

HOME OFFICE
PO Box 326
MT AETNA PA 19544

VOICE 717-933-9475
FAX 717-933-1403
TOLL FREE 877-255-0558
Webpage: proaccorp.com



MEMBERS OF:



QUALITY ASSURANCE MICROBIAL AND INDOOR AIR QUALITY SURVEY CLOSING REPORT EAST MIDDLE SCHOOL

09/26/12

PROJECT LOCATION:
377 MAIN STREET
FAWN GROVE, PA 17321-9545

PROJECT CONTRACT FOR:
MR. FRANK DEHAUT JR
QUALITY ASSURANCE PLUS

Respectfully Submitted
PROAC CORPORATION

Reviewed By:
PROAC CORPORATION

Walter Saunders, CIEC, ASCS
Industrial Hygienist



Dean R. Klopp, CIE, CMR, ASCS
President



TABLE OF CONTENTS

| | |
|---------------------------|----|
| SUMMARY OF FINDINGS:----- | 3 |
| RECOMMENDATION:----- | 11 |

LIST OF ATTACHMENTS

| | |
|--|-----|
| PICTURES:----- | 12 |
| MICROBIAL ANALYSIS:----- | 54 |
| AHU INSPECTION:----- | 118 |
| DIRECT READINGS, TEMPERATURE, AND RELATIVE HUMIDITY:----- | 119 |
| PARTICLE COUNTS:----- | 121 |
| REFERENCES----- | 123 |
| REPORT CONDITIONS:----- | 124 |

SUMMARY OF FINDINGS:

On September 26, 2012 a Quality Assurance Microbial and Indoor Air Quality Survey was performed at East Middle School located in Fawn Grove, PA. The survey was completed by:

Dean Klopp, CIE, CMR, ASCS, President, PROAC Corporation
Walt Saunders, CIEC, ASCS, Industrial Hygienist, PROAC Corporation
Mike Ruth, CMR, ASCS, Senior Crew Leader, PROAC Corporation

A visual inspection of each of the areas surveyed and each of the air handlers inspected revealed no indication of fungal or bacterial contamination.

The survey included direct reading measurements of Total Volatile Organics, (TVOC) Carbon Dioxide (CO₂), Carbon Monoxide (CO), Temperature, Relative Humidity (RH) and Particle Counts. An "AMPROBE" digital sling psychrometer was used to obtain temperature and relative humidity readings. Carbon Dioxide (CO₂), Carbon Monoxide (CO) and Total Volatile Organic Compounds (VOC's) were sampled using a "MultiRAE IR", PGM-54 Multi-Gas Monitor. Range of gases begins at "0" and the resolution is 10ppm for CO₂, 1ppm for CO. No significant readings were revealed. Particle counts were obtained with a Six Channel, Laser Hand Held Particle Counter (HHPC-6). Micron size of particles documented include; .3, .5, 1, 2, and 5 (um). CO₂ levels were slightly elevated in Room # 126 and Room # 124. There were no other significant readings.

The survey also included air sampling in eighteen (18) areas inside and five (5) outdoor locations for comparison. Air sampling was conducted for total fungal spores, viable fungi and yeasts and bacteria. A surface sample was obtained in each area that an air sample was obtained, excluding the outdoor samples, and analyzed for viable fungi, yeasts and bacteria. Samples for total, countable fungal structures were obtained using a Bio Pump and Allergenco D sampling cassettes. The pump was calibrated at 15 liters/minute and the samples were drawn for 5 minutes. Samples for airborne, culturable fungi and yeasts and bacteria were obtained from each location using an Anderson-type sampler as recommended for IAQ studies by the Environmental Protection Agency (EPA) and the American Industrial Hygiene Association (AIHA). The Anderson pump was calibrated to meet the flow rate of 28.3 L/minute +/- 1% and the samples were drawn for four minutes. Typically, the fungal profile of the indoor samples should be similar to and of a lower concentration than the outdoor samples.

Generally, the samples for total fungal spores were of a lower concentration and similar rank and order as compared to the outdoor samples, however very low levels of *Gonderma*, which was not revealed in the outdoor samples, were revealed in several of the indoor areas including Room # 126, The Boys Locker Room, the Library Office , the Girls team Room and the Library. The concentration of this contaminant is not considered to be significant.

The air samples for viable fungi and yeasts revealed a lower concentration and similar rank and order as compared to the outdoor samples, however very low levels of several fungal types that were not revealed in the outdoor samples, were revealed in several of the indoor areas including *Aspergillus niger* in Room # 126, *Aspergillus versicolor* in Room # 124 and the Boys Locker Room, *Cuvularia lunata* in the Office Area and the Weight Room, *Aspergillus fumagatis* in The Boys Training Room and *Fusarium sporotrichioides* in the Girls Locker Room. The concentration of these contaminants is not considered to be significant.

The air samples for bacteria revealed minimal contamination throughout much of the school, however moderate concentrations of *Micrococcus luetus* were revealed in numerous rooms. Human-shed bacteria, i.e. *Staphylococcus* and *Micrococcus* are common in a public building.

Generally speaking, the air samples revealed no significant findings.

Surface samples were obtained in each room that air samples were obtained. The surface samples were obtained from locations most likely to harbor fungal and/or bacterial growth due to the potential for moisture, such as window sills.

The surface samples for fungi and yeasts obtained in each of the rooms tested revealed a moderate to high concentration of *Fusarium sporotrichioides* in the Cafeteria. The remaining surface samples revealed low levels of fungal contamination, NOT growth.

The surface samples for bacteria revealed high levels bacterial contamination, NOT growth in the form of gram (-) negative bacteria and *Psuedomonas* in Room # 126, Room # 124, the Cafeteria, the Weight Room, the Wrestle Room, the Boys Team Room, the Boys Locker Room, the Library Office, the Girls Team Room, Room # 224 and the Gymnasium. Additionally a significant concentration of *Flavobacterium* was revealed in the sample obtained from the Girls Locker Room.

A dust sample was obtained from the carpet in the office area. This sample revealed a significant concentration of fungi and bacteria. This carpet should be HEPA contact vacuumed and hot water extracted with a mild 5% bleach detergent solution. Thorough drying should then occur, utilizing dehumidifiers and fans.

It should be again noted that no visible evidence of fungal and/or bacterial growth was noted during the survey and that these sample locations were chosen to represent the worst case scenario in the school. We feel that the bacteria levels can be reduced significantly through upgraded housekeeping measures including upgrading to HEPA rated vacuums. Hard surfaces should be cleaned with detergent and/or 5% bleach solution and clean rinsed. Areas with roof leaks should also be treated with a mild, 5% bleach solution, rinsed and dried. This work can be completed by school personnel.

