/R-93/116 Quantitation					400 Point Count	
NAD - No Asbestos Detected		LF - Linear Feet		TEM NOB - New York ELAP 198.4 Method						
F - Friable		Chrys - Chrysotile		PLM - EPA 600-R-93/116 Method						
NF - Non-Friable		Amos - Amosite		PS - Previously Samples						
TSI - Thermal Systems Insulation		Anth - Anthophyllite		ACM - Asbestos Containing Material						
SURF - Type of Surfacing Material		Trem - Tremolite		ASSD - Assumed Asbestos Containing Material						
MISC - Miscellaneous Material		Croc - Crocidolite								

Samples Analyzed By EPA Method 600/R-93/116 (PLM)

IN ACCORDANCE WITH STATE OF CONNECTICUT REGULATIONS Section 19a-333-5

NOTE

Polarized Light Microscopy may not consistently detect asbestos in samples of roofing, flashing, floor tile, mastic and similar non-organically bound materials. Transmission Electron Microscopy is currently the only method that can definitely determine if this material contains asbestos > 0.1% by weight. However, the State of Connecticut Regulations state that bulk samples shall not be composited for analysis and shall be analyzed for asbestos content by polarized light microscopy (PLM), using the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" found at Appendix A to subpart F in 40 CFR Part 763 as amended, or the current EPA method for the analysis of asbestos in building materials by polarized light microscopy.

TABLE 2
NON-ASBESTOS CONTAINING MATERIALS

TABLE 2
NON-ASBESTOS CONTAINING MATERIALS
SUMMARY TABLE

Roger Ludlowe High School
Fairfield, CT

AMC Tracking # ASB101111		Lab: EMSL Analytical, Inc.	Lab # 241104205
Sample #	Sample Location	Sample Description	
9-29/RO-03	Room 015	Cement panel board window sill	
9-29/RO-04	Room 30	Gray/clear window caulk	
9-29/RO-05	Room 30	Gray/clear window caulk	
9-29/RO-06	Room 30	Original brittle window glazing compound	
9-29/RO-07	Room 30	Original brittle window glazing compound	
9-29/RO-08	Room 114	Soft gray window glazing compound	
9-29/RO-09	Room 114	Hard original window glazing compound	
9-29/RO-10	Room 121	Gray window glazing compound assoc w/ metal window sash	
9-29/RO-11	Room 121	Gray window glazing compound assoc w/ metal window sash	
9-29/RO-12	Room 121	Cement window sill	
9-29/RO-13	Room 121	Cement window sill	
9-29/RO-14	Room 115	Gray window frame caulk	
9-29/RO-15	Room 116	Gray window frame caulk	
9-29/RO-18	Room 115	Gray grout assoc w/ square glass window panels	
9-29/RO-19	Room 116	Gray grout assoc w/ square glass window panels	
9-29/RO-20	Room 121	Window frame caulk	
9-29/RO-21	Room 122	Black window glazing compound	
9-29/RO-22	Room 122	Gray window frame caulk	
9-29/RO-23	Room 133	Black/gray window glazing compound	
9-29/RO-24	Room 138A	Black window glazing compound	
9-29/RO-25	Room 138B	Gray replacement window caulk @ glazing	
9-29/RO-26	Room 142	Black replacement caulk @ window glazing	
9-29/RO-27	Room 142	Hard black compound b/w sill/window sash jct	
9-29/RO-28	Room 142	Black factory window glazing compound	
9-29/RO-31	Room 201	Soft gray replacement caulk used as window glazing material	
9-29/RO-32	Room 203	White window frame caulk @ sash/support column jct	
9-29/RO-33	Room 204	Gray window glazing compound on metal sash	
9-29/RO-34	Room 204	Gray window glazing compound on metal sash	
9-29/RO-35	Room 204	Soft-elastic gray replacement window glazing caulk	
9-29/RO-36	Room 205	Gray window glazing compound	
9-29/RO-38	Room 206	Gray window glazing compound	
9-29/RO-39	Room 206	Silver replacement caulk @ window glazing locations	
9-29/RO-40	Room 213	Brown window glazing compound	
9-29/RO-41	Room 214	Brown window glazing compound	
9-29/RO-42	Room 216	Gray window frame caulk @ sash/block jct	
9-29/RO-43	Room 220	Interior window frame caulk	
9-29/RO-45	Room 223	Hard white interior window glazing compound	
9-29/RO-46	Room 226	Brittle white window glazing compound	
9-29/RO-47	Room 230	Silver repair window glazing compound	

