

August 2006 Polychlorinated Biphenyl Air and Bulk Sampling Results

New Bedford High School
New Bedford, Massachusetts

Presented by:
TRC Environmental Corporation

TRC

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Scope of Work

Diagnostic Sampling To Evaluate Potential
Sources of PCBs* in Indoor Air
Consisting of the Following:

- Indoor Air Monitoring
- Indoor Wipe Sample Collection
- Interior / Exterior Bulk Sampling of Select Building Materials

*PCBs – Polychlorinated Biphenyls

Common Historic Uses of PCBs in Buildings

- Sealants
- Paints
- Coolants
- Electrical Fluids
- Caulking
- Adhesives
- Flame Retardants
- Heat Transfer Fluids
- Hydraulic Lubricants
- Dedusting Agents
- Cutting Oils
- Carbonless Copy Paper

PCBs can also accumulate in areas of dust collection by several mechanisms.

Summary of Findings

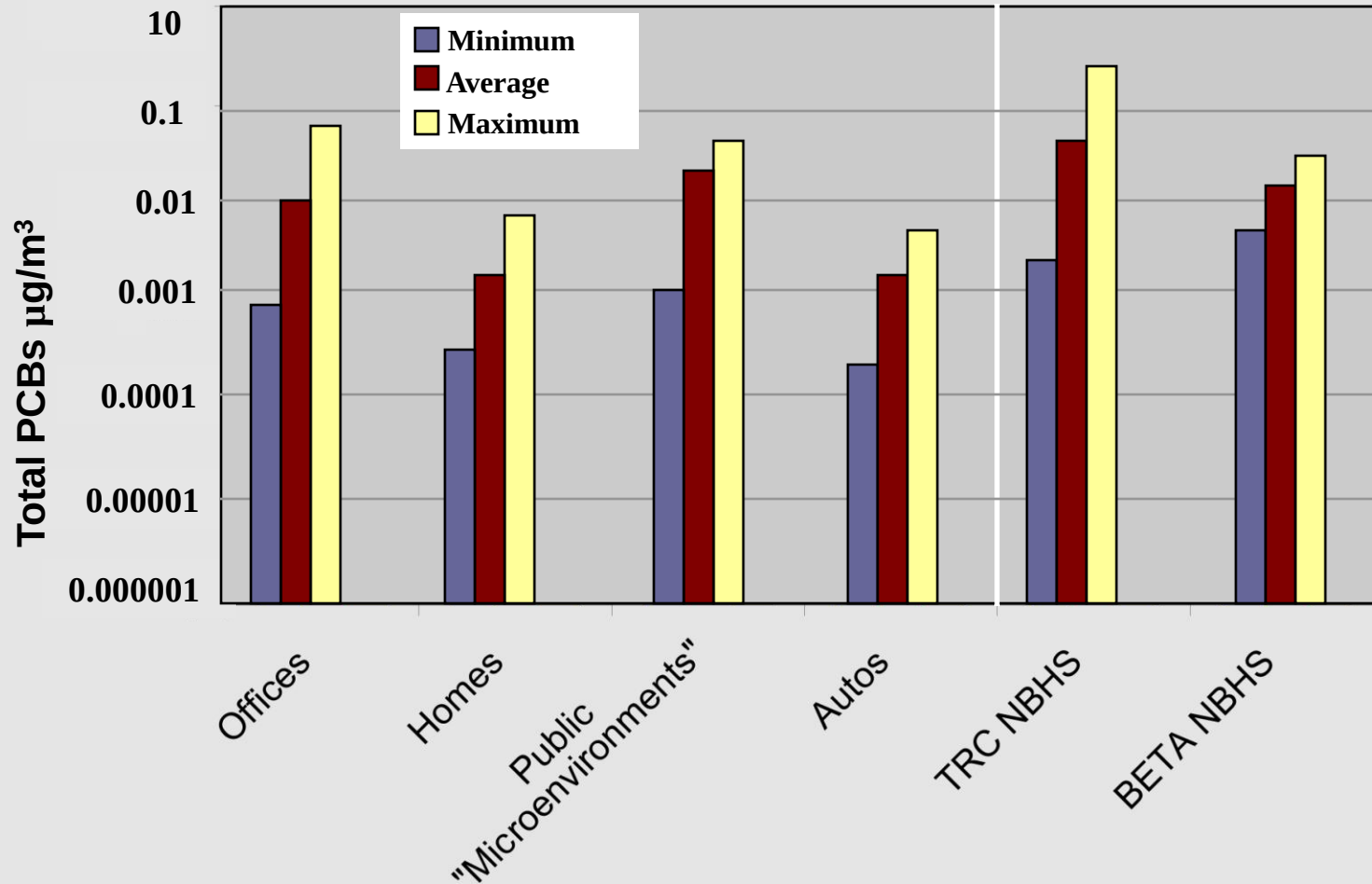
- 2 indoor air results met or slightly exceeded the BETA-derived "Maximum Acceptable Level" of 0.3 ug/m³ derived for Keith Middle School.
- The " Maximum Acceptable Level " represents a long-term average exposure concentration. A one-time exceedance of this concentration does not indicate an immediate hazard to current occupants.
- Building materials are an important, although not necessarily exclusive, source of the PCBs in the indoor air in the high school.
 - Initial data suggests that dust in vents and caulking are important contributors.
 - Other potentially significant contributors are tile and baseboard mastics.
 - Miscellaneous sources are also present (hydraulic oil, few remaining ballasts, etc)

Summary of Findings

- Local and regional PCB contamination is also a factor contributing to indoor air levels.
- Levels similar to other schools and public buildings (worldwide issue with PCBs).

