Charles Klingler <cklingler@ecsconsult.com>

TPS, 100-wing room UV cleaning

2 messages

Charles Klingler <cklingler@ecsconsult.com> Thu, Aug 30, 2012 at 12:55 PM
To: Kimberly Tisa <Tisa.Kimberly@epamail.epa.gov>

Good afternoon Kim,

The interior surfaces of the 100-Wing room unit ventilators were cleaned in late October/early November 2011, via HEPA vac and wet wipe methods, following methods performed as part of the pilot tests. The following attachments should answer your questions regarding cleaning of the 100-Wing room unit ventilators. I apologize for any confusion that I have caused.

Attached is the letter to EPA from ECS (February 13, 2012) that addresses questions on the initial RBP. Refer to pages 3 & 4 of the attached. I have highlighted the applicable portions for you.

Also attached are excerpts from the revised RBP dated February 13, 2012 that address the 100-wing room UV's.

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Best Regards,

Chuck

Chuck Klingler, LSP, LEP
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Environmental Compliance Services, Inc.
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2 attachments

ECS Response to EPA Comments of 2-10-12 Letter - Final with highlights on 100-wing room

UV's.pdf
220K

2-13-12 RBP excerpts re 100-wing room UV's.pdf
103K

Kimberly Tisa <Tisa.Kimberly@epamail.epa.gov> Sat, Sep 1, 2012 at 10:33 AM
To: Charles Klingler <cklingler@ecsconsult.com>
Cc: rhartman@triumvirate.com

Thanks, Chuck. This discussion wasn't in your modification and thus, I just needed confirmation. Did you send the amendment to your modification so that I can get this completed?

Kimberly N. Tisa
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100
Mail Code: OSRR07-2
Boston, MA 02109-3912

Phone: 617.918.1527
E-Fax: 617.918.0527

tisa.kimberly@epa.gov

-----Charles Klingler <cklingler@ecsconsult.com> wrote: -----

> To: Kimberly Tisa/R1/USEPA/US@EPA
> From: Charles Klingler <cklingler@ecsconsult.com>
> Date: 08/30/2012 12:55PM
> Subject: TPS, 100-wing room UV cleaning
> [Quoted text hidden]

[attachment "ECS Response to EPA Comments of 2-10-12 Letter - Final with highlights on 100-wing room UV's.pdf" removed by Kimberly Tisa/R1/USEPA/US]
[attachment "2-13-12 RBP excerpts re 100-wing room UV's.pdf" removed by Kimberly Tisa/R1/USEPA/US]

ecs
WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

997 Millbury Street, Unit G, Worcester, MA 01607 tel 508.756.0151 fax 508.757.7063 www.ecsconsult.com

February 13, 2012

Ms. Kimberly Tisa, PCB Coordinator (OSRR07-2)
Remediation and Restoration II Branch
United States Environmental Protection Agency
Region 1
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912

Re: Responses to EPA Comments - PCB Risk-Based Cleanup and Disposal Plan
Thomas Prince School
Princeton, Massachusetts

Dear Ms. Tisa:

Environmental Compliance Services, Inc. (ECS) has received your comments, dated February 10, 2012, regarding a Notification dated January 18, 2012 to address PCB contamination at the Thomas Prince School in Princeton, Massachusetts. In the comments letter, EPA indicated that the Notification was incomplete and does not meet the notification requirements at 40 CFR § 761.61(a)(3). ECS has provided responses to your comments below. The comment from EPA is followed by a response from ECS presented in BOLD text. Where appropriate, changes have been made to the text of the Cleanup and Disposal Plan, a copy (text only) of which has been submitted concurrently with this response letter. Note that additions to the text have changed the pagination of the Cleanup and Disposal Plan. As such, most page numbers have changed. The new page numbers associated with the changes, where applicable, are referenced in the responses below.

1. Page i. Executive Summary. There appears to be inconsistencies within the Notification as to the scope of the proposed project. The first paragraph indicates that the window removal/replacement project includes classroom 201-209, the cafeteria and the kitchen.

   ECS Response - ECS apologizes for this confusion. The window removal/replacement project includes classrooms 201, 203, 205, 207, 211, cafeteria and kitchen. The windows from classroom 209 were removed as part of the pilot test previously performed. However, additional sealant will be applied to the masonry products associated with classroom 209.

   a. For clarification, the six rooms are classrooms 201, 203, 205, 207, and 209. The reference to "classrooms 201-209" infers consecutively numbered rooms.

      ECS Response - This has been corrected in the text of the report. The classrooms subject to this approval are 201, 203, 205, 207, 209 & 211.

b. Footnote 2 indicates that the classrooms 201-211, the kitchen and the cafeteria windows are to be removed/replaced under this project.

