Historical Perspective on Indoor Air Quality

Historically it was felt that controlling temperature was sufficient in order to provide human comfort. As we became better at sealing and heating buildings to high temperatures during cold weather we managed to dry the air to such an extent that humidity became a factor to be controlled as well.

Indoor Air Quality involving the measurement of airborne contaminants is a much newer concern. It has developed as we have become ever better at sealing buildings and creating synthetic building materials. Humans have likely complained about winter being too cold and summer being too hot since the beginning of time. However, until 1973 and the Arab oil embargo indoor air quality was not much of a concern. With cheap energy there was little incentive to prevent a little outside air from entering our buildings. Then things changed.

After years of doing our best to build a barrier between outside air and inside air, in order to reduce building heating and cooling costs, we discovered that we had succeeded and people still were not happy. We could control the temperature and humidity at the lowest possible cost but people complained of headaches, were absent more often, worked less efficiently and in some cases went on permanent disability claiming damage to their immune systems because of indoor air pollutants.

So it seems that the old technique of letting fresh air into a building by unintentionally leaving cracks around the windows and doors is not a good idea because it costs a lot to heat and cool. It also seems that sealing a building so well that almost no fresh air enters is also a bad idea since people do not like to live in it. What is the best way to resolve this conflict between energy efficiency and indoor air quality?

The answer lies in providing just enough make up fresh air to meet indoor air quality requirements. To do this requires an instrument that can accurately monitor these requirements. The recently developed AQT-2000 is such an instrument. It accurately monitors occupancy calling for more fresh air as the occupancy level increases. It also monitors chemical emissions from building materials and other sources and calls for increased fresh air to flush them from occupied spaces before they build up.