Birmingham, England Indoor Air Data 2003 to 2005*

Comparison to TRC/BETA Data

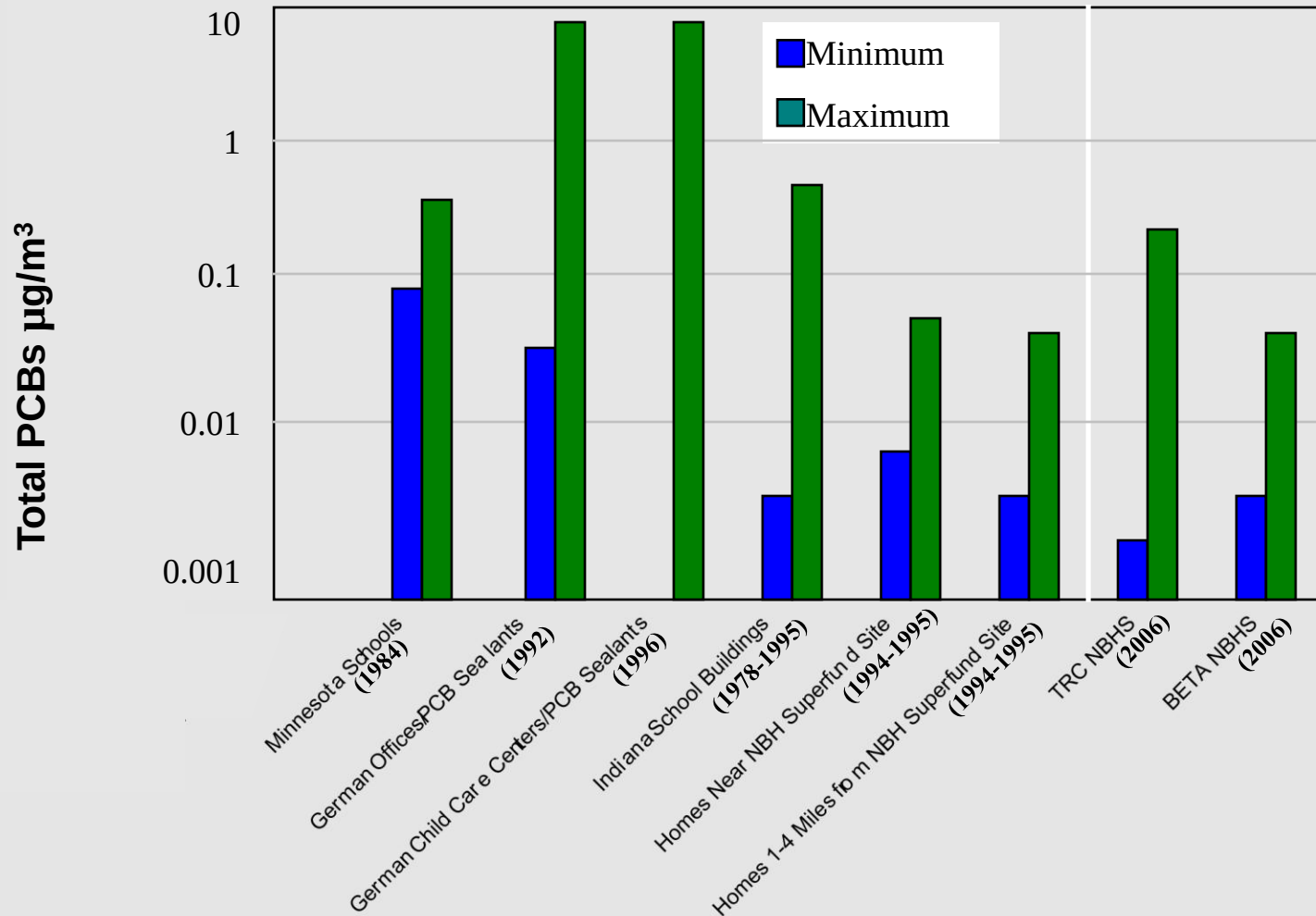


NBHS = New Bedford High School

µg/m³ = micrograms per cubic meter

* Source = Harrad et al, 2006 Environmental Science and Technology 2006, 40, 4633-4638

Indoor Air Concentrations – Various Studies* Comparison to TRC and BETA Data



NBH = New Bedford harbor

µg/m³ = micrograms per cubic meter

Source = Spengler, Samet, and McCarthy, 2001, *Indoor Air Quality Handbook*. McGraw, Hill, NY, NY

Indoor Air Monitoring for PCBs (Low-Vol)

23 Indoor Air Samples for PCBs

- 17 Classroom samples
- 3 Hallway samples (include re-sampling of prior BETA high hit).
- 1 Cafeteria sample
- 1 Boiler room sample
- 1 Auditorium sample
- 1 Girls Gymnasium sample
- 1 Automobile shop sample