ECS Response - This has been corrected in the text of the report.

c. There is reference to the "six classrooms" that will be part of the window replacement project. 201-209 would address only five rooms, not six.

ECS Response - This is correct. Classroom 209 will have additional epoxy coating applied to substrate materials and is thus part of the overall plan. This has been clarified.

Please revise as necessary for clarity and consistency.

2. Page i, footnote 3. This footnote reference EPA Method 3350 for PCB sample extraction. There is no such method. Please revise for accuracy.

ECS Response - This should be EPA Method 3550B/C Ultrasonic Extraction, it was a typographical error. This has been corrected in the text of the report.

3. Page ii, footnote 15. Please be aware that the Triumvirate facility in Lowell is not a disposal facility for PCB ballasts. Please revise for accuracy and clarification on waste disposal.

ECS Response - ECS apologizes for this confusion. The ultimate disposal of the ballasts was at Complete Recycling Solutions, LLC in Fall River, MA. This has been added to the text of the report.

4. Page 2 and 3. The events list makes reference to Indoor Air Samples collected on August 1 and November 8, 2011. The table for these results is identified as Table 2. It is actually Table 1. Please correct for accuracy.

ECS Response - This has been corrected in the text of the report. The changes are reflected on pages 3 & 4 of the revised text.

5. Page 8, Section 2.3.4. Surface wipe sampling is not an appropriate method for determining PCB concentrations in *porous surfaces.* While wipe sampling has been used to ascertain the effectiveness of sealants on *porous surfaces,* this paragraph indicates that the wipe samples were collected prior to application of the epoxy sealant. Thus, please clarify the objective of the wipe sampling on the unencapsulated *porous surfaces.*

ECS Response - ECS understands that wipe sampling is not an appropriate method for determining PCB concentrations in porous surfaces. The purpose of the sampling was purely inquisitive in nature. The results were reported to be comprehensive in data reporting to EPA. The results are in no way being used in any form to support the rendering of decisions or opinions related to existing

conditions or mitigation practices. This information has been added to the report. The changes are reflected in footnote 29 of the revised text.

6. Page 9, Section 2.3.5.

a. This paragraph indicates that only the common area rooms were thoroughly cleaned. Please clarify what this means. How were the common areas cleaned versus the classrooms?

ECS Response - In this reference, thorough cleaning refers to a very meticulous cleaning of all horizontal surfaces within the room, working from the top portions of the room to the floor, using HEPA vacuum and wet wipe methods. The first paragraph of section 2.3.5 indicates that the common areas were the only rooms thoroughly cleaned following the initial wipe sampling performed in August 2011. The thorough cleaning of the common areas was completed on or about September 19, 2011. This was performed so that the students could reoccupy these common areas. For example, in the cafeteria, the steel I-beams on the ceiling were cleaned as well as the window sills, the light fixtures, the crown molding, the accessible interiors of the exhaust vents, the sound board on the walls (HEPA vacuum only), the curtains of the stage (HEPA vacuum), the floors, etc. In addition, the accessible interior and exterior portions of the HVAC air handlers for the common areas were cleaned via HEPA vacuum.

The classrooms were also cleaned during this time period, though such a meticulous thorough cleaning as completed for the common areas was not performed as the students were not going to occupy the classrooms at this time. The classrooms were also cleaned via HEPA vacuum and wet wipe methods, just not as thorough as the common areas.

As presented in the second paragraph of this section, once it was determined that the 100-wing class rooms were to be re-occupied by students, a thorough cleaning of these rooms was performed which included cleaning from top to bottom all horizontal surfaces, light fixtures, crown molding, chalk board trays, shelves, accessible interiors of exhaust vents and the interior/exterior portions of unit ventilators, interior and exterior, using HEPA vacuum and wet wipe methods. This information has been added to the report. The changes are reflected on page 10, Section 2.3.5 of the revised text.

b. As part of the cleaning discussed in this section, please clarify how the unit ventilators were cleaned. Were only the exterior surfaces cleaned or did the cleaning also include the interior surfaces?

ECS Response – The initial cleaning of the unit ventilators (except for room 209) involved exterior cleaning only. For room 209, the interior was cleaned of dust via HEPA vacuum. The initial cleaning was conducted following removal of classroom furniture and supplies.

Following the initial cleaning, a more thorough cleaning was performed as part of pilot testing and to allow re-occupancy of the 100-wing classrooms. The interior and exterior portions of the unit ventilators for the 100-wing classrooms and the pilot test classrooms were cleaned using HEPA vacuum and wet wipe methods. The interior surfaces of the unit ventilators for the 200-wing classrooms were not cleaned (except for the pilot test room 209) as access to the 200-wing classrooms was to remain restricted. Note that unit ventilators are present only in the classrooms, not the common areas. This information has been added to the report. The changes are reflected on pages 10 & 11, Section 2.3.5 of the revised text.

