CORE FACILITY SOLUTIONS

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Indoor Air Quality

Case Study#1

Mold in a North Dakota School District

The Challenge

There is a large emphasis placed on today's schools to provide enhanced Indoor Air Quality. The environmental conditions of the past no longer meet today's requirements.

Many of the mainly rural schools throughout North Dakota were designed around the 1960's. A popular economic design concept was to build a tunnel system under the facility to serve a dual purpose of running heating piping and provide a means of using it as ductwork for the air distribution system. One of the largest drawbacks of the tunnel system design is water intrusion. This can either happen from ground water seepage or leaks in the piping for the heating system or potable water lines. When you have water combined with an organic material it creates an ideal environment for mold.

When the team at CORE FACILITY SOLUTIONS was asked to analyze a school facility in the northwest region of North Dakota, they interviewed staff and inspected the facility. It was observed that the air distribution system under the 1967 portion of the facility consisted of two tunnel systems that were connected by a small access that had degraded due to moisture issues over the years. The tunnels each had a connected air handler located in custodial closets, many times these units were not operable. Some staff mentioned that there was a burnt odor that they would occasionally smell due to a fire that started in the tunnel system during a 2015 construction project.

CORE FACILITY SOLUTIONS enlisted the help of an environmental consultant to take air samples for mold. The sampling indicated that there were significantly elevated levels of Aspergillus/Penicillium, and also indicated the presence of Chaetomium which is a zero tolerance species.

- Aspergillus/Penicillium – This mold is found throughout our indoor and outdoor environments. High levels can indicate moisture issues. Many strains

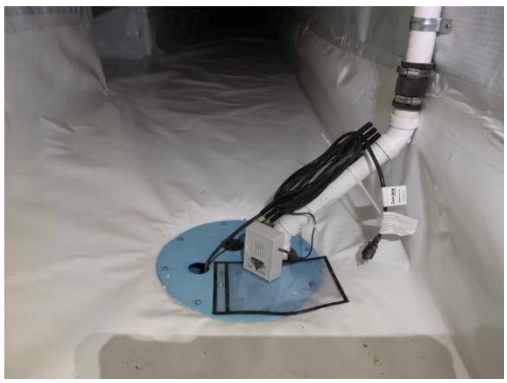
of these molds are harmless, but in some cases, it can cause people to develop serious lung infections. This mold typically causes allergic reactions and triggers asthma symptoms.

- Chaetomium - The presence of Chaetomium spores typically indicates a chronic moisture problem, the hazards to humans can include cerebral infections, allergic reactions, asthma, coughing, skin/nail infections, memory loss, nose bleeds, seizures, dermatitis, and internal lesions.

The Solution

The CORE FACILITY SOLUTIONS team observed numerous issues within the tunnels: moisture residue, charred insulation wall board, old chemical storage, etc. along with a "musty" odor. The team enlisted the assistance of additional experts to encapsulate the tunnels using a closed cell spray foam on the ceiling, 15MIL wall liner, and a 20MIL floor liner with drainage matting underneath. Sump pumps were engineered and installed in strategic locations. The access door between the two tunnels was replaced. This encapsulation will starve the mold of its food sources - moisture, and oxygen. Any future growth will be inhibited, and the mold will become dormant away from the air distribution system.

Additional issue - Asbestos - Right before the tunnel was encapsulated CORE FACILITY SOLUTIONS found asbestos on the elbows of the pipe insulation. As this asbestos was in the air distribution system, the team made the decision to abate the asbestos insulation at NO ADDITIONAL COST to the school district. Now all potential health issues have been remediated.



Air samples for mold were taken right before the start of the school year and CORE FACILITY SOLUTIONS is pleased to report that no Chaetomium was found, the Aspergillus/Penicillium was back normal levels.

The school district was able to start the school year with clean indoor air free from contaminant sources.