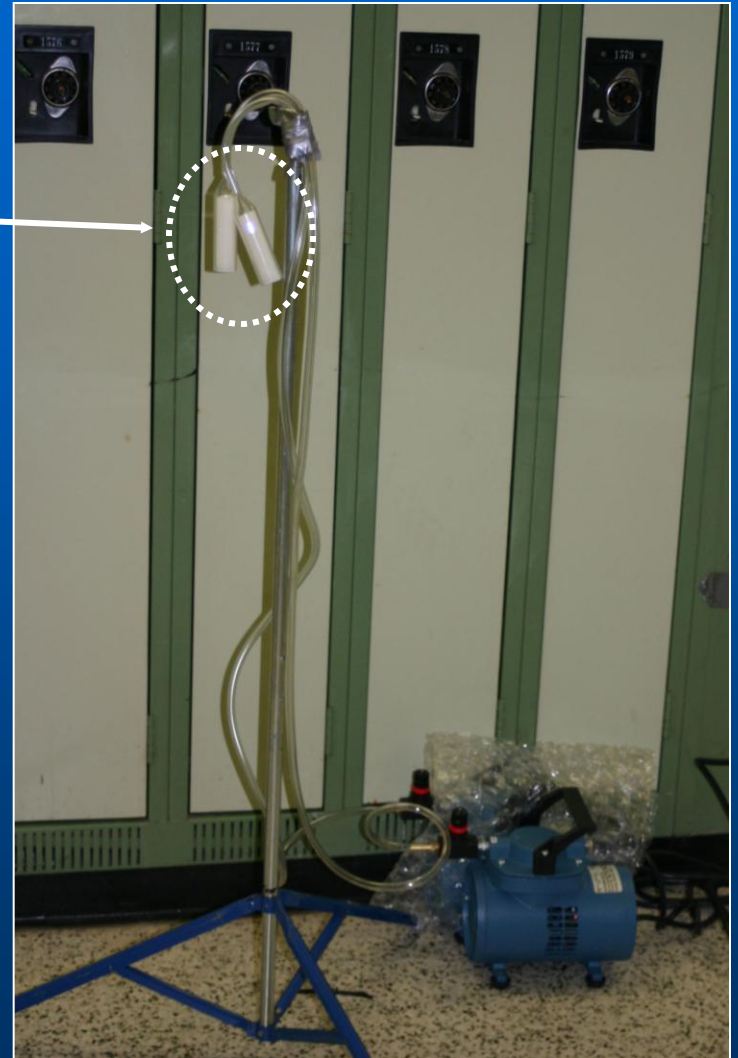
2 Background sample locations

- play ground
- front of main office

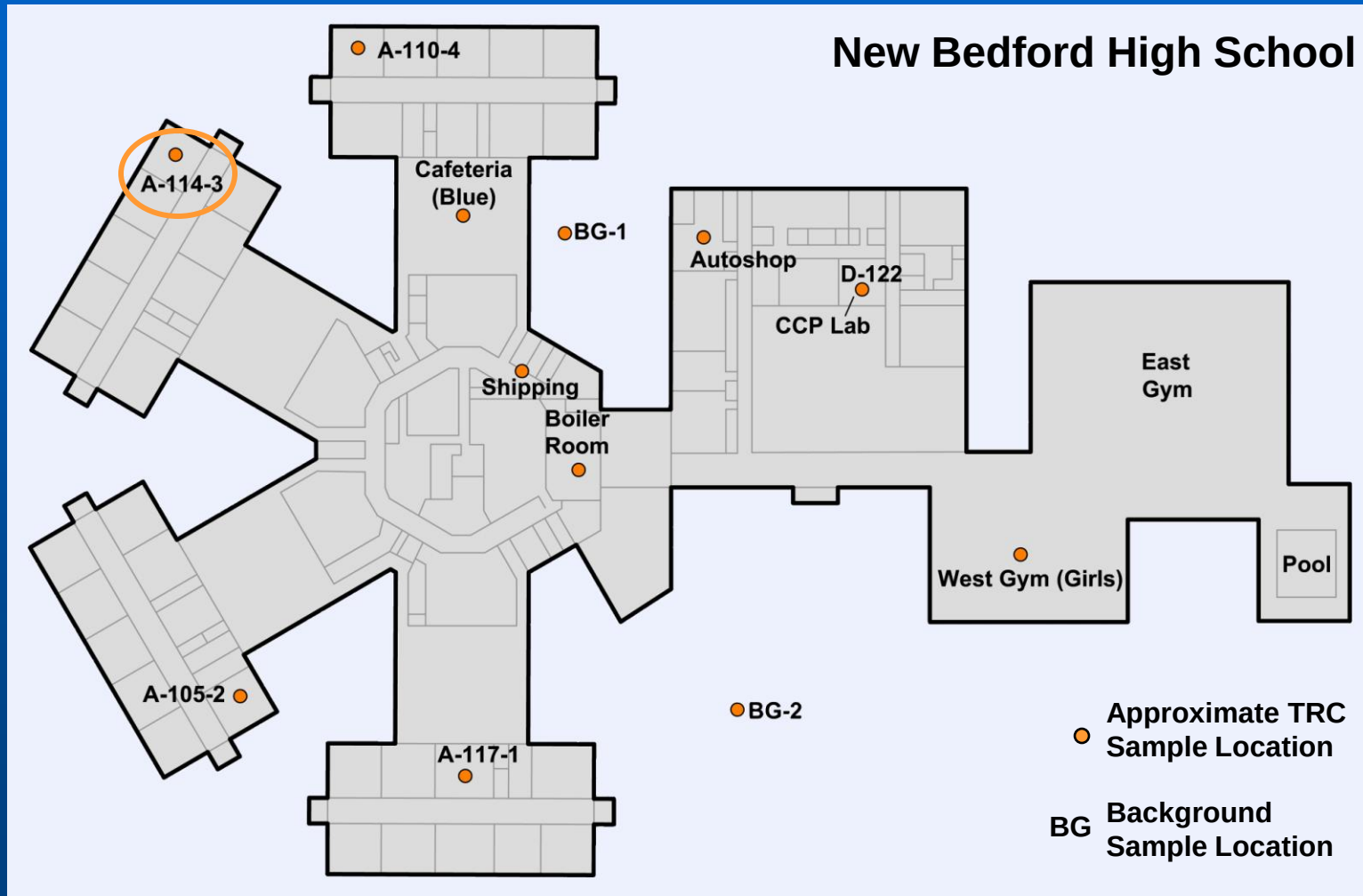


Air Sampling Train Examples

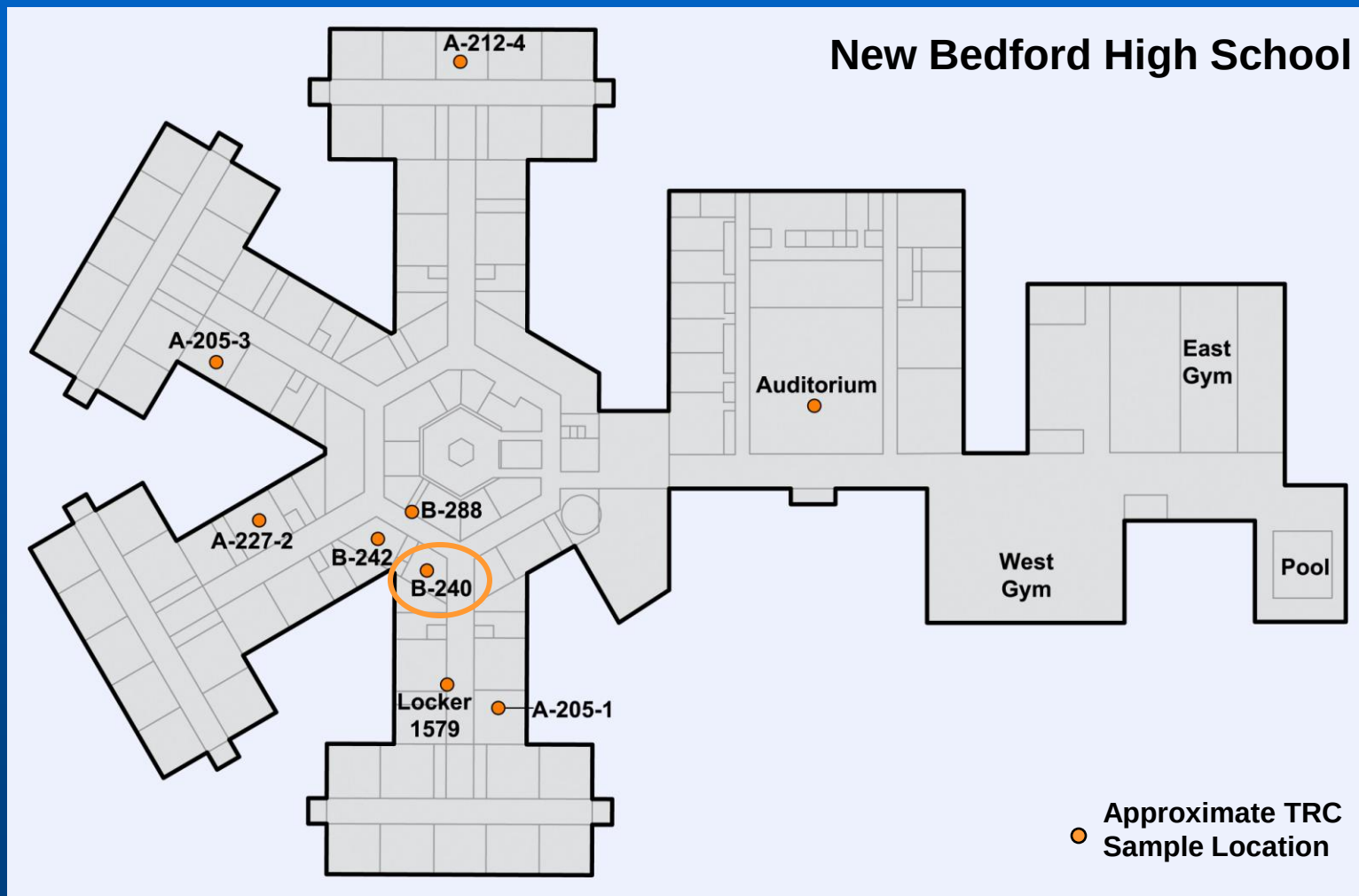
“PUF” Cartridge



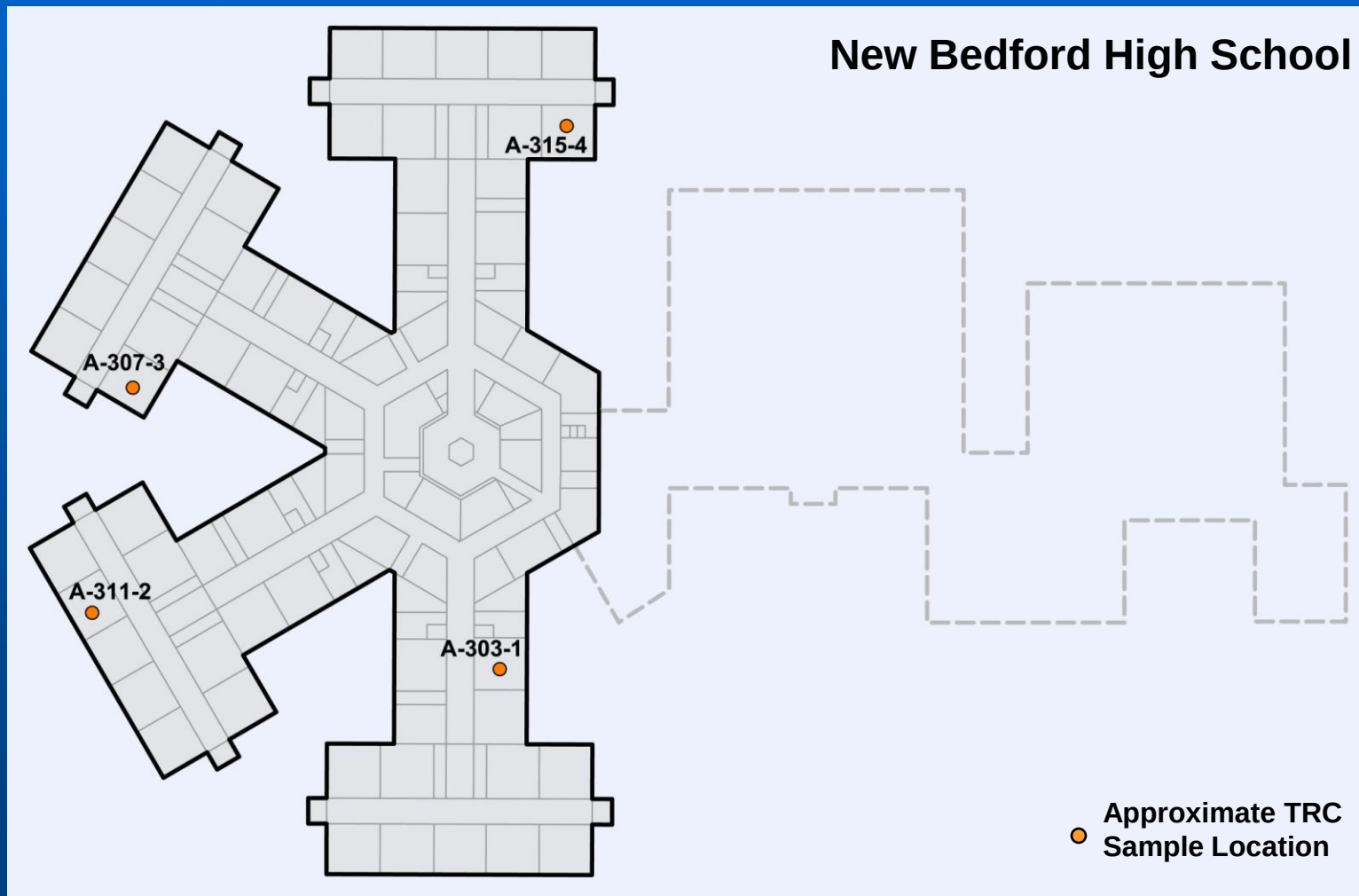
First Floor Air Sampling Locations