A total of seventeen air handler units were inspected as part of the survey. Generally, the filters and coils were slightly fouled with dust. Suspect contamination was noted on the blower fan in the Office unit. No visible evidence of contamination was noted in any of the other units inspected.

A sterile swab sample was obtained from each unit and analyzed for viable fungi and yeasts and bacteria. The samples obtained in the HVAC units in the Weight Room, the Girls Locker Room, Room 216, Room 135 the Cafeteria, and the Girls Training Room revealed minimal to no fungal and bacterial contamination. The samples obtained in the Air Handling Units in the Gymnasium, the Library Office, the Library Scanner Room, Room 222, Room 224, the Office, the Girls Training Room, The Boys Team Room and Room 126 revealed moderate to heavy concentrations of fungi and/or bacteria. We are recommending that these unit be professionally cleaned and treated with an EPA registered sanitizer.

MICROBIOLOGICAL SAMPLES

Media Used

| | |
|--|--|
| Viable Mold, Yeast & Fungus Agar Plates | Malt Extract |
| Total, Countable Fungi Bacteria | Allegenco D Spore Trap Cassettes Tryptic Soy Agar |
| Surface Samples | Sterile Swabs |

There are currently no standards regarding the amount of fungal or bacterial (microbial) contamination on surfaces or in the air. There are, however, guidelines to assist IAQ professionals with comparing their survey data to study data. References are listed as an attachment. According to the American Conference of Government Industrial Hygienists (ACGIH) and the EPA, the recommended level for microbiological exposure is an equal or lower quantity inside the building than found outside the building. Also, indoor samples should have the same kind, rank and order of organisms that are found outdoors.

Samples were obtained from the following locations:

| | |
|------------------------|-----------------------|
| Cafeteria | Girls Locker Room |
| Girls Team Room | Weight Room |
| Boys Locker Room | Boys Team Room |
| Library Storage Room | Library Office |
| Room # 135 | Room # 137 |
| Gym # 1 | Gym # 2 |
| Main Office | Room # 224 |
| Room # 124 | Wrestle Room |
| Room # 126 | Room # 222 |
| Outside Front Entrance | Outside Entrance E 12 |
| Outside Entrance E 18 | Outside Entrance E 16 |
| Outside Rear Entrance | |

Air Samples for Total Countable Fungal Spores

Outdoor Air Samples - Five samples was obtained outdoor for comparison to the indoor sample. This sample are used as an aid in determining if the source of fungal contamination is indoors. The outdoor samples revealed seasonable levels of fungal contamination with *Cladosporium*, ascospores and basidiospores being the primary contaminants.

Inside Air Samples – Eighteen samples were obtained from location in the school. Generally, the samples for total fungal spores were of a lower concentration and similar rank and order as the outdoor samples, however very low levels of *Gonderma*, which was not revealed in the outdoor samples, were revealed in several of the indoor areas including Room # 126, The Boys Locker Room, the Library Office , the Girls team Room and the Library. The concentration of this contaminant is not considered to be significant.

Air Samples for Viable Mold Yeast and Fungus

Outdoor Air Samples - Five outdoor samples were obtained for comparison with the indoor environment. These samples is used as an aid in determining if the source of fungal contamination is indoors. The outdoor samples revealed seasonable levels of fungi with *Cladosporium* being the dominant contaminant.

Inside Air Samples – Eighteen samples were obtained indoors. The air samples for viable fungi and yeasts revealed minimal contamination throughout the school however very low levels of several fungal types that were not revealed in the outdoor samples, were revealed in several of the indoor areas including *Aspergillus niger* in Room # 126, *Aspergillus versicolor* in Room # 124 and the Boys Locker Room, *Curvularia lunata* in the Office Area and the Weight Room, *Aspergillus fumigatus* in the Boys Training Room and *Fusarium sporotrichioides* in the Girls Locker Room. The concentration of these contaminants is not considered to be significant.

Air Samples for Bacteria

Outdoor Air Samples - Five outdoor samples were obtained for comparison with the indoor environment. These samples is used as an aid in determining if the source of fungal contamination is indoors. The primary contaminants in the outdoor samples were *Methylobacterium*, *Bacillus* and *Micrococcus luteus*.

Indoor Air Samples - Eighteen samples were obtained indoors. The air samples for bacteria revealed minimal contamination throughout much of the school, however moderate concentrations of *Micrococcus luetus* were reveled in numerous rooms. Human-shed bacteria, i.e. *Staphylococcus* and *Micrococcus* are common in a public building.

We feel that the bacteria levels can be reduced significantly through upgraded housekeeping measures including upgrading to HEPA rated vacuums. Hard surfaces should be cleaned with detergent and/or bleach solution and rinsed. Areas with roof leaks should also be treated with a mild, 5% bleach solution, rinsed and dried. This work can be completed by school personnel.

Bulk Dust Samples for Mold, Fungi, Yeasts and Bacteria

A dust sample was obtained from the carpet in the office area. This sample revealed a significant concentration of fungi and bacteria spores. This carpet should be HEPA contact vacuumed and hot water extracted with a mild 5% bleach detergent solution. Thorough drying should then occur, utilizing dehumidifiers and fans.

It should be again noted that no visible evidence of fungal and/or bacterial growth was noted during the survey and that these sample locations were chosen to represent the worst case scenario in the school.

Surface Samples for Mold, Fungi and Yeasts

Surface samples for mold, fungi and yeasts and bacteria were obtained in each area that air samples were obtained. The surface samples were obtained from locations most likely to harbor fungal and/or bacterial growth due to the potential for moisture, such as window sills.

The surface samples for fungi and yeasts obtained in each of the rooms tested revealed a moderate to high concentration of *Fusarium sporotrichioides* in the Cafeteria. The remaining surface samples revealed low levels of fungal contamination, NOT growth.

Surface Samples for Bacteria

The surface samples for bacteria revealed high levels of bacterial contamination, NOT growth, in the form of gram (-) negative bacteria and *Psuedomonas* in Room # 126, Room # 124, the Cafeteria, the Weight Room, the Wrestle Room, the Boys Team Room, the Boys Locker Room, the Library Office, the Girls Team Room, Room # 224 and the Gymnasium. Additionally a significant concentration of *Flavobacterium* was revealed in the sample obtained from the Girls Locker Room.

AHU INSPECTION AND SAMPLING

A total of seventeen air handler units were inspected as part of the survey. Generally, the filters, coils, drain pans, blower fans and insulation were noted to be in good condition however the drain pan in the Office AHU is rusted and suspect fungal contamination was noted on the blower fan in this unit. Additionally, the filters in the Cafeteria AHU were collapsing and should be replaced. No visible evidence of growth was noted in any other unit inspected.