7.Page 11, Section 2.4.2. Please clarify if the 1991 caulk was asbestos containing.

ECS Response - Window caulking was collected from the 100-wing classrooms for analysis of asbestos. A white colored interior and exterior window caulking, located at the surface, was not found to contain asbestos. A grey caulking, observed below this white caulking on the interior, was found to contain 10% Chrysotile asbestos. This has been added to the report. The changes are reflected on page 13, Section 2.4.2 of the revised text.

8. Page 11. Section 2.4.3.

a. There is reference to cleaning of the interior portions of the unit ventilators as part of the pilot testing. It is unclear how this differs from cleaning that may have been conducted initially. See previous comment 5.b.

ECS Response - During the initial cleaning, the interior of the unit ventilator in room 209 was cleaned solely via HEPA vacuum and the exterior surfaces were cleaned via HEPA vacuum and wet wipe methods. During the initial pilot test stage, the exterior and readily accessible interior surfaces of the unit ventilators in the pilot test rooms (106 & 209) were cleaned via HEPA vacuum and wet wipe methods. There was considerable "caked on" dirt and grime on the internal surface of the unit ventilators below the cylindrical fan veins, thus aggressive wet wipe scrubbing was performed to remove this material. This has been corrected in the report. The changes are reflected on page 14, Section 2.4.3 of the revised text.

b. There is reference to sealing of masonry that was described "above". However, the preceding paragraphs and sections contained no discussion or reference to sealing of the masonry.

ECS Response - This is an error and has been corrected within the report text. The changes are reflected on page 14, Section 2.4.3 of the revised text.

9. Page 12, Footnote 38.

    a. There is reference to glazing compound that could not be removed from the windows. This requires clarification. There is no discussion in the Notification that any effort was undertaken to remove window glazing, only caulk. Thus, please clarify.

    ECS Response - ECS apologizes for the unintended omission. As window glazing was initially found to contain PCBs, an attempt to remove the window glazing was made. A reference to the window glazing removal has been added to page 13, Section 2.4.2 of the revised text. This reference has also been included within the revised text on page 13 of Section 2.4.2.

10. Page 13, Section 2.7.

    a. Bullet 2. It is indicated that encapsulation of exposed substrate was conducted following window removal. Please clarify what additional sealing was conducted as it was previously indicated that sealing was conducted in Section 2.4.5 (page 12).

    ECS Response - ECS apologizes for the confusion. Section 2.4.5 presents information on the initial pilot testing during which window caulking and glazing were removed with the windows remaining in place. During this point, the substrate material around the metal window frame was sealed with epoxy.

    Section 2.7 presents information on the continuation of the pilot test (in which the windows were fully removed) following receipt of unfavorable indoor air sampling results after the initial removal of window caulking and glazing. Upon removal of the windows, the substrate that had formerly been covered by the steel window frame, which now was exposed, was sealed with epoxy coating. This reference has been added to page 16, Section 2.7, second to last paragraph of the revised text.

    b. Bullet 4. It is indicated that sealing of other interior caulk joints was conducted as part of the pilot test for Room 209. EPA notes that sealing of "other interior caulk joints" is not proposed as part of the plan. A discussion as to why this is not proposed as part of the abatement plan should be incorporated into the Notification.

    ECS Response - A reference to this "other" caulking material is made in section 5.3, page 33, bullet #7 of the revised PCB Risk Based Cleanup and Disposal Plan. As presented in this section, the sealing of these observed apparent caulk joints with an epoxy coating is proposed to be completed as a best management practice (BMP) and will be subject to wipe sampling as part of the Long Term Monitoring and Maintenance Plan. Hence, this was incorporated into the Notification though as a BMP since it has not been

determined if PCB are actually present in this material. A reference to this has been added to page 27, Section 4.4, next to bullet #2 for 200-Wing Classrooms – Interior.

11. Page 17, 2nd paragraph, 2nd to last sentence. Please clarify what decontamination methods were used for hand tool, machinery, and associated gear. Reference should be made to the decontamination requirements under § 761.79 as part of this clarification.

ECS Response - The tools and associated gear used during soil removal were cleaned with water wet and dry rags to NACE Visual Standard No. 2 per the decontamination requirements per 40 CFR 761.79. This has been added to the text of the report in the above noted section on page 21 of the revised text.

12. Page 18, Section 3.0, 1st bullet. This bullet indicates that fluorescent light ballasts were manifested as a non-regulated material to TEI's facility in Lowell. Why were these ballasts considered "exempt PCB ballasts"? Please clarify where these ballasts were disposed of.