Second Floor Air Sampling Locations



Third Floor Air Sampling Locations



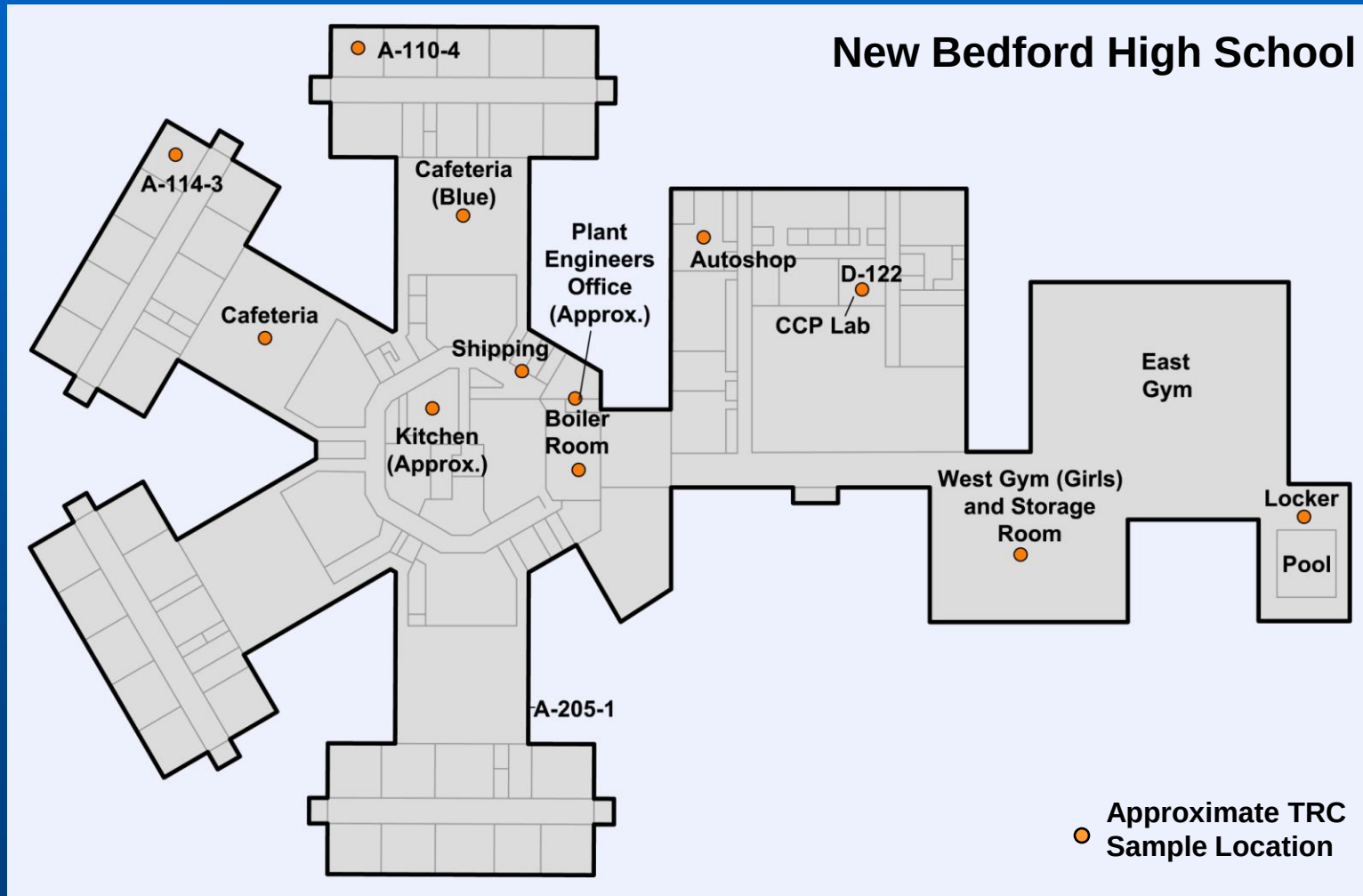
Bulk Sampling for PCBs

33 bulk samples for various building materials

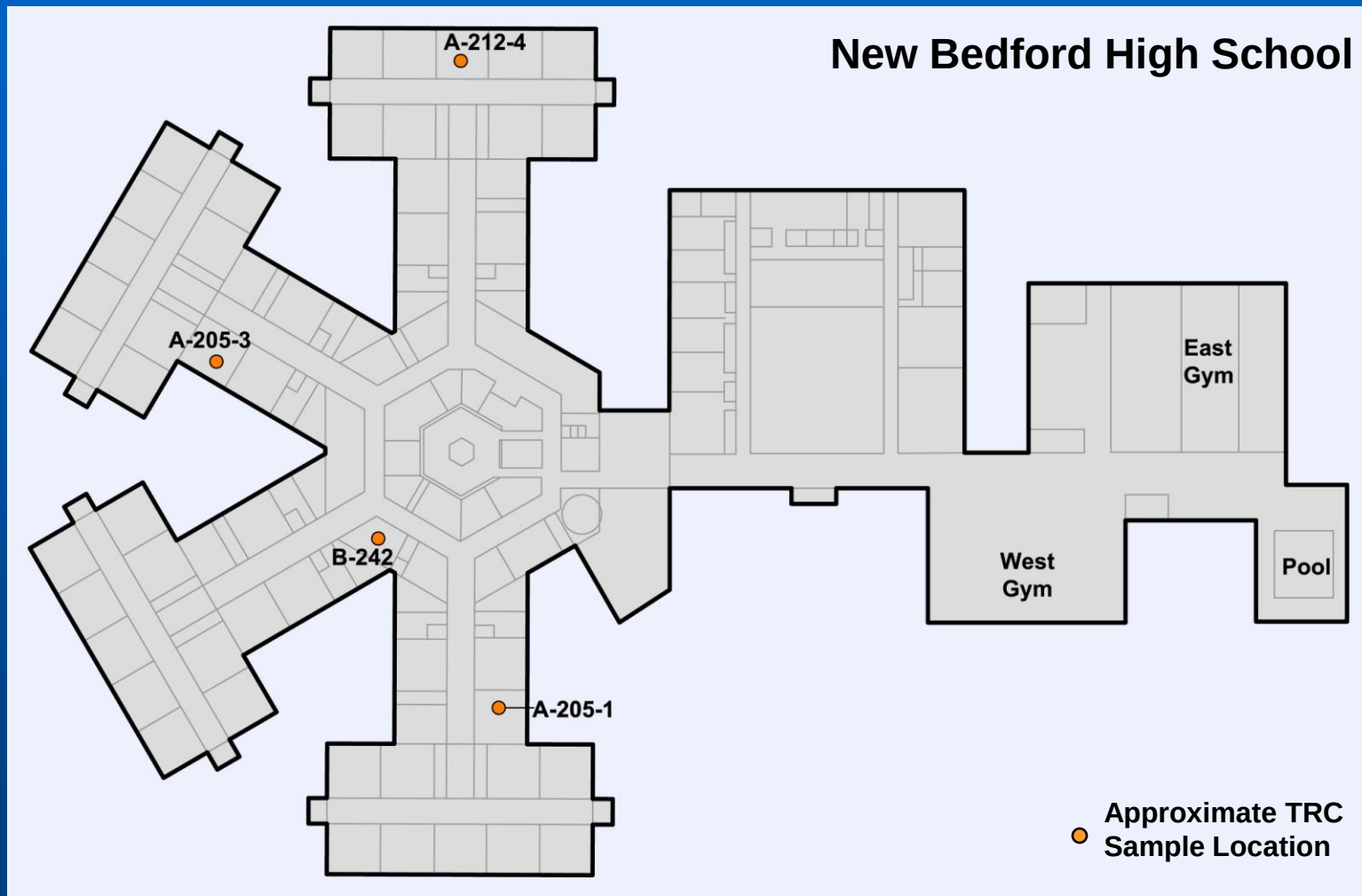
- 9 Vent dust/residue samples
- 1 Filter material and dust from air handling system sample
- 5 Tile and base molding mastic samples
- 5 Caulking and glazing samples (2 exterior)
- 5 Paint samples
- 2 Polyurethane foam samples (upholstery and gym pads)
- 2 Wall/ceiling tile samples
- 1 Air compressor oil sample
- 1 Oil/water auto lift sump sample
- 1 Floor drain contents sample