TABLE 2 (continued)
NON-ASBESTOS CONTAINING MATERIALS
SUMMARY TABLE

Roger Ludlowe High School
Fairfield, CT

Sample #	Sample Location	Sample Description
9-29/RO-48	Room 238	Brown window glazing compound
9-29/RO-51	Room 243	Brown caulk applied as window glazing
9-29/RO-52	Room 243	Brown caulk applied as window glazing
9-29/RO-56	Room 266A	Metal window glazing compound
9-29/RO-57	Room 266A	Metal window glazing compound
9-29/RO-58	Room 269	Gray window glazing compound
9-29/RO-59	Room 280	Black replacement tar @ metal sash
9-29/RO-60	Room 282	Brittle window glazing compound
9-29/RO-61	Room 282	Replacement silicon @ window glazing
9-29/RO-62	Room 291	Gray window glazing compound
9-29/RO-63	Room 301	Gray window glazing compound
9-29/RO-65	Room 321	Hard gray window glazing compound
9-29/RO-66	Room 366	Soft gray window glazing compound
9-29/RO-68	Ext. fac A	Soft gray window frame caulk
9-29/RO-69	Ext. fac A	Soft gray window frame caulk
9-29/RO-70	Ext. fac A	Caulk @ window glazing
9-29/RO-71	Ext. fac A	Caulk @ window glazing
9-29/RO-74	Ext. fac C	Gray window frame caulk
9-29/RO-75	Ext. fac C	Gray window frame caulk
9-29/RO-77	Ext. fac D	Typical gray window frame caulk
9-29/RO-78	Ext. fac D	Window glazing compound
9-29/RO-79	Ext. fac D	Brittle caulk at window sill brick mold jct
9-29/RO-80	Ext. fac D	Brittle caulk at window sill brick mold jct
9-29/RO-81	Ext. fac C	Brittle caulk @ window sill/brick jct
9-29/RO-82	Ext. fac C	Gray window frame caulk
9-29/RO-84	Ext. fac A	Hard gray window frame caulk
9-29/RO-85	Ext. fac A	Thick hard window frame caulk @ brick/window jct
9-29/RO-86	Ext. fac A	Typical gray window frame caulk
9-29/RO-87	Ext. fac A	Caulk @ window sill/concrete transom
9-29/RO-88	Ext. fac A	Clear window glazing compound
9-29/RO-89	Courtyard	Brittle window frame caulk on metal sash
9-29/RO-91	O/S room 138 B	Brittle window glazing compound

** Samples listed in ***bold and italics*** all documented <1% asbestos. It is recommended that one or more of these samples be further analyzed using the TEM NOB method to further confirm or deny the presence of asbestos. If further testing is not authorized these materials can be considered non-asbestos containing, HOWEVER all OSHA standards/regulations for asbestos apply when working with these materials.

6.0 LEAD-BASED PAINT

X-Ray Fluorescence Screen

The lead-based paint screening was performed using an X-Ray Fluorescence (XRF) Radiation Monitoring Device (RMD) Lead Paint Analyzer (LPA 1), serial number 1326. The screen includes accessible surfaces and building materials within the inspection area. The lead screen tests limited components and surfaces throughout the building. It is not intended to test all painted surfaces, but to achieve a representation of painted components for the purpose of characterizing the waste stream.

The X-ray Fluorescence Analyzer (XRF) is the most common and accepted means of field-testing for lead in paint. The XRF detects lead through gamma ray technology. It is designed to measure the total weight of lead in a measured area. The results are reported in milligrams per centimeter squared (mg/cm^2). Most states have set a legal limit for lead in paint; Connecticut uses the $1.0\text{mg}/\text{cm}^2$ threshold. The lead screen provides the data necessary to accurately identify the waste streams that will be generated as a result of the renovation activities. These waste streams can then be evaluated by the Toxicity Characteristic Leachate Procedure (TCLP) test to determine if the waste will need to be discarded as hazardous lead waste or non-hazardous solid waste.

The computer generated lead-based paint inspection report is provided in Appendix A. The report consists of three (3) sections: a coversheet, summary report, and detailed report. Surfaces with results greater than $1.0\text{ mg}/\text{cm}^2$ can be found in the summary report. All surfaces tested can be found in the detailed section of the report. The condition of the paint is also noted for each surface or component tested by either an "I" for Intact or a "P" for Poor. The Location of surfaces tested is illustrated by letters. "A" refers to street side, followed by B, C, and D, in a clockwise pattern.