ECS Response - As a non-regulated material the ballasts are classified as a Universal Waste and thus are considered "exempt" as they are non-hazardous. The ultimate disposal of the ballasts was at Complete Recycling Solutions, LLC in Fall River, MA. This reference has been added to the text of the report in the above noted section on page 22 of the revised text.

13. Page 22, Section 4.4. EPA understands that the scope of this current project is limited to Rooms 201, 203, 205, 207, 209, 211, the cafeteria and the kitchen. It is indicated that the 100-wing classrooms will be addressed in a subsequent plan, anticipated to be submitted in March 2012.

a. 1st bullet.

i. It was previously indicated on page 9, section 2.3.5, that a thorough cleaning of rooms 100, 102, 104, 106, 108, 110, and the common areas (cafeteria, kitchen, library, computer lab, bathroom, hallways, and room 113) were thoroughly cleaned. Please clarify, what rooms in the 1962 construction, if any, will not have been "thoroughly cleaned" following completion of the work proposed under this project.

ECS Response - The rooms that are not currently planned to be "thoroughly cleaned" following completion of the work proposed under this project include:

<u>Storage Supply Rooms (9)</u> – these rooms are not occupied and are accessed primarily by the custodial staff

<u>Computer Server Room (1)</u> – adjacent to room 113

<u>Classroom 112</u> – PCBs were not detected in indoor air from this room at a concentration greater than 25 ng/m^3.

The Nurse Office (Room 15)

The General Office Conference Room and associated offices (Rooms 10, 11, 12, 13 &14)

The Boiler Room

The Electrical Room

The Staff Lounge

ii. For the interior masonry block encapsulation is proposed to a distance of 6 inches from the corner of the concrete block, as accessible.

However, it does not appear that sufficient data exists on the interior concrete block to support this encapsulation. Specifically, PCBs were > 1 ppm at a distance of 3 inches. Thus, the 6-inch encapsulation distance has not been established based on current data. Additional sampling should be conducted to support the proposed encapsulation for these interior surfaces.

ECS Response - For the interior block in the 200-wing classrooms, ECS will collect additional masonry samples to determine the extent of PCBs to < 1ppm. It is proposed that samples be collected at six and eight inches from the caulked joint at two of the window locations and submitted for analysis of PCB via Methods 3540C for extraction and 8082. If required, ECS will amend the proposed encapsulation to account for any required greater distance for application. The results, and if required an amendment to the plan, will be submitted to your attention along with a revised table which presents these results. It is anticipated that the sampling will be conducted during the week of February 13, 2012 and that results will be obtained the following week.

As this proposed encapsulation applies to the 200-wing classrooms which are currently restricted for occupancy, ECS requests that the window removal project not be delayed awaiting receipt of laboratory results demonstrating compliance with the above request. Though not expected, additional epoxy coating will be applied beyond the proposed six inch distance as required to encapsulate substrate material if shown by the proposed additional sampling and analysis to be impacted with PCBs > 1ppm.

b. 2nd bullet. It is indicated that the vertical joint caulk along the building facing side of the precast concrete columns and adjacent brick will not be removed under this project, but will be encapsulated until water proofing upgrades occur. Based on the information provided, PCB caulk with > 50 ppm is located in the joints between pre-cast concrete columns (PCBs at 22,800 ppm) and in the pre-cast concrete column to brick joint (PCBs at 29,800 ppm). As the Town is aware,

use of PCBs in caulk in unauthorized at 50 ppm and when found this caulk must be removed.

i. Given that encapsulation of the building facing sides and window facing sides of the exterior precast concrete columns as well as adjacent brick will be encapsulated with epoxy, justification has not been provided to support why the caulk could not be removed as part of this effort.

ECS Response – The caulking could be removed as part of this effort. However, this would be another significant non-planned, non-budgeted expense associated with this project that the community of Princeton would come to bear. As a less intrusive, equally protective and more cost effective solution, the Town proposes to temporarily encapsulate the vertical joint caulking and defray the high costs associated with removal of the caulking to a later date. The application of an epoxy encapsulant over the caulking is a far less costly option than removing the caulking and will provide a protective barrier to prevent potential exposure to the caulking. The caulking in its present form is in good condition, with little to no readily apparent visible deterioration and no chipping or flaking. This was further indicated by soil sampling immediately beneath these caulk joints in which PCBs were not detected at concentrations > 1ppm, and in most cases not above laboratory detection limits. The application of an epoxy coating would likely further strengthen this already stable material. In addition, potential contact with these areas is very low as the windows are located within a closed off courtyard and access to the courtyard by children is controlled and limited. Thus, other than regulation there appears to be no apparent compelling reason to remove the caulking as long as it is properly managed in place through the documented application of an epoxy coating, periodic sampling and visual inspection.