SWAB SAMPLES FOR MOLD/FUNGI YEASTS AND BACTERIA

A sterile swab sample was obtained from each unit and analyzed for viable fungi and yeasts and bacteria.

The samples obtained in the units in the Weight Room, the Girls Locker Room, the Room # 216 UV, the Cafeteria, the Room # 124 UV, the Boys Locker Room AHU and the Room and the Girls Training Room and the Room # 135 UV revealed minimal to no fungal and bacterial contamination.

The samples obtained in the Gym RTU, the Library Office, The Library Scanner Room, The Room 222 AHU, the Room 224 UV, the Office AHU and the Girls Training Room each revealed significant concentrations of fungal and/or bacterial contamination.

We are recommending that these unit be professionally cleaned and treated with an EPA registered sanitizer.

GAS SAMPLING AND PARTICLE COUNTS

The weather on the days of the survey was warm humid with ambient air temperatures in the mid 60's to mid 70's. Relative humidity (RH) readings outdoors ranged between 55% and 73%. The carbon dioxide (CO₂) readings outdoors ranged between 240 ppm and 320 ppm. Carbon Monoxide (CO) and Volatile Organic Compound (VOC's) were not detected outdoors on the day of the survey.

Temperatures in the school ranged 68 degrees F and 78 degrees F while the RH reading indoors were recorded between 35% and 69% with most readings in the mid 50% range. The American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE) have suggested that for optimum comfort, indoor temperatures should range from 68.5-76 degrees F during the heating season and 73 - 79 degrees F during the cooling season. The guidelines also suggest 30% RH as the minimum indoor humidity level and 60% as the maximum indoor humidity level (ASHRAE Standard 55-1992).

ASHRAE has also suggested that for optimum comfort, **Carbon Dioxide** levels should not exceed 700 ppm above ambient air. The CO₂ levels indoors generally, were well within the standard, however CO₂ readings were slightly elevated as compared to the standard in Room #'s 126 and 124. Elevated CO₂ levels could be the result of increased occupants and or activity in the space. Each of the room had a minimum of 22 occupants at the time the readings were obtained.

Carbon Monoxide readings registered 0.0 ppm throughout the survey.

Total Volatile Organic Compound readings registered 0.0 ppm throughout the survey. Detection limit begins at 0.1 ppm. Total V.O.C. levels of 1 ppm or above are considered significant. If chemical sensitivity is an issue than more specific tests may be performed.

Particle Counts were recorded in five sizes of microscopic particulate. Data collected is used only as an indicator of dusty environments or for relative comparison. Higher counts may be an indicator of high occupancy, low efficiency filtration, lack of hygiene, use of paper products or processes, etc.

Typically, particle counts should be lower inside that building than outside. Particle counts in the school were generally lower as compared to the out doors.

No standards are available for "counts" of particulate of any size, outside of a "Clean Room" environment. Time Weighted Averages may be performed by collecting "dust" and particulate onto a pre-weighed cassette, drawn by a vacuum pump over a known period of time (NIOSH method). This method is usually performed in a manufacturing or dusty environment. This method is not recommended.

RECOMMENDATIONS:

- 1) Correct roof leaks.
- 2) Significant bacterial contamination was noted in many of the surface samples, including Room #'s 126, 124, 224, the Cafeteria, the Weight Room, the Wrestle Room, the Boys Team Room, the Boys Locker Room, The Library Office, the Girls Locker Room, The Girls Team Room and the Gymnasium. We are recommending that general housekeeping be upgraded in these areas of the school as well as all other remaining areas of the school. This housekeeping should include HEPA vacuuming throughout, including room contents, as well a cleaning all non porous surfaces with hot water, detergent and bleach solution with clean water rinse. This work can be completed by school Personnel.
- 3) We are recommending that the Air Handlers in the Gym, the Library Office, the Library Scanner Room, Room 222, Room 224, the Office and the Girls Training Room each be cleaned via HEPA vacuum, the coils be cleaned with the patented, Aeris enzymatic coil cleaner and coated with Aeris Guard anti-foulant which will guarantee and inhibit mold growth for one year on the coils. Other hard surfaces in the units should be washed with detergent, rinsed and treated with the EPA registered sanitizer, Fast Attack. This work should be completed under the supervision of National Air Duct Cleaners Association (NADCA) certified Air Systems Cleaning Specialist (ASCS) and American Council for Accredited Certification (ACAC) Council Certified Mold Remediators. Routine cleaning of all HVAC units should continue, including the Aeris Coil Restoration. Filters should be changed twice yearly, unless conditions warrant more frequency. Filters should be replaced in the Cafeteria AHU.
- 4) The Office carpet should be HEPA contact vacuumed and hot water extracted with detergent, 5% bleach and clean rinsed. Thorough drying should immediately occur utilizing dehumidifiers and fans.
- 5) Adopt the patented Aeris TM, Coil Restoration program, which includes washing the coils with the enzymatic coil cleaner and treating the coils with the anti-foulant/EPA registered anti-microbial.

QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - OUTSIDE E-12 ENTRANCE



SAMPLE LOCATION - ROOM # 126



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - ROOM 124



SAMPLE LOCATION CAFETERIA



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - OUTSIDE FRONT ENTRANCE



SAMPLE LOCATION - WEIGHT ROOM



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - BOYS TEAM ROOM



SAMPLE LOCATION - BOYS LOCKER ROOM



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - LIBRARY OFFICE



SAMPLE LOCATION - GIRLS LOCKER ROOM



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - OUTSIDE ENTRANCE E-18



SAMPLE LOCATION ROOM # 135



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - ROOM # 137



SAMPLE LOCATION - OUTSIDE REAR ENTRANCE



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - ROOM 224



SAMPLE LOCATION ROMM # 222



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - GYM 1



SAMPLE LOCATION - GYM 2



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

SAMPLE LOCATION - OUTSIDE ENTRANCE E-12



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

GIRLS TRAINING ROOM-UNIT BLOWER



GIRLS TRAINING ROOM-UNIT WALL



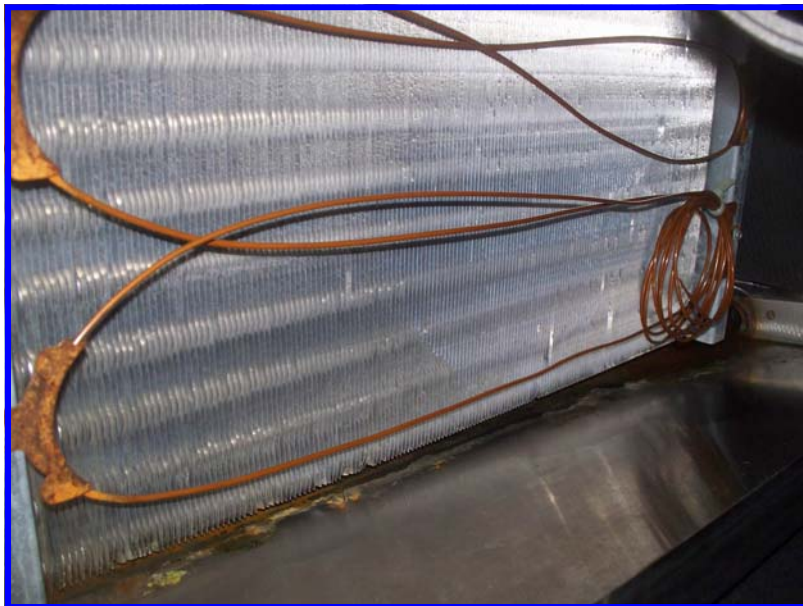
**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

GIRLS TRAINING ROOM-UNIT FILTER



LIBRARY SEMINAR ROOM-UNIT COIL/DRAIN PAN



LIBRARY SEMINAR ROOM-UNIT BLOWER



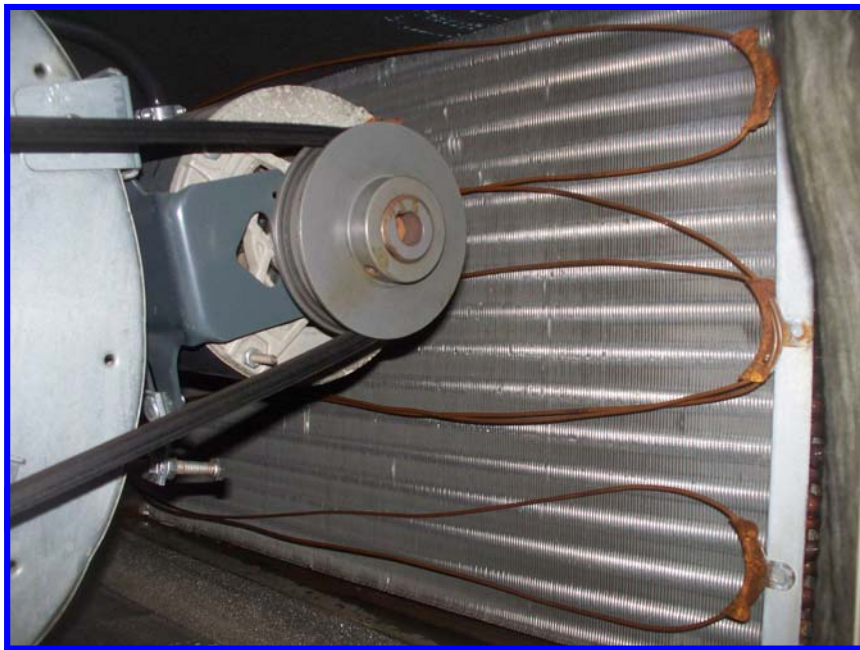
LIBRARY SEMINAR ROOM-UNIT INSULATION



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

ROOM # 135-UNIT COIL



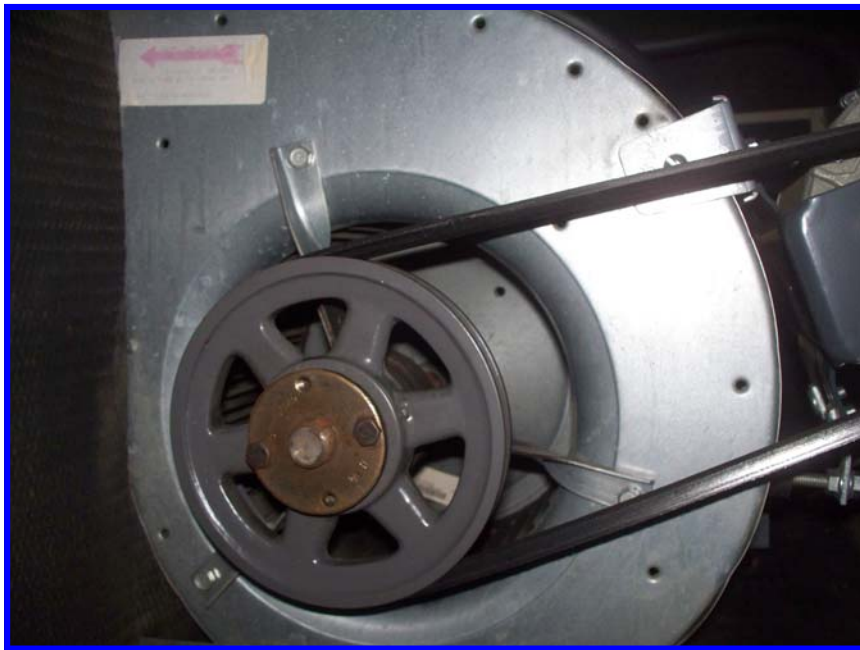
ROOM # 135-UNIT DRAIN PAN



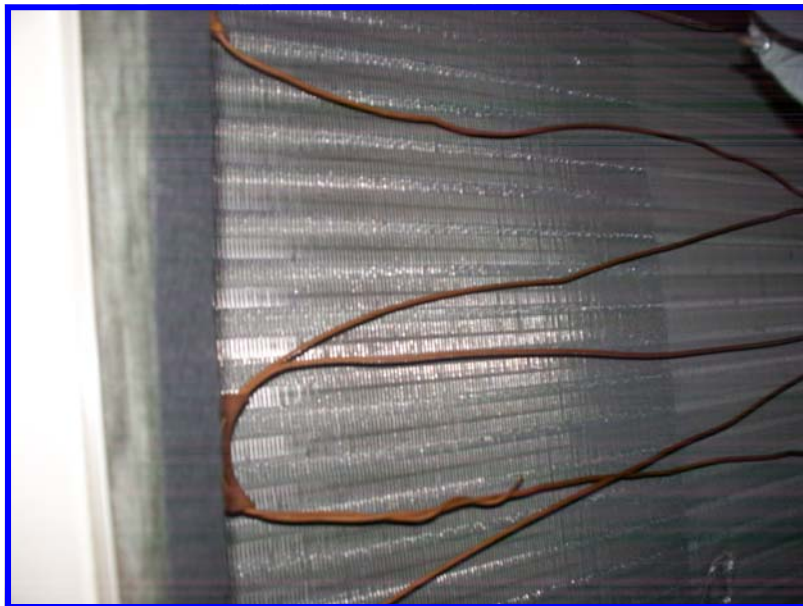
**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

