

# Foster

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## Case Study: Mold Gets 10 Years to Life

The following case study involves a prominent upper Midwest maximum security prison, which was built 23 years ago. The architect who designed the building won an award for innovative techniques in reducing energy consumption. In reducing energy consumption, however, he created severe indoor air quality problems.

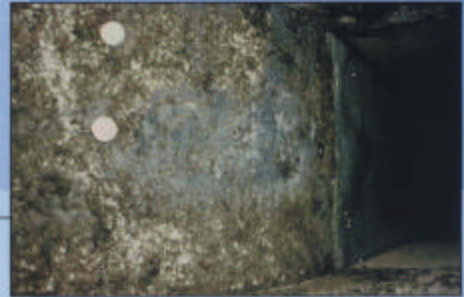
In 1988, a new warden, assistant warden, and three members of the personnel office suffered from headaches, sinus blockage, coughing, and sneezing every time they reported for work. This led to chronic sinus infections and other breathing problems. The symptoms ceased when the employees went on vacation, but returned when they came back to work. The employees were able to segregate areas in the work environment where they suffered from severe symptoms versus minimal to no symptoms. Some of these employees moved their offices in an attempt to get relief. However, the relief was temporary.

After several failed attempts to identify the source of the problem the state's worker's compensation carrier hired Paul Ellringer PE, CIH to investigate the problem and find a solution. Ellringer found that the building's ventilation system was contaminating the work environment with mold spores. Examination of the duct system confirmed that mold was growing on the fibrous glass duct liner found in the building's ventilation system. The duct system was cleaned of visible mold and fumigated with chlorine dioxide to sanitize the affected duct system. Testing one week later confirmed reduction in spores, and building occupants confirmed an improvement in air quality.

Success was short lived. In less than one year the occupants had serious health problems again. Additional inspection and testing of the ventilation ductwork revealed that the fungi was back and as bad as before the initial treatment. Shortly after this test Ellringer learned that Foster Products Corporation had developed a new fungicidal protective coating called Foster 40-20. Ellringer also learned that Foster 40-20 had a long-term ability to inhibit fungal growth, and that it could be applied directly to the fibrous glass liner inside the ductwork.

Foster 40-20 Fungicidal Protective Coating was applied to the ductwork in February 1993. Since then, the ventilation ductwork has been inspected and tested for fungi at one, three, five and ten years after the initial application of Foster 40-20. Fungal testing and visual observations have confirmed that no growth of fungi has occurred in the ductwork coated with Foster 40-20. In areas where the ductwork remains un-coated, testing and observations revealed continued significant fungal growth.

Prior to application of Foster 40-20 fungal wipe samples on the fibrous glass duct liner showed average fungal levels of 45,000 colony forming units per square centimeter (cfu/cm<sup>2</sup>).



After ten years the fungal wipe samples on the same areas showed an average of 7 cfu/cm<sup>2</sup> -meaning no growth!



After ten years, the ductwork coated with Foster 40-20 looks as good visually as when it was originally applied. The warden at the prison is extremely satisfied with the results of the Foster 40-20 solution. His experience with fungi at the prison has led him to take a proactive approach concerning the indoor environment. The well-being of his staff, guards and inmates is always his first priority.

Tested and Written by independent Certified Industrial Hygienist Paul Ellringer PE, CIH, Air Tamarack Inc.