To monitor potential migration of PCB through the epoxy coating, the epoxy coating on these caulk joints would be evaluated on an annual basis via wipe sampling as part of the Long Term Monitoring and Maintenance Plan. The additional effort required to inspect and sample these areas would be minimal, especially in light of the fact that inspections are already required to be performed in these areas to assess the condition of other epoxy coatings. A provision to collect two wipe samples annually from the proposed coatings has been provided within the plan on page 32 of Section 5.2. This information has been added to the text of the report in Section 4, page 28 of the revised text.

ii. Please clarify if the portion of concrete located between the windows will also be encapsulated.

ECS Response - The entire surfaces of the exterior concrete located between the windows will also be encapsulated. In addition, the

entire surfaces of the concrete columns will be encapsulated (not just a distance of 8 inches from the caulk joints). This has been added to the above referenced bulleted text of the revised Cleanup and Disposal Plan, page 27.The applicable square footage of sealant to be applied was added to Section 5.2, bullet #2.

iii. No information is provided on the concrete pebble window sills. PCBs were identified at > 1 ppm in these materials.

ECS Response - ECS apologizes for this unintentional omission. It is the intention of the Town of Princeton to apply two coats of Sikagard-62 epoxy coating to the window sills and the vertical faces of the pebbled concrete, to a distance of four inches from the edge of the sill. This has been added to the above referenced bulleted text of the revised Cleanup and Disposal Plan, page 27.

iv. It appears that the concrete pebble also is located above the window. Is this correct? If so, is this material in contact with caulk?

ECS Response - The concrete pebble is located above the window and is in contact with the caulk. An epoxy coating will be applied to the horizontal and vertical surfaces as described above. Information will be provided in the revised Cleanup and Disposal Plan. This has been added to the above referenced bulleted text of the revised Cleanup and Disposal Plan, page 27.

v. No mention is made about the air intake louver itself and the brick adjacent to the louver. Please clarify if the caulk around the louver contains $\geq$ 50 ppm PCBs. If so, the louver and the brick need to be discussed in the plan.

ECS Response – The proposed removal of the caulking from the louvered air intake vents was mentioned in the first bullet of this section. However, discussion on masonry sealing was inadvertently not presented. This was an oversight as it has been the full intension of the Town of Princeton to remove these louver vents and associated caulking, replace with new and seal the masonry substrate around the vents. This caulking material has not been sampled. In addition, the masonry was inadvertently not sampled to determine PCB extent. It was assumed that this caulking was the same as the vertical joint caulking in contact with the concrete window columns and brick masonry based on its visual appearance and assumed similar time of installation.

Therefore, following caulking removal and cleaning of the substrate associated with these louvered vents, it is proposed to seal the masonry around the louvered vents to a distance of 6 inches beyond the edges of

the brick, parallel to the building, and on the interior edges of the brick that are perpendicular to the building. This distance is consistent with the sealing of the masonry associated with the exterior concrete window pillars.

However, ECS will also collect caulking and masonry samples from these areas to determine the presence of PCBs and the extent of PCBs to < 1ppm. It is proposed that samples be collected at two, six and eight inches from the caulked joint at one of the vents and submitted for analysis of PCB via Methods 3540C for extraction and 8082. If required, ECS will amend the proposed encapsulation to account for any required greater distance for application. The results, and if required an amendment to the plan, will be submitted to your attention along with a revised table which presents these results. It is anticipated that the sampling will be conducted during the week of February 13, 2012 and that results will be obtained the following week.

As this proposed encapsulation applies to exterior surfaces and is not directly related to the window removal/replacement project, ECS requests that the window removal project not be delayed awaiting receipt of laboratory results demonstrating extent of PCB in the masonry product. Though not expected, additional epoxy coating will be applied beyond the proposed six inch distance as required to encapsulate substrate material shown to be impacted with PCBs > 1ppm.

This information has been added to the above referenced bulleted text of the revised Cleanup and Disposal Plan, Section 4.4, bullet #3, 200-Wing Classrooms – Exterior, page 27-28.

c. Following cleaning of interior surfaces, including unit ventilators, sampling would be required to document that the cleaning was effective and that PCB concentrations are <1 ug/100cm^2 . This should be incorporated into the plan.

ECS Response - It is proposed that one sample per unit ventilator interior, and two additional samples per classroom exposed horizontal surfaces be collected. This information has been added to the above referenced bulleted text of the revised Cleanup and Disposal Plan, Section 4.4, 200-Wing Classrooms – Unit Ventilator and Classroom Cleaning, bullet #4, page 29.

14. Page 23. Please be aware that communications with the school community and a worker training component will be a requirement of the Long Term Monitoring and Maintenance Plan (MMIP) that will be required as part of the Approval Conditions.

ECS Response – Awareness of this requirement is noted.