ROOM # 135-UNIT BLOWER



ROOM # 137-UNIT COIL



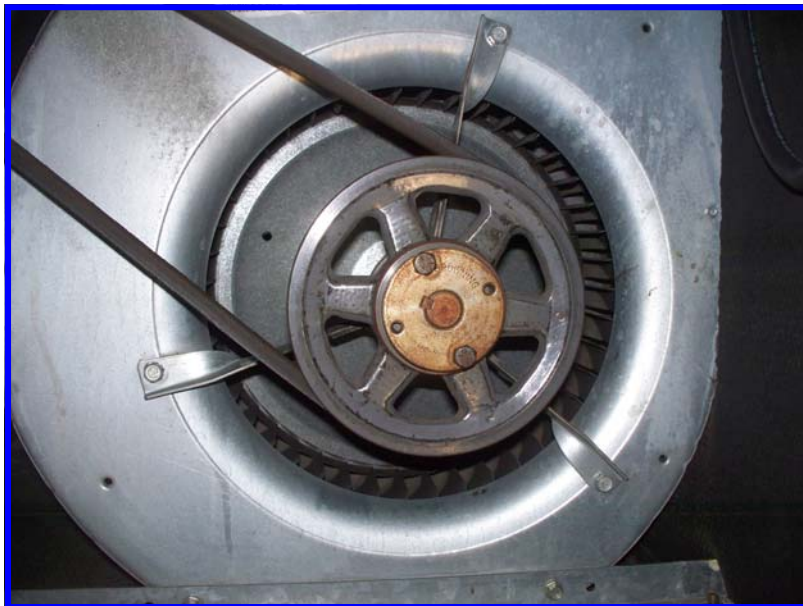
**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

ROOM # 137-UNIT DRAIN PAN



ROOM # 137-UNIT BLOWER



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

ROOM # 224-UNIT VENTILATOR COIL



ROOM # 224-VENTILATOR BLOWER



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

ROOM # 224-UNIT VENTILATOR



ROOM # 222-UV COIL



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

ROOM # 222-UV BLOWER



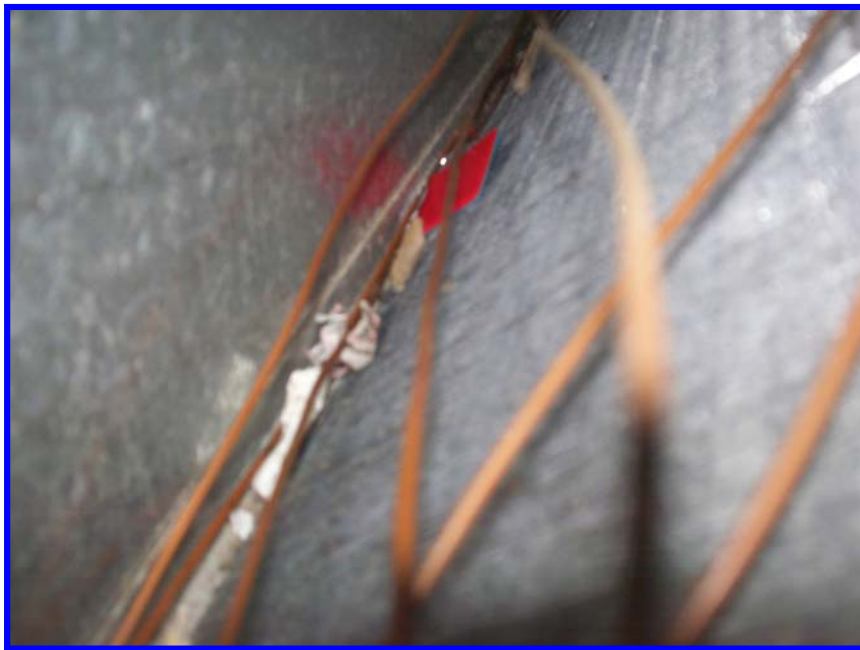
ROOM # 222-UV



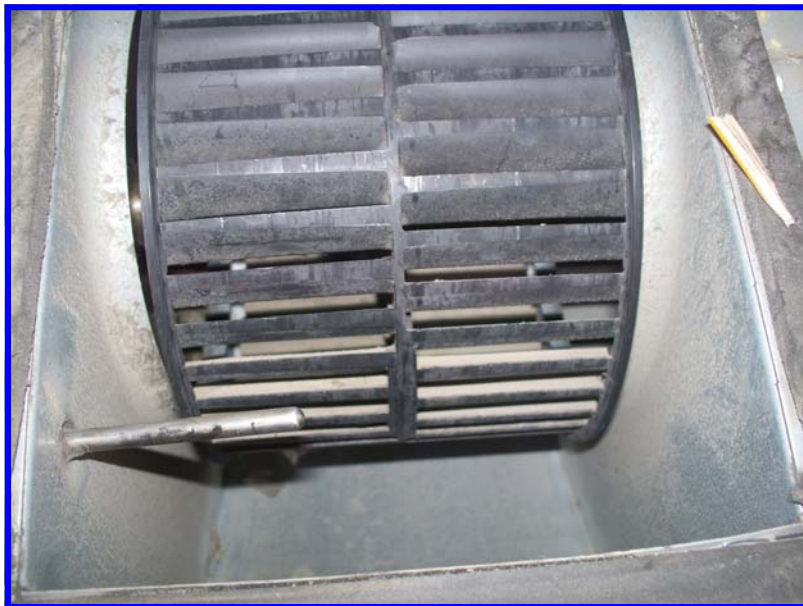
**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