Worker Protection

Toxic level lead-based paint as defined by the State of Connecticut Regulations means a level of lead which when present in a dried paint, plaster or other accessible surface in a residential dwelling contains more than 0.50 percent lead by dry weight as measured by atomic absorption spectrophotometry (AAS), or 1.0 milligrams lead per square centimeter of surface as measured on site by an X-ray fluorescence analyzer or other equipment deemed sufficiently accurate and reliable by the commissioner. OSHA regulates lead dust exposure to workers under 29 CFR 1926.62 and considers any detectable level of lead in paint (above or below Connecticut's level) to be a concern. Therefore OSHA requires exposure assessments be conducted for each task where painted surfaces or components are disturbed.

Lead Waste Characterization

The State of Connecticut Department of Environmental Protection regulates the disposal of hazardous waste. Lead containing waste is analyzed by a procedure known as a TCLP or Toxicity Leachate Procedure (Regulation of State DEP 22a-449©-101). This analytical test determines a buildings material waste classification.

The TCLP test requires a 100-gram sample of waste material, which is then analyzed and assessed for its ability to leach out lead into the environment. The waste is classified as
AMC Environmental, LLC
Stratford, CT

hazardous waste if the sample results are greater than 5.0 mg/l of lead. The wastes are classified as non-hazardous if the TCLP sample result is less than this threshold. All materials and components containing equal to or greater than 1.0mg/cm² of lead by XRF requires waste classification analysis.

Composite Sample and Demolish Method

The TCLP sampling method used for this project is referred to as the Composite Sample and Demolish Method. This method is conducted in accordance with the State of Connecticut Department of Environmental Protection Guidance for the Management and Disposal of Lead-Contaminated Materials Generated in the Lead Abatement, Renovation, and Demolition Industries. This method utilizes composite samples of all representative samples to assess the lead content of the entire quantity of debris to be removed. This method is most effective for whole building demolitions, where quantity on non-lead debris is expected to be greater than leaded debris.

The calculations of waste streams are initially determined by identifying each building component that will be disposed of once the structure is demolished. The inspector then calculates the percent contribution by weight in grams of each components contribution in the waste stream. Each material sampled is mixed together in proportion to their percent of total quantity of debris to be removed.

Results

XRF Testing Results

Eighty-nine (89) XRF readings were collected during the lead-based paint screen of the building windows and surrounding walls. The lead-based paint screen identified a limited number of components or surfaces that contain levels of lead paint over the threshold of 1.0mg/cm². Four (4) actionable levels of lead based paint above the threshold were identified on the interior of school. In rooms 006 and 007 the metal window mullion and the concrete windowsill documented a concentration of 1.0mg/cm², which is considered to be toxic threshold. AMC recommends doing confirmatory paint chip sampling to accurately identify the contents of the surfaces. Metal and concrete have been known to provide false positives in some cases. The metal clad windows had a factory milled finish. The windowsills were either natural stone or painted concrete. The walls surrounding the windows are of painted block construction. Without the confirmatory paint chip sample, these surfaces will need to be handled as toxic lead and appropriate work practices and procedures will have to be followed.

A complete inventory of tested building materials is illustrated in Detailed Reports and can be found in **Appendix B.**

Conclusion

Toxic levels of lead were found on a limited number of window surfaces. Further action is necessary at this time. However, AMC recommends doing confirmatory paint chip sampling to confirm the result. Initial exposure assessments must be performed on employees who engage in activities that disturb building materials with any detectable levels of lead in paint. Personal protective equipment must be provided to employees during such activities. Lead safe work practices and protocols must be followed. If the scope of work changes and includes surfaces not included in this report, additional sampling must be performed prior to the commencement of work.

7.0 (PCB's) POLYCHLORINATED BIPHENYLS

Inspection

PCB's can be found in a variety of items including transformers, capacitors, fluorescent light ballast, and other oil-containing equipment. Certain building materials such as flooring, caulking, roofing and insulation can also contain these materials. This PCB inspection focused on the caulking and window glazing associated with the various window systems found within the school. PCB's were extensively used between 1950 through 1977 in caulking material.

Potential PCB-containing caulking can exist in buildings constructed or renovated between 1950 and 1980. PCB caulking and glazing compounds can be found around windows frames and sills, door frames, masonry columns and other masonry building materials on interior and exterior surfaces, as well as in expansion joints. PCB containing items must be managed and disposed of properly in accordance with special requirements. Representative samples of caulking and window glazing material from the building's window systems were tested prior to the start of the window replacement project. Samples were obtained from both interior and exterior window components. If the results of the samples prove to be contaminated with PCB's, the surrounding soils and substrates also need to be surveyed to assess the potential for residual PCB contamination. PCB-containing caulking may leach PCBs into adjacent surfaces such as brick or block, soils, and impacted dust inside of buildings with PCB-containing caulking.