15. Page 26. Section 5.3. Bullet 6.

a. It appears that only one sample was collected from the kitchen window sill at a distance of 4.5 inches from the caulk. Although the PCB concentration was < 1 ppm at this location and the sills are being encapsulated, the PCB concentration at the caulk joint is unknown. Therefore, sampling of the encapsulated kitchen sills should be incorporated into the MMIP.

- **ECS Response - There was no caulk observed in association with the interior kitchen windows or at the base of the exterior windows. Upon removal of the windows, samples of the sill materials at the window/sill joint will be collected for PCB analysis. If the samples test > 1 ppm for PCB, wipe sampling of the encapsulated kitchen sills will be conducted in association with this plan. An additional wipe sample per event will be added for this purpose if required. This provision has been included as bullet #3 of Section 5.2 of the revised report. The provision in bullet #6 of Section 5.3 requiring no samples has been removed.**

b. The bullet states "... as a conservative measure due to their location (i.e. food preparation and **injection)** the sills..." Is "injection" the correct term? If so, please clarify what this means.

ECS Response - This is a typographical error. The word injection has been deleted from the text of the revised report.

16. Table 4. The analytical results for the caulk samples collected by Woodard and Curran that are indicated in the table are not consistent with the data contained in Table 1 of the July 12, 2011 Woodard and Curran Summary of Characterization Sampling Results and Potential Remedial Options letter. Please review and amend as required for accuracy and consistency.

ECS Response - It is correct that Table 4 of the ECS report is not consistent with Table 1 of the Woodard and Curran Report. However, note that the Woodard and Curran Table presents estimated values designated by the letter "E" on the laboratory certificate. Below the laboratory data for the initial analysis on the laboratory certificate is the data for the re-analysis. The applicable data are presented on the ECS Table 4. Thus an amendment of ECS Table 4 is not required.

17. Appendix M. Contractor Work Plan.

ECS Response - TEI will amend the Contractor Work Plan and submit it under separate cover to EPA. Where appropriate, ECS has provided comment below and has revised the Clean-up Plan to reflect changes.

a. The pages should be numbered for ease of reference.

b. If known, please provide a diagram showing the PCB waste storage location(s).

c. Please clarify how tools and equipment will be decontaminated.

d. If mechanical means are used to remove visible caulk, please clarify if any air monitoring will be conducted during the removal activities.

e. Item 2.B. According to the work plan, the encapsulation will include surfaces that were not in direct contact with the PCB caulk.

f. Item 2.D. Please clarify the cleaning solution for surfaces.

g. Items 3A and 4. It would be helpful if a sketch of the proposed containment design could be provided.

h. Item 4. It is indicated that negative air will be used for the removal of the 200 wing windows. Please clarify why this is limited to the 200 wing windows and not the cafeteria and kitchen windows.

i. Item 5. A. b. Is there any plan to conduct dust monitoring during cutting/grinding operations to ensure the integrity of the containment? If so, please provide information. Please see Comment 17.h., below.

ECS Response - ECS will be performing dust monitoring, as well as asbestos monitoring.

j. Item 5.A. e.i. The Notification calls for using Sikagard 62 epoxy coating or equivalent to encapsulate the masonry. The contractor work plan references Sikagard 670W epoxy, or equivalent. Sikagard 670W is a clear acrylic coating (per the Technical Specification Sheet), not an epoxy. Please clarify which coating will be used for encapsulation. Sikagard 670W may not have the same properties as Sikagard 62 that would be required to meet the objectives for this project.

k. Item 5.C.d.

i. It is unclear if the unit ventilator cleaning described herein is consistent with the cleaning that was conducted for the unit ventilator in Room 209. Please confirm. Please also provide any information the Town has on the capacitor (i.e. type and PCB concentration) in the unit ventilators.

ii. Will containment be placed around the unit ventilator during cleaning? If so, please provide details. Will the unit ventilators be cleaned prior to or after the interior room cleaning?

iii. The Notification calls for inspecting univent capacitors to determine if they require replacement. However, the contractor

work plan indicates that the "capacitor of the fan motor" will be replaced. Thus, please clarify how the capacitor in the univent will be addressed.

Should you have any questions regarding the above, please contact Ryan Rouillard (781-603-5375 M or 603224-8871 O) at ECS.

Sincerely,

Environmental Compliance Services, Inc.

Charles E. Klingler
Worcester Branch Manager

Cc: John Lebeaux, Town of Princeton
Ryan Rouillard, ECS

ventilators[32], the interior of a computer CPU from room 209[33], the concrete block of the window opening following caulking removal[34] and the top of a clock[35] contained PCB levels greater than 1 ug/100 cm^2. A summary of the analytical results is presented in **Table 3**. The laboratory certificates are presented in **Appendix D**.

