

# A GROWING EPIDEMIC

## **Part III: “Sick Building Syndrome” (SBS) — Finding The Sources**

*The detectives stood by the side of the building shaking their heads and saying aloud — “Where do we begin?” “What do we do?” “Where do they come from?”*

Human and building problems associated with indoor air pollutants are worse than ever. Modification of materials used to build, furnish, and decorate buildings and the reduction of indoor air circulation brought on by the “energy crises” in the early 1970's, were all changes that had a great impact on indoor air pollution.

When human or even building-based symptoms occur, a search for the cause must be undertaken. This can be done a number of different ways: using your colleagues’ experiences, your own experiences, calling in some expert, or just plain old common sense. The easiest and cheapest way is of course, common sense. We will focus on using common sense for the discovery of pollutants in this article. Found everywhere, microbes are also particulates that produce gases. Thus making microbial contaminates the best example to look at.

By simply looking at your building, you will see areas where pollutants originate, come in, move around, and then exit. HVAC systems, windows, doors, venting systems, elevator shafts, and even people movement are pathways for pollutants. Areas where moisture is noticeable are also good indicators of possible pollutant sources. Condensation on pipes, windows, doors, water faucets, and even over-watered plants are great places for mold and mildew to grow. The biggest sources of microbial growth are fabric furnishings such as carpets, upholstery, and drapes where dirt and moisture get trapped.

Surrounding natural and human built structures greatly influence your indoor environment. Figure 1 shows some of these exterior influences. Weather patterns, nearby highways and parking garages must be counted as potential sources of your building problems. In addition, neighboring industrial factories that omit pollutants into the air must all be considered when searching for sources.

The quality of air at the point of entry must be understood and should not be taken lightly. Keeping air intakes free from dirt, standing water, and bird roosting is very important. Your air handling and conditioning system are the “lungs of your building.” Therefore, by completely understanding how outside pollutants enter into your building, proper design and operation of filtration equipment can be made. See figure 2.

Once inside the HVAC system, the air is usually mixed with the recirculating building air and is heated or cooled. Mixture of this air at different temperatures creates moisture. This moisture encourages abnormal levels of microbial growth, odors, deterioration, and staining. These pollutants are then transported through the air ducts into the areas occupied by people.

This occupied space becomes a large mixing bowl of contaminated air for contact with the unknowing occupant. In an ideal system, this air would immediately be returned through vents to the outside. Unfortunately, indoor air circulation is still at a much slower rate than it used to be in the past. Therefore, before this polluted air can be recycled or vented, it is in constant direct contact with its building occupants. This reality makes it increasingly important that pollutant sources are identified, isolated, and removed.

In summary, the simple way to understand sources of pollutants is to take a broad view of the external and internal environments and check these areas for abnormalities. Also knowing the areas throughout your building where there have been “water events,” should sharpen your senses to any potential sources of pollutants.

In our next issue, we will take an in depth look at and examine the worst of known pollutants — microorganisms.

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