ROOM # 216-UV COIL



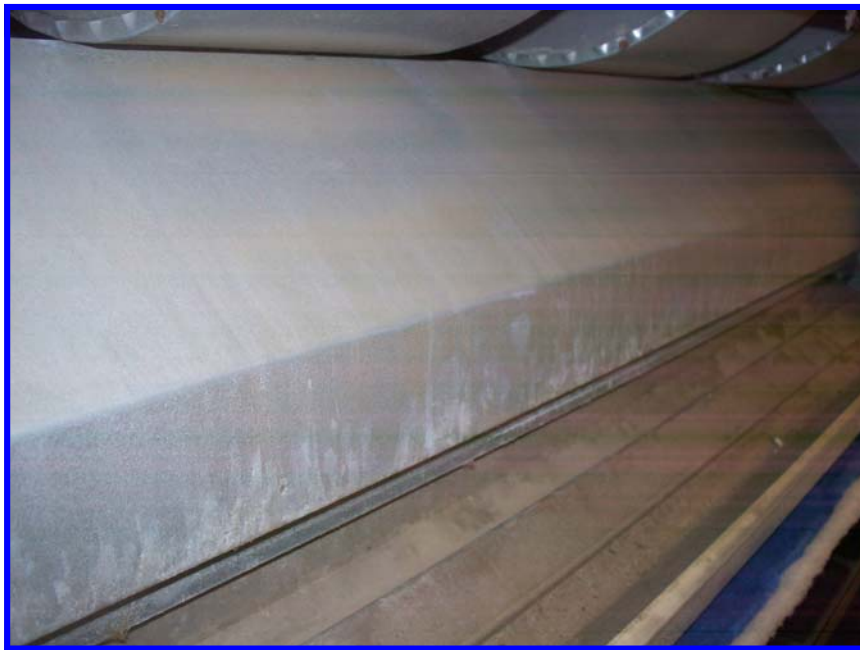
ROOM # 216-UV BLOWER



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

ROOM # 216-UV



RTU -GYMNASIUM FARTHEST FROM FLAGPOLE OUTSIDE DAMPERS NO UNIT #



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

RTU -GYMNASIUM FARTHEST FROM FLAGPOLE



RTU -GYMNASIUM FARTHEST FROM FLAGPOLE –FILTERS



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

RTU -GYMNASIUM FARTHEST FROM FLAGPOLE –COILS



RTU -GYMNASIUM FARTHEST FROM FLAGPOLE –BLOWER FINS



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

RTU -GYMNASIUM FARTHEST FROM FLAGPOLE –OUTSIDE AIR FILTERS/BIRD SCREEN



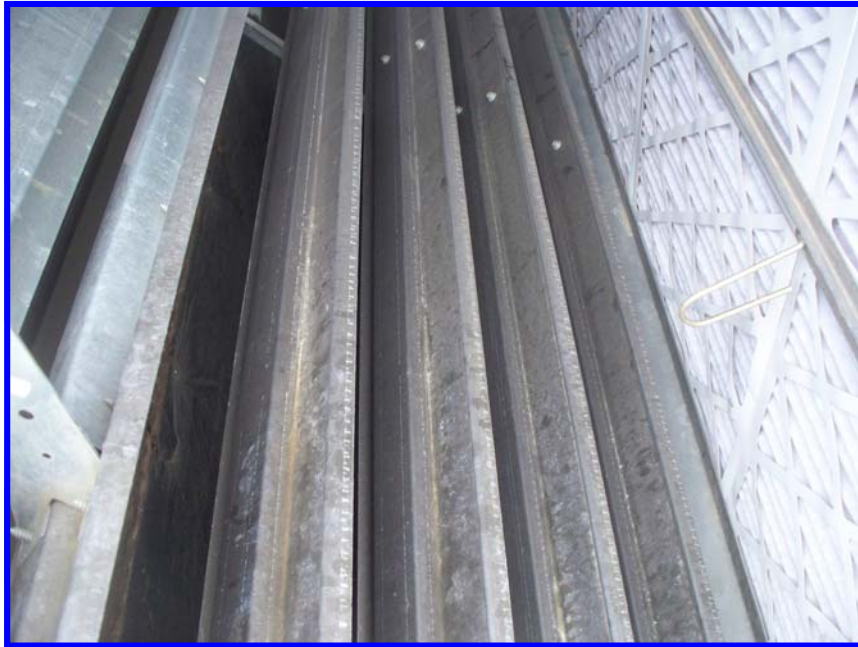
RTU -GYMNASIUM CLOSEST TO FLAGPOLE –OUTSIDE AIR DAMPERS-NO UNIT #



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

RTU -GYMNASIUM CLOSEST TO FLAGPOLE –RETURN AIR DAMPERS



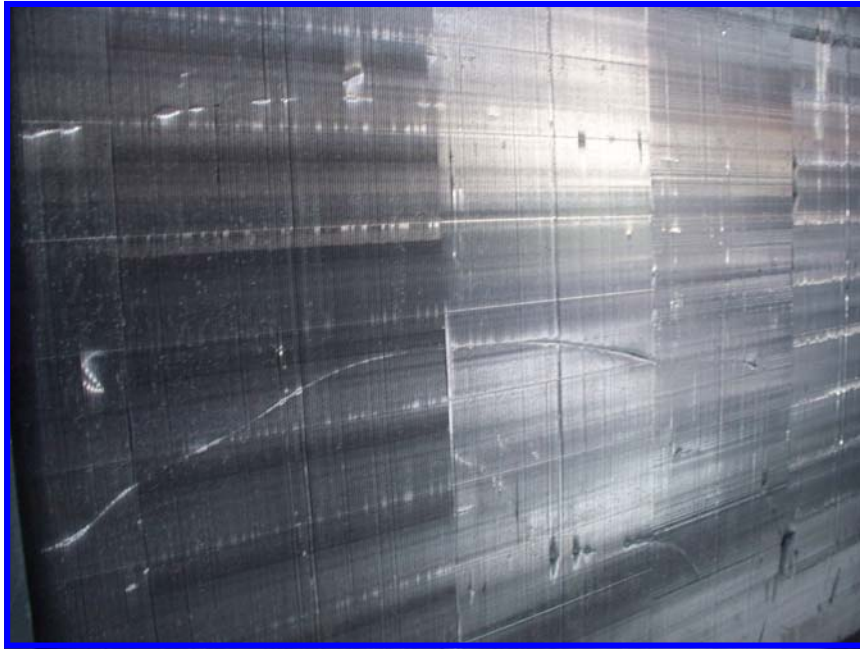
RTU -GYMNASIUM CLOSEST TO FLAGPOLE –FILTERS



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

RTU -GYMNASIUM CLOSEST TO FLAGPOLE –COILS