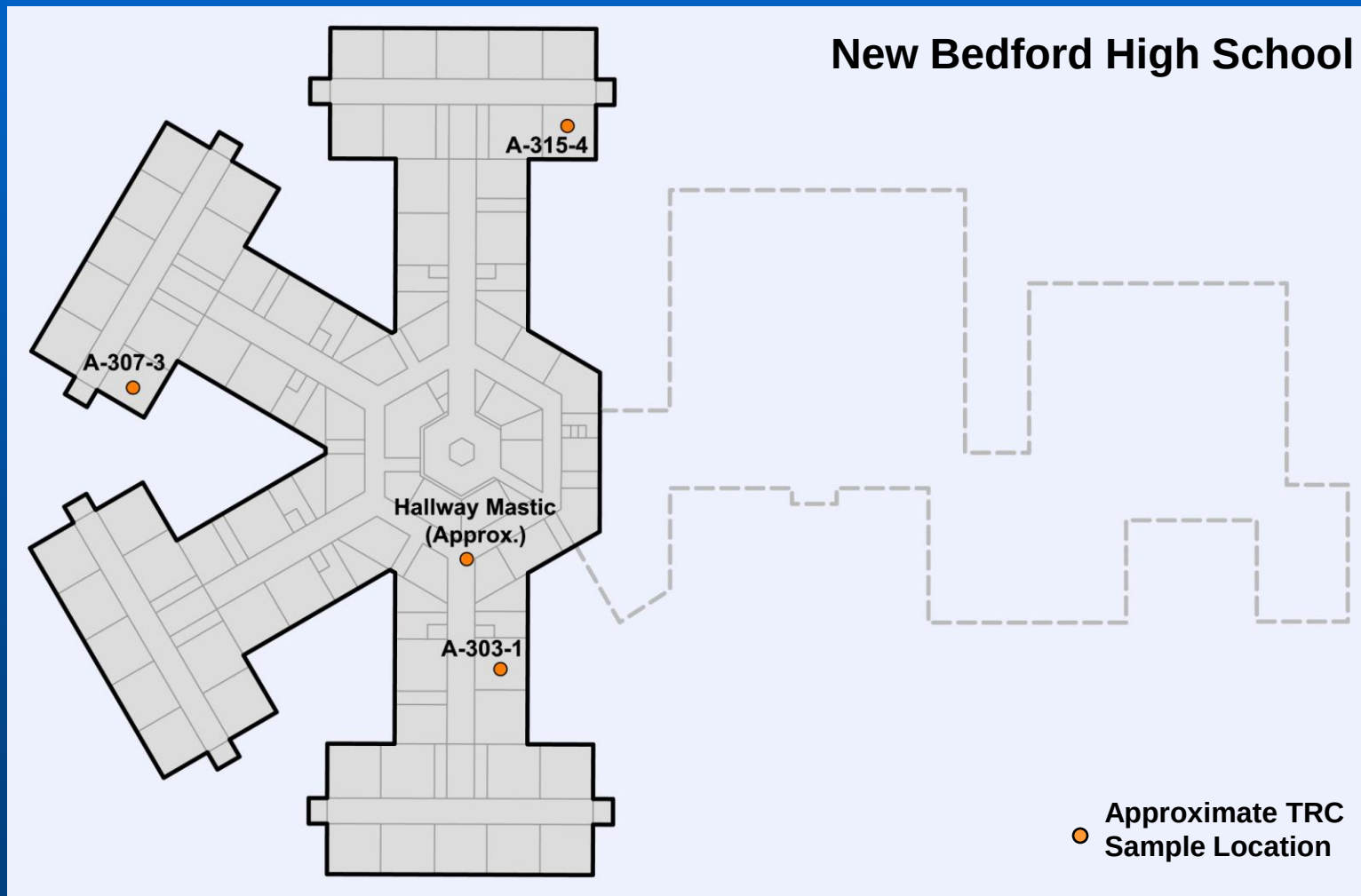
First Floor Bulk Sample Locations



Second Floor Bulk Sample Locations



Third Floor Bulk Sample Locations



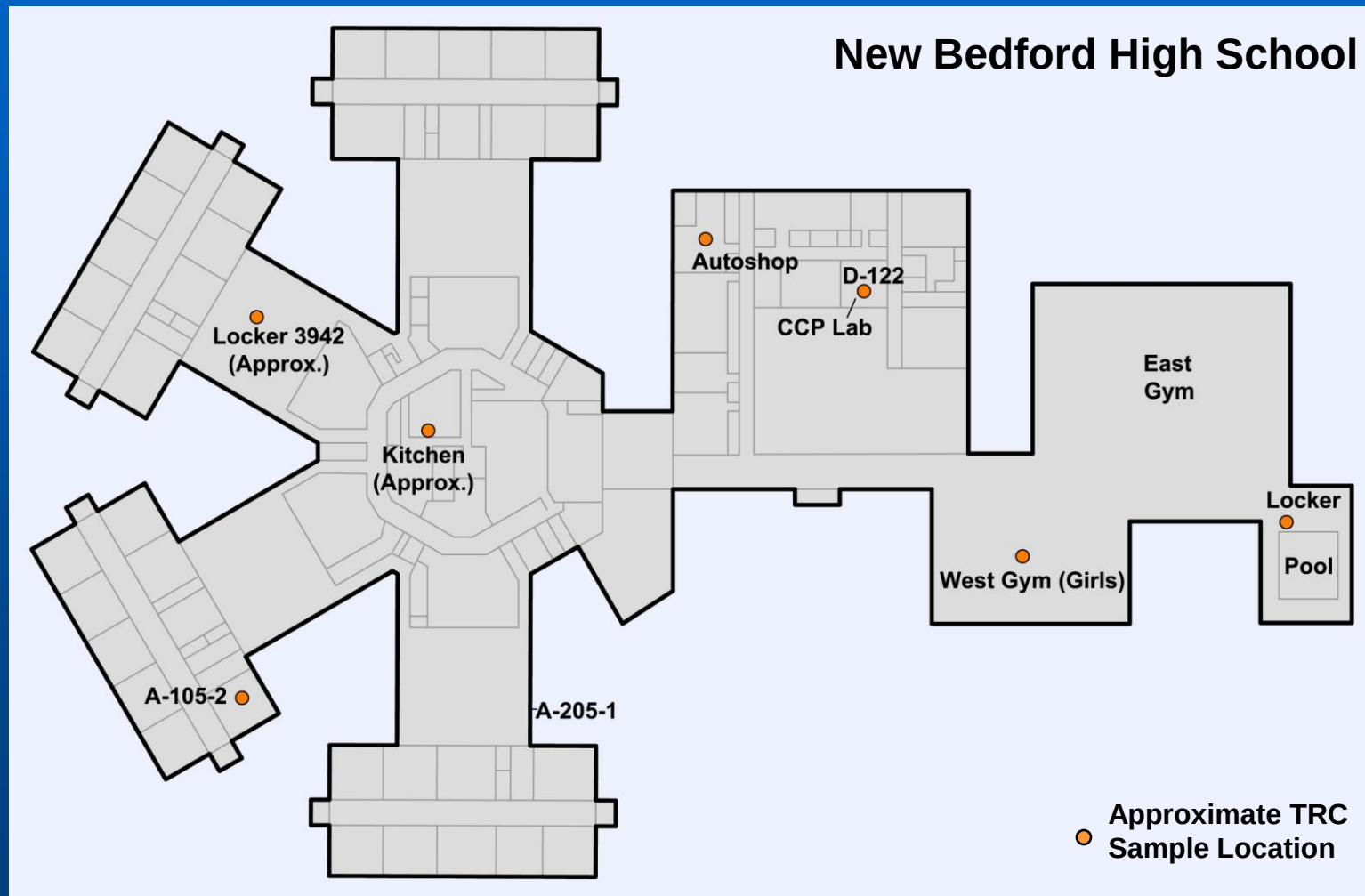
Wipe Sampling for PCBs

22 wipe samples of various building materials

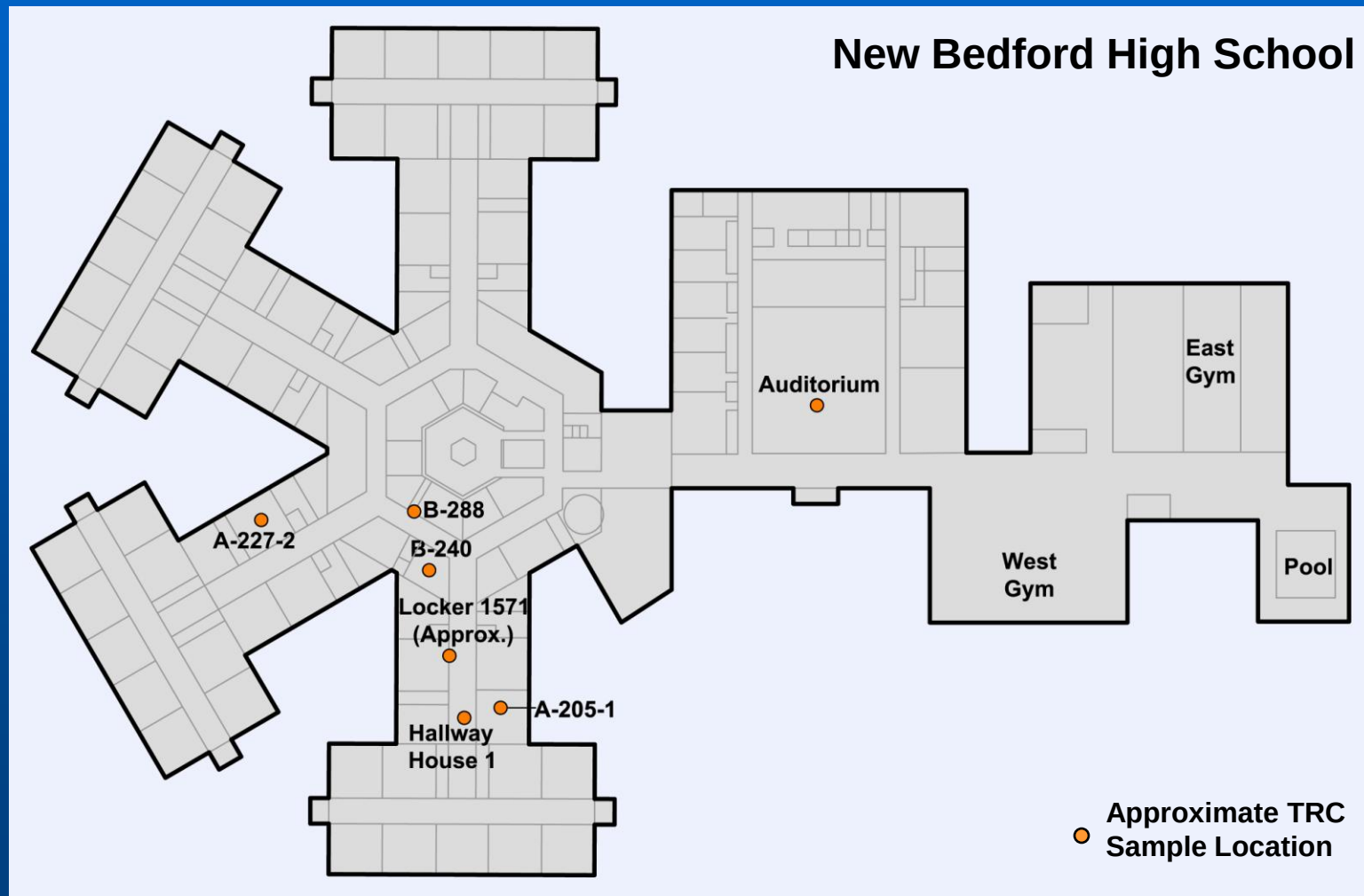
- 1 Unit heater coil wipe
- 2 Unit heater exterior air inlet wipes
- 2 Tops of cabinets/bookcases in class room wipes
- 1 Top of light fixture wipe
- 1 Window sill wipe
- 6 Ceiling vent wipes (incl. dup)
- 1 Wall heater feeder pipe wipe
- 3 Locker bottom wipes
- 1 Floor drain wipe
- 1 Auditorium speaker wipe
- 3 Duct/vent surface wipes