PCB concentrations in original caulking can vary from less than 50 parts per million (ppm) up to and exceeding 200,000 ppm. In locations where the original caulking has been replaced, PCBs may have leached into the surrounding substrate. In those locations where new caulking has replaced the original PCB caulking, PCBs may have also leached back into the new caulking at concentrations above the 50-ppm regulatory threshold.

Currently, the USEPA regulates the disposal of this material under the Toxic Substance Control Act (40 CFR761.62). The Toxic Substances Control Act (TSCA) of 1976 authorized U.S. EPA to control substances that were determined to cause unreasonable risk to public health or the environment. In 1979 the U.S. EPA banned the manufacture of new products containing PCBs and developed regulatory requirements for the storage, labeling, use, and disposal of materials

containing PCBs at levels above the regulatory thresholds. In addition, the regulations under TSCA specify allowed or authorized uses of PCBs in certain situations. If a material or item is not specifically listed it is considered unauthorized. The U.S. EPA considers building materials containing PCBs, including caulking with PCB concentrations exceeding 50-ppm to be an unauthorized use. As a result, caulking materials with concentrations above 50-ppm must be managed as PCB wastes and removed following special procedures. PCB concentrations below this threshold of 50 ppm are overseen on the state level and regulated by the State of Connecticut Department of Environmental Protection (DEP). Safe work practices are still necessary when workers are exposed or renovations disturb concentrations below this limit, and the waste generated is required to be properly disposed of properly.

Results

A total of eleven (11) interior and four (4) exterior bulk samples of window frame caulking and glazing were tested from the building. Of the fifteen 15 samples, two (2) interior samples and three (3) exterior samples identified the presence of PCB's greater than the threshold level of 50 parts per million (ppm). However, EPA states that slightly elevated PCB concentrations that are under the 50ppm may still need to be categorized under TSCA. The reasoning is that the caulk may have been at one time above the 50ppm threshold or that new caulk was applied over the original PCB containing caulk and the PCB's leached into the new caulk. Therefore, based on the data, an additional six interior samples require further testing and evaluation before the samples can be considered non-TSCA regulated (see **Appendix C** for analytical results).

Sample Number	Component	Window Type	Location	Result in PPM
10-3/PCB-01	Window Glazing Compound	T	Room 114-interior	4.4
10-3/PCB-02	Window Glazing Compound	E	Room 121-interior	23
10-3/PCB-03	Window Frame Caulk	Unknown	Room 128-interior	17
10-3/PCB-04	Window Glazing Compound	A	Room 201 & 301-Interior	21
10-3/PCB-05	Window Frame Caulk	A	Room 203-interior	280
10-3/PCB-06	Window Glazing Compound	F	Room 204 & 302-interior	26
10-3/PCB-07	Window Frame Caulk	C	Room 220-interior	920
10-3/PCB-08	Window Glazing Compound	P	Room 238-interior	49
10-3/PCB-09	Window Glazing Compound	B/T-J	Room 282 & 286-interior	3.4
10-3/PCB-10	Window Glazing Compound	S	Room 291 & 292-interior	25
10-3/PCB-11	Window Glazing Compound	T-C	Room 321 & 329-interior	23
10-17/PCB-01	Window Frame Caulk	T-C	Room 215 – Exterior	20,000
10-17/PCB-02	Window Frame Caulk	T-A	Façade A – Exterior	58,000
10-17/PCB-03	Window Wrap	TE	Façade C – Exterior	74
10-17/PCB-04	Window Frame Caulk	TJ	Room 274 – Exterior	1.8

Samples listed in bold exceed the 50 ppm threshold.

Conclusion

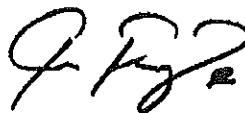
Initial composite and isolated samples of caulking and glazing compound were obtained from the interior and exterior of the school window systems. Both the interior and exterior samples identified several elevated levels of PCB's in the window frame caulk and window glazing. Both TSCA and non-TSCA concentrations were found. Due to budget restraints, sampling was representative based on window type and building material. Additional testing is needed to properly characterize and isolate PCB and non-PCB containing materials. Due to the high levels of some of the sample results, notification to the EPA is required and removal of the contaminated caulk and glazing is mandatory. Additionally, soil and substrate testing at and around the windows where PCB's were identified is needed in order to accurately identify the extent of the PCB contamination and migration path. Once all additional testing is complete, a PCB Remediation plan must be developed and submitted for approval to the United States Environmental Protection Agency Region 1 office.

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