RTU -GYMNASIUM CLOSEST TO FLAGPOLE –BLOWERS



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

RTU # 126-UV BLOWER



RTU # 126-UV



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

RTU # 126- BLOWER



RTU # 126-UV COIL



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

RTU # 124- UV BLOWER



RTU # 124-UV COIL



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

RTU # 124- UV



AHU # 3-OFFICE AREA-COIL-CEILING



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

AHU # 3-OFFICE-BLOWER-SUSPECT MICROBIAL GROWTH



AHU # 3-OFFICE BLOWER FINS



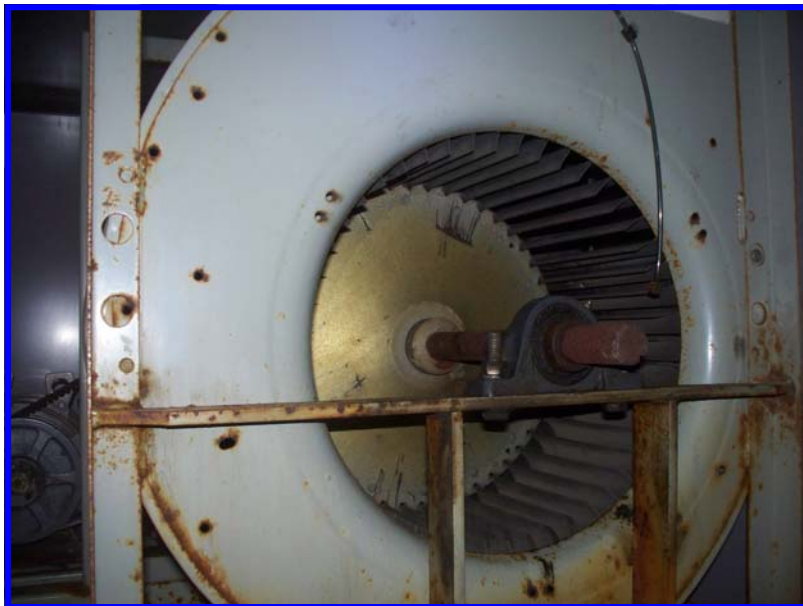
QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

AHU # ?-CAFETERIA-COIL DOWNSTREAM



AHU # ?-CAFETERIA -BLOWER



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

AHU # ?-CAFETERIA-FLOOR



CAFETERIA AHU-FILTERS



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

CAFETERIA AHU - COIL UPSTREAM



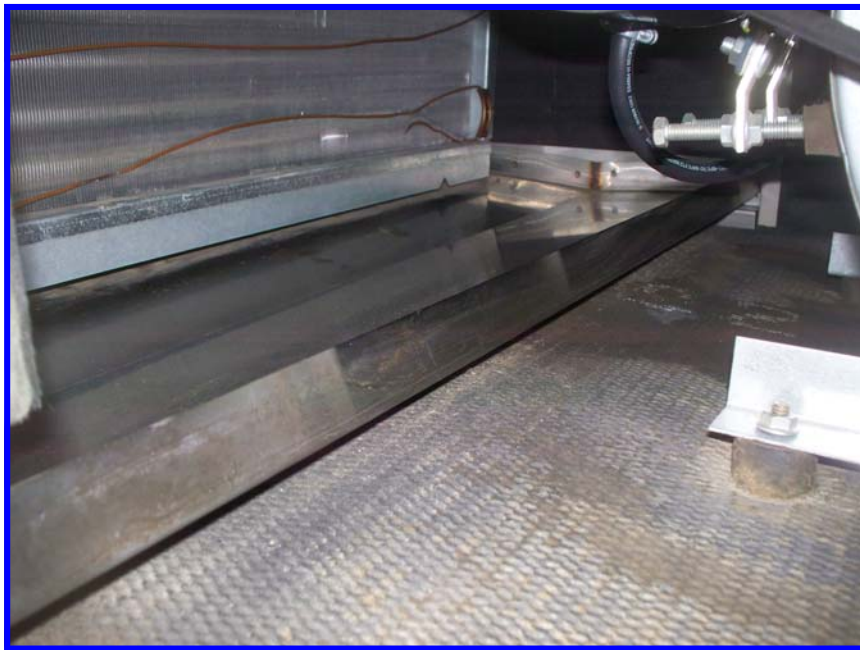
WEIGHT ROOM-UNIT COIL



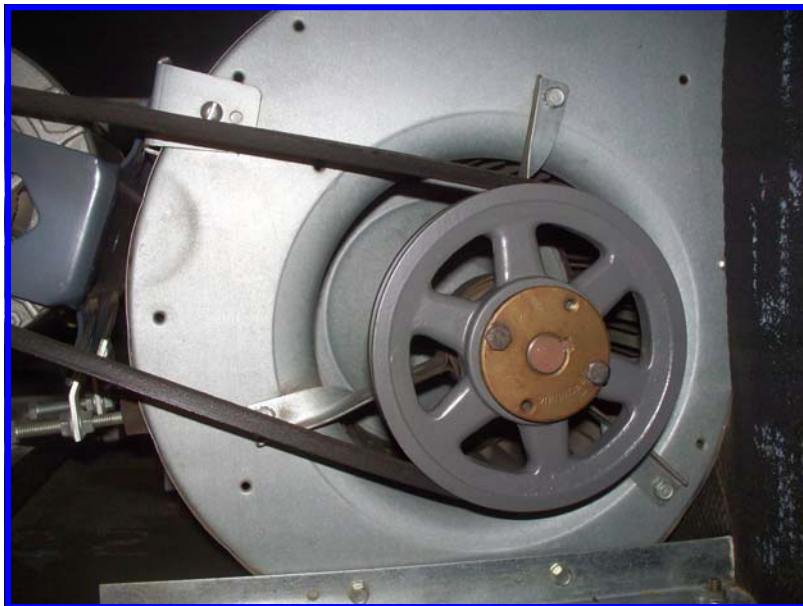
**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