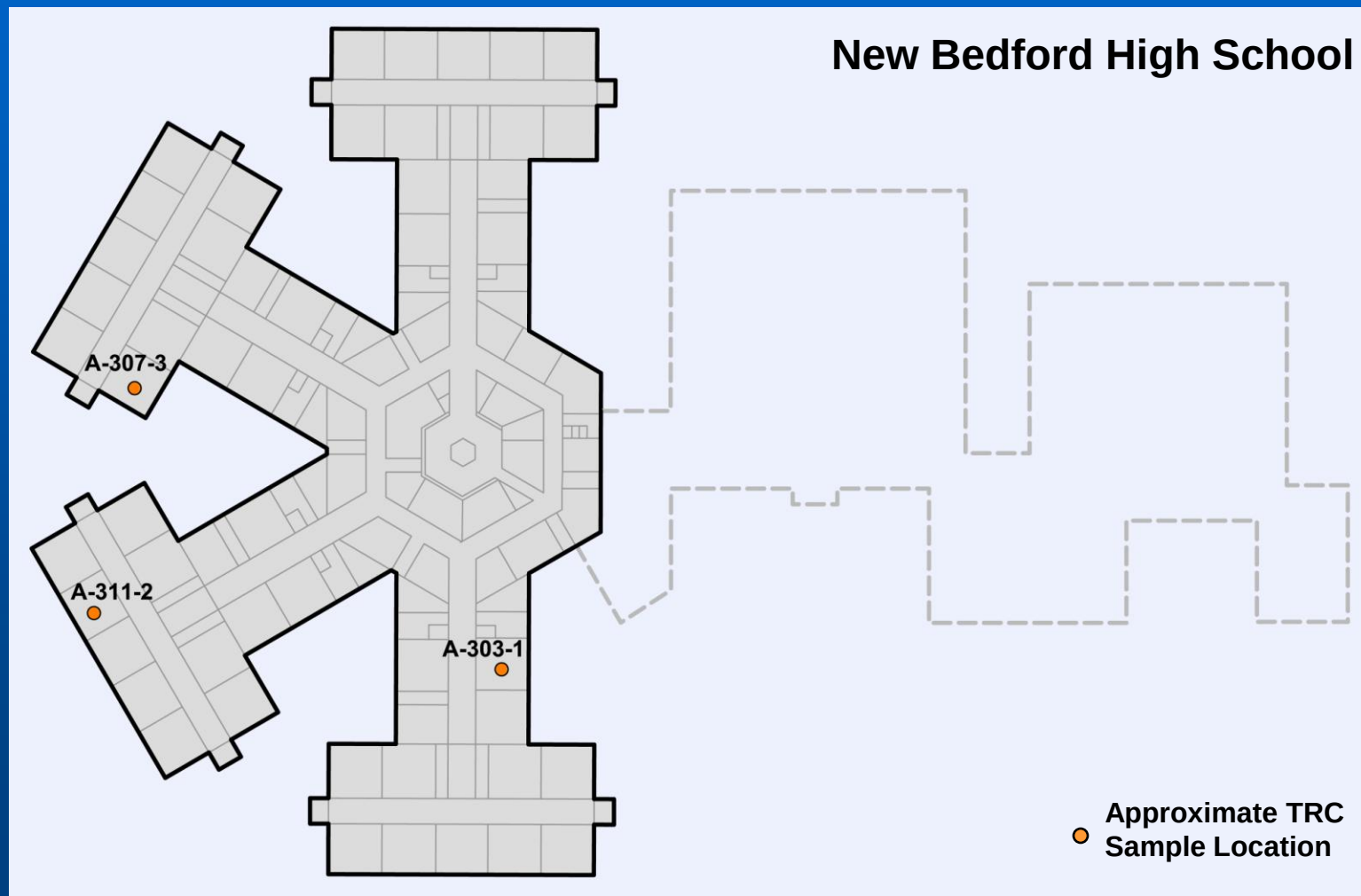
First Floor Wipe Sample Locations



Second Floor Wipe Sample Locations



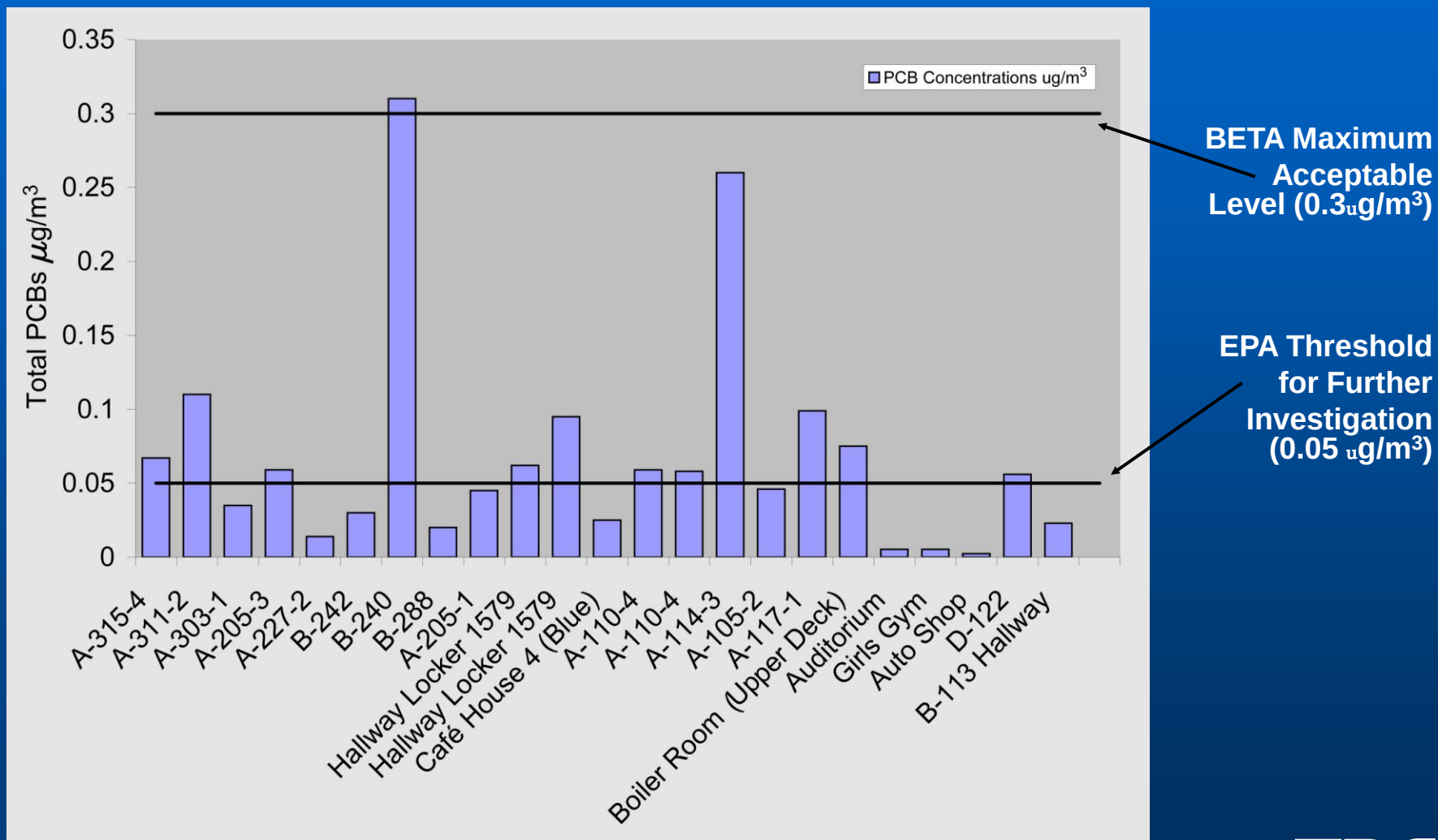
Third Floor Wipe Sample Locations



PCB Indoor Air Monitoring Results for NBHS - August 2006

- Concentration Range: 0.0024 $\mu\text{g}/\text{m}^3$ to 0.31 $\mu\text{g}/\text{m}^3$
- Results In Excess of EPA Threshold for Further Investigation (0.05 $\mu\text{g}/\text{m}^3$): 11
- Results At or Above BETA “Defined Maximum Acceptable Level” (0.3 $\mu\text{g}/\text{m}^3$): 2
 - Room B-240 0.31 $\mu\text{g}/\text{m}^3$
 - Room A-114-3 0.26 $\mu\text{g}/\text{m}^3$

Graphic Summary - TRC NBHS Indoor Air Results August 2006



PCB Bulk Sample Results for NBHS - August 2006

- Concentration Range: 0.20 ppm to 36.5 ppm
- Highest Concentration Materials:
 - Return Air Duct Dust - 36.5 ppm
 - Window caulk (classroom) - 34.4 ppm
 - Floor mastic - 18.1 ppm
 - Foam padding - 10.2 ppm (possible repository)
 - Auto Lift Sump Contents (oil/water) - 10.9 ppm (oil fraction)

PCB Wipe Sample Results for NBHS - August 2006

- Non-Quantitative Results Used to Identify PCB Contaminated Deposition Areas
- Items/Areas with Greatest Number of PCB Detections:
 - Vents
 - Areas of Dust Accumulation:
 - Locker bottoms
 - Tops of ducts
 - Book cases
 - Speaker housing
 - Light fixtures



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Recommended Action Items

- Risk management and mitigation
 - Possible initial remedies can be readily implemented
 - Other remedial measures can be safely scheduled and implemented
- Additional data collection/monitoring
 - Understand variation over time and space
 - Verify and quantify sources

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Thank you for coming. Any
questions are welcome.



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