2.3.5 Room Cleaning

Following the initial wipe sampling and indoor air sampling, the classrooms and common area rooms[36] within the older portion of the building were cleaned via combination of HEPA vacuum and wet wipe methods. However, only the common area rooms were thoroughly cleaned at this time. Thorough cleaning refers to a very meticulous cleaning of all horizontal surfaces within the room, working from the top portions of the room to the floor, using HEPA vacuum and wet wipe methods. For example, in the cafeteria, the steel I-beams on the ceiling were cleaned as well as the window sills, the light fixtures, the crown molding, the accessible interiors of the exhaust vents, the sound board on the walls (HEPA vacuum only), the curtains of the stage (HEPA vacuum), the floors, etc. In addition, the accessible interior and exterior portions of the HVAC air handlers for the common areas were cleaned via HEPA vacuum. The thorough cleaning of the common area rooms differed from the initial cleaning of the classrooms in the level of effort that was applied. Though HEPA vacuum and wet wipe methods were used during the initial cleaning, the meticulous level of detail employed was not as great. The main goal of the initial cleaning was to remove accumulated dust and dirt that remained in the room following furniture /teaching materials cleaning and removal. Except for classroom 209, the interior portions of the unit ventilators were not cleaned at this time, only the external portions. The accessible internal portion of the unit ventilator for room 209 was cleaned via HEPA vacuum.

The thorough cleaning of the common areas was completed to allow immediate re-occupancy of these common room areas by the students and staff as their access was confined to the newer portion of the school which does not include a cafeteria, a library or a computer room. Though the initial PCB indoor air concentrations within these common room areas were below the recommended EPA school indoor air guideline of 300 ng/m^3, in the best interests of the students and staff, it was determined that the thorough cleaning of these rooms to remove any accumulated dust or other deposits on horizontal surfaces was appropriate to attempt to further reduce the detected PCB indoor air concentrations. On or about September 19, 2012, thorough cleaning of the common room areas was completed.

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[32] A sample collected from the interior bottom surface of the unit ventilator in room 209 exhibited a value of 113 ug/100 cm^2 and the sample from the same location within the unit ventilator in room 106 exhibited a value of 4.8 ug/100 cm^2.
[33] A wipe sample of the dust from the interior of a CPU present in room 209 exhibited a value of 3.3 ug/100 cm^2.
[34] Following the removal of interior window caulking from classroom 209 & 106, wipe samples of the cleaned, exposed concrete block substrate were collected. The samples exhibited values of 21.7 & 37.9 ug/100 cm^2 (room 209) and 17.4 ug/100 cm^2 (room 106).
[35] On August 20, 2011 a pre-cleaning sample was collected from the top surface of an elevated clock present in the kitchen which exhibited a PCB value of 1.6 ug/100 cm^2.
[36] Common area rooms include the cafeteria, kitchen, library, computer lab, the bathrooms, room 113 and the hallways.

Between late October and early November, the classrooms in the northern 100-wing (rooms 100, 102, 104, 108 and 110) were thoroughly cleaned via HEPA vacuum and wet wipe methods. Classroom 100 was re-occupied by the band class on November 21, 2011. Classrooms 106 and 209 were also thoroughly cleaned as part of the pilot tests. During this later time, the interior and exterior portions of the unit ventilators for the 100-wing classrooms and classroom 209 were cleaned using HEPA vacuum and wet wipe methods. The interior surfaces of the unit ventilators for the 200-wing classrooms were not cleaned (except for the pilot test room 209) as access to the 200-wing classrooms was to remain restricted. Note that unit ventilators are present only in the classrooms, not the common areas.

2.3.6 Post Room Cleaning Wipe Sampling

On September 16 & 22, 2011, wipe samples were collected from four[37] locations that had exhibited PCB concentrations above 1 ug/100 cm^2 during the August 20 and September 16, 2011 initial sampling. The purpose of the post room cleaning wipe sampling was to demonstrate the effectiveness of the cleaning techniques in reducing PCB concentrations. In addition, wipe samples were also collected from the epoxy sealed window frame areas in classrooms 106 and 209 where caulking had been removed as part of the pilot test. Wipe samples were collected in accordance with EPA requirements. The results were compared to the EPA unrestricted use guideline for the cleanup of PCBs on surfaces in schools of 1 ug/100 cm^2 and all results were below this value. A summary of the analytical results is presented in **Table 3**. The laboratory certificates are presented in **Appendix D**.