WEIGHT ROOM-UNIT FLOOR



WEIGHT ROOM-UNIT BLOWER



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

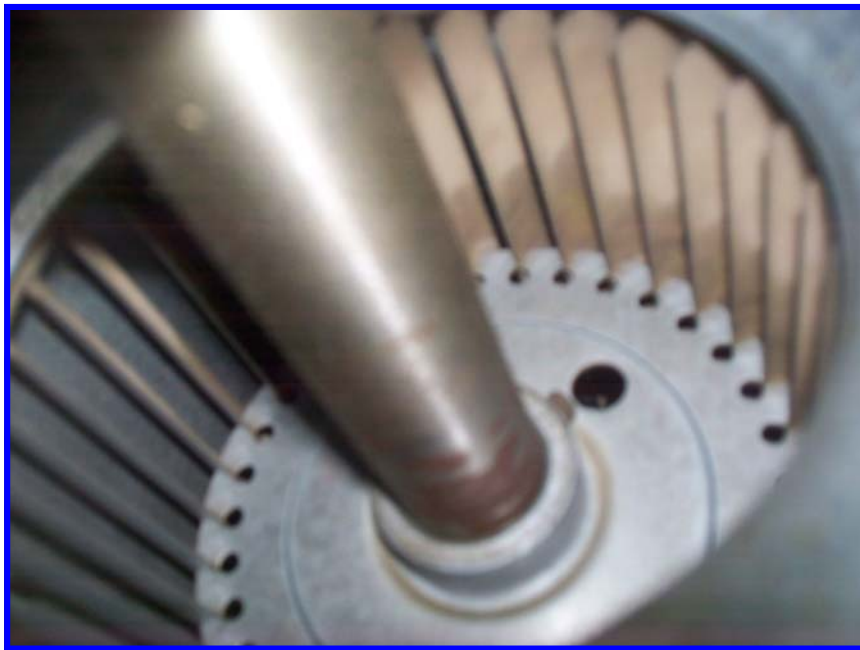
TEAM ROOM-UNIT COILS UPSTREAM



TEAM ROOM-UNIT COILS DOWNSTREAM



TEAM ROOM-UNIT BLOWER FAN



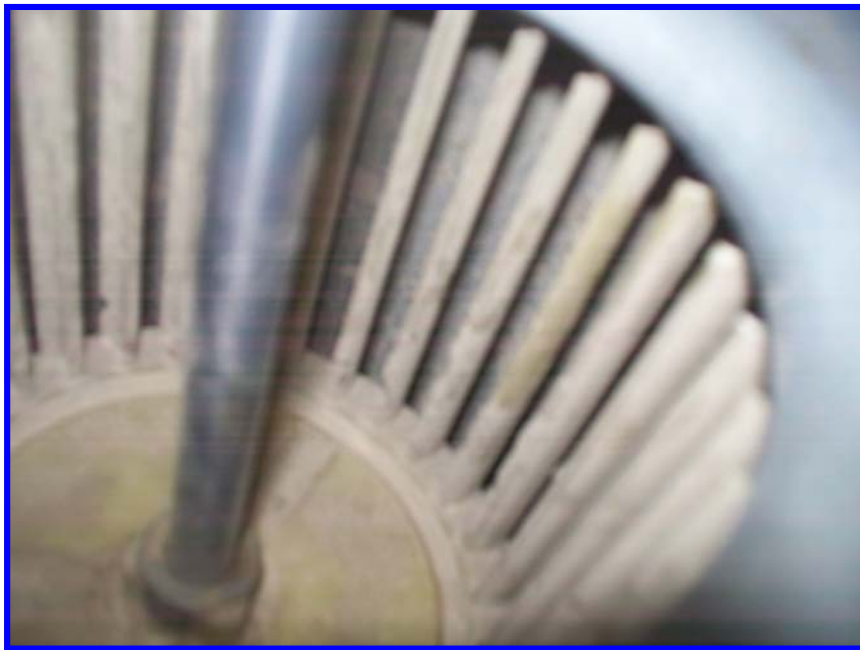
BOYS LOCKER ROOM-UNIT COIL



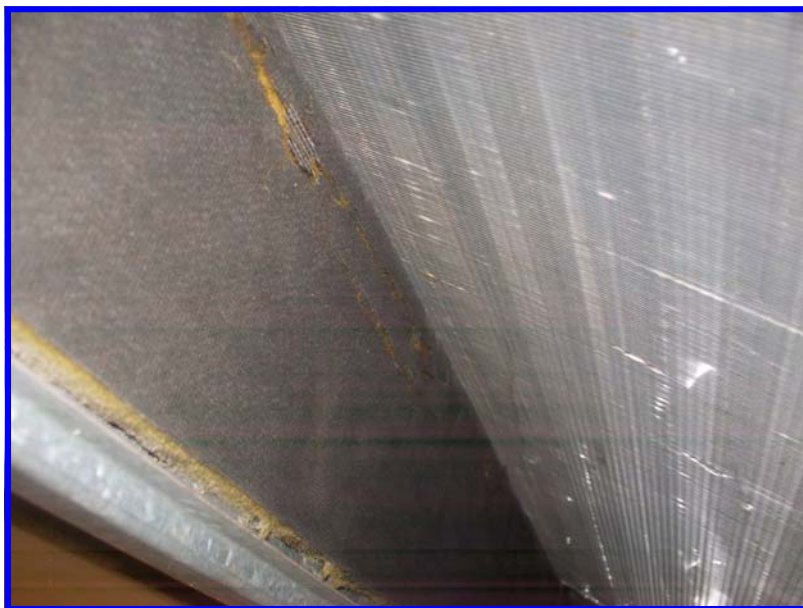
**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

BOYS LOCKER ROOM-UNIT BLOWER



BOYS LOCKER ROOM-UNIT INSULATION



QUALITY ASSURANCE MICROBIAL & IAQ SURVEY

EAST MIDDLE SCHOOL

GIRLS LOCKER ROOM-UNIT COIL



GIRLS LOCKER ROOM-UNIT INSULATION



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

GIRLS LOCKER ROOM-UNIT BLOWER



GIRLS LOCKER ROOM-UNIT INSULATION



UNIT BLOWER



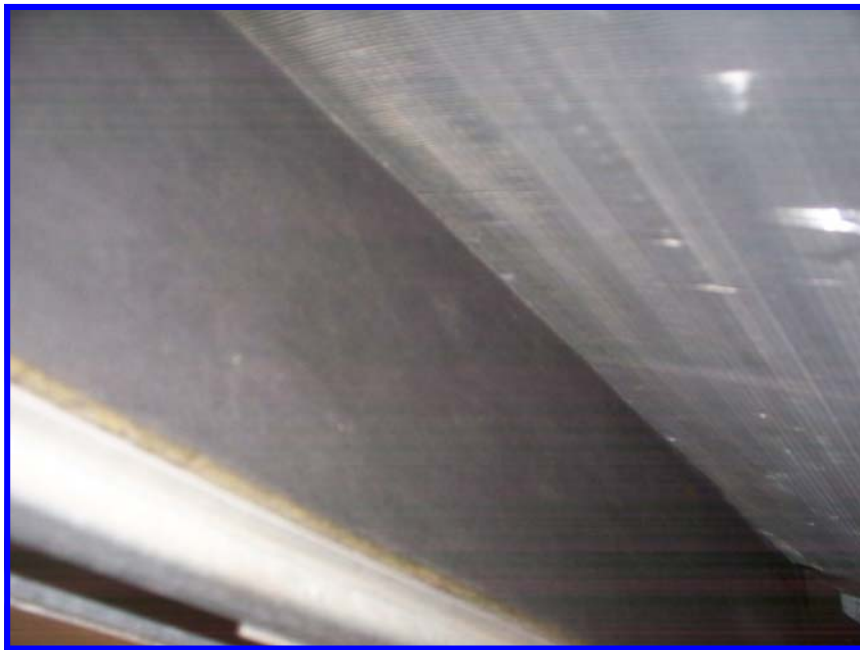
UNIT FLOOR



**QUALITY ASSURANCE
MICROBIAL & IAQ SURVEY**

EAST MIDDLE SCHOOL

UNIT CEILING



UNIT BLOWER