2.4 PILOT TESTING

2.4.1 Purpose

The purpose of the pilot testing was to evaluate various mitigation efforts that would effectively reduce the indoor air concentrations of PCBs within the classrooms to below the EPA guidance level of 300 ng/m^3. The pilot test was designed to be implemented in a phased approach to determine which specific mitigation activities could be undertaken to achieve this result. Two classrooms within the older portion of the building were selected for the pilot test, rooms 106 and room 209. Following the reduction of indoor air concentrations to favorable levels in the pilot test classrooms, the proven mitigation methods would be presented to EPA under 40 CFR section 761.61 (c) as a risk based option for consideration and approval as a mitigation approach to be implemented in the remainder of the classrooms which contained elevated PCB concentrations above EPA guidance levels, i.e. the remainder of the classrooms in the 200-wing (classrooms 201, 203, 205, 207 and 211).

[37] These areas included the top outer surface of a fluorescent light fixture located in the 200 corridor, the inside of the unit ventilators from pilot test rooms 106 and 209 and the top surface of the kitchen clock. Note that the top outer casing of an additional fluorescent lighting fixture, located in the 200 corridor, had contained a PCB concentration greater than 1 ug/100 cm^2. However, this item was not sampled following cleaning as the post-cleaning results of the aforementioned light fixture was deemed representative as it had contained a higher concentration of PCB.

colored interior and exterior window caulking was not found to contain asbestos. However, the grey caulking, observed below this white caulking on the classroom interior, was found to contain 10% Chrysotile asbestos.

2.4.3 Cleaning

Following caulking removal, the pilot test rooms were again cleaned via HEPA vacuum and wet wipe methods. This cleaning generally included all horizontal surfaces. In addition, the accessible surfaces of the interior portions of the unit ventilators were cleaned. During this initial pilot test stage, the exterior and readily accessible interior surfaces of the unit ventilators in the pilot test rooms (106 & 209) were cleaned via HEPA vacuum and wet wipe methods. There was considerable "caked on" dirt and grime on the internal metal surface of the unit ventilators below the cylindrical fan veins, thus aggressive wet wipe scrubbing was performed to remove this material.

2.4.4 Ventilation

During/following cleaning, the unit ventilators were in operation with all doors closed. In preparation for the pilot test, the unit ventilators in the pilot test rooms were balanced by the HVAC specialist responsible for their operation. In addition, the industrial blowers used to generate negative pressures for the containment structures during caulking removal activities were temporarily activated for additional ventilation.

2.4.5 Exposed Substrate Sealing with an Epoxy Coating

Following cleaning and ventilation of the room, the masonry areas where the caulking had been removed (and approximately 1-inch beyond) were sealed with two coats of Sikagard®-62, a solvent free epoxy coating. The epoxy coating was applied as a protective layer to encapsulate the exposed masonry to limit potential migration (surface migration and volatilization) of PCBs from the masonry products in the direct areas where the caulking had been located. Details on Sikagard®-62 are presented in **Appendix H**.

2.4.6 Wipe Sampling of the Epoxy Coating and Unit Ventilators

On September 22, 2011, wipe samples were collected from the surface of the applied epoxy coating and from the cleaned unit ventilators in accordance with EPA requirements. The results were compared to the EPA unrestricted use guideline for the cleanup of PCBs on surfaces in schools of 1 ug/100 cm^2 and all results were below this value. Low levels of PCBs were detected on the epoxy coating[38]. A summary of the analytical results is presented in **Table 3**. The laboratory certificates are presented in **Appendix D**.

[38] Following receipt of the indoor air sampling results collected on September 22, 2011, a closer inspection of room 209 was completed on October 5, 2011 to determine if a potential source of PCB to indoor air could be identified. It was observed that exposed window glazing compound remained between the windows and the metal frame. It is surmised that the low concentration of PCBs detected on the surface of the epoxy coating is likely the result of the exposed glazing compound that could not be removed from the windows. It was observed that outside air was passing across the exposed glazing compound between the glass window and the metal window frame.

Table 3
CLASSROOM WIPE SAMPLE RESULTS - PRE/POST ROOM CLEANING

SAMPLE ID	Date	Aroclor	Concentration ug/100cm^2	Notes	Total Concentration ug/100cm^2	SAMPLE LOCATION and COMMENTS
106 UV	8/30/2011	1248	4.1		**4.84**	Room 106, Interior bottom of Univent prior to cleaning
		1260	0.74			
106 UV Post Cln	9/22/2011				<0.2	Room 106, Interior bottom of Univent, post cleaning

Notes:
All samples collected as hexane wipes over a 100 square centimeter (cm^2) area.
<0.1 = Not Detected at the Practical Quantitation Limit (PQL).
Bold indicates value greater than 1 ug/100 cm^2
Yellow Highlight indicates value following cleaning and/or sealant encapsulation of indicated item
Sealant encapsulation completed using 2 applications of Sikagard® 62, an epoxy sealant
1.) Aroclor 1254 being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.
2.) Aroclor 1242 being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.
3.) Aroclor 1260 being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.
Regulatory exposure limit for unrestricted use in school is 1 ug/100 cm^2