



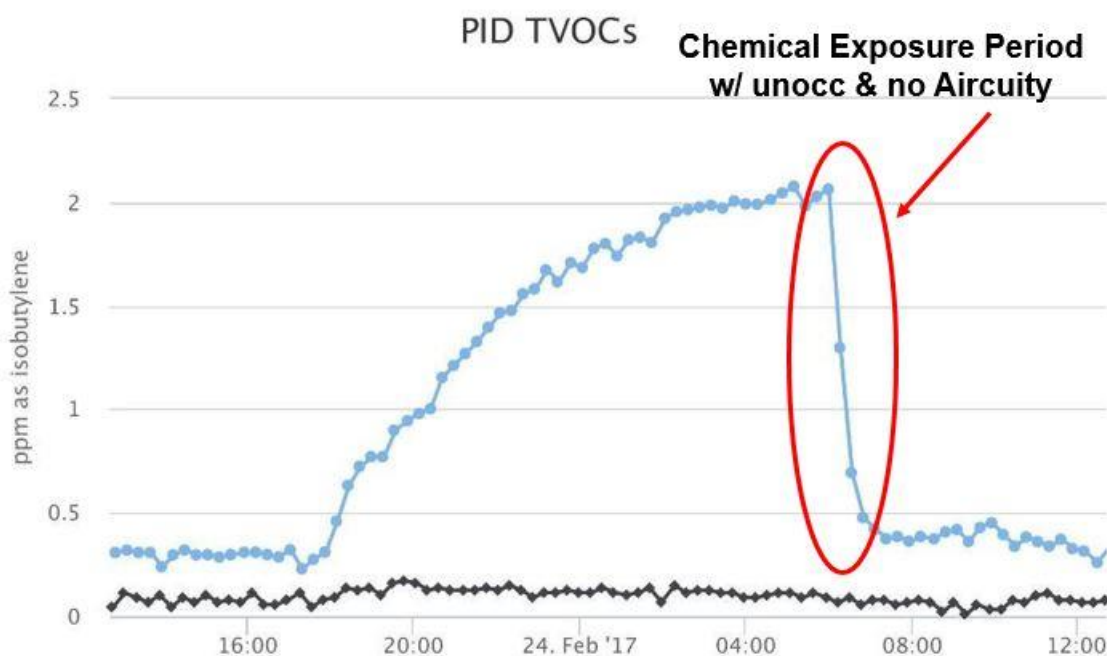
Just Turn It Down at Night?

An Examination of Aircuity vs. Set Air Change Rates

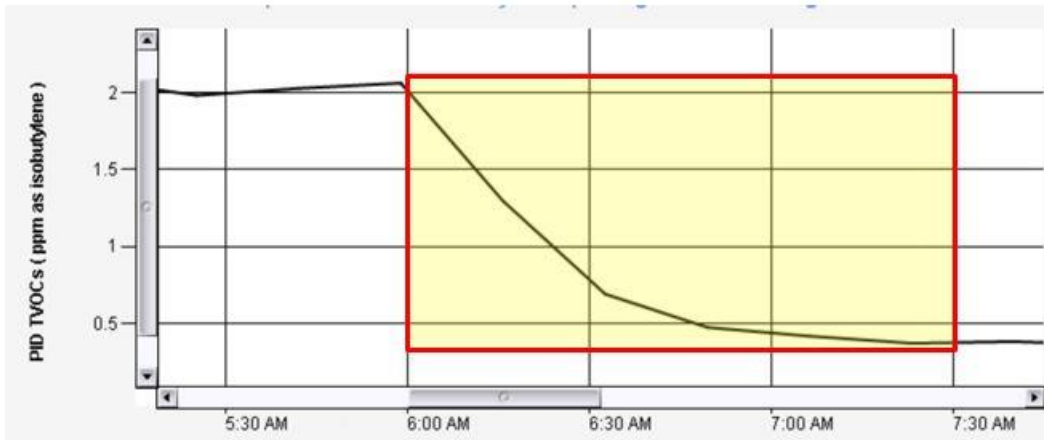
One question that we get asked every so often is, “well can I just turn down my air change rates (ACH) at night instead of using Aircuity?”. The answer is simple- you could, but not without impacting the health and safety of lab occupants. The 2015 ASHRAE Handbook, Lab Chapter 16 notes that lab use at night cannot be predicted and labs may take upwards of one hour to clear. The new ASHRAE guidance recommends lower unoccupied rates only when lab can be assured to be “clean” at night. Excerpts from the handbook states, “...ventilation designers need to confirm that premise applies: that is, when the workers cease their activities and leave the laboratory, the contamination hazard is significantly reduced. Lab processes that continue unattended or erratic occupancy patterns may eliminate the opportunity.”

Depending on the type of lab (i.e. teaching vs research), occupants may enter the lab outside of the set “occupied” times, being exposed to the build-up of containments from the lower levels of fresh air ventilation. Additional containment exposure may happen when researchers first enter the building in the morning. After running at lower air change rates overnight containment levels take a while to drop back down after the “occupied” ventilation rate kicks back in.

Here is data from a lab where Aircuity was monitoring, but demand control was not turned on yet. Instead they were using an occupied/unoccupied strategy and operating at 2 ACH unoccupied and 6 ACH occupied. There is a notable amount of total volatile organic compound (TVOC) build-up overnight. In this case if researchers were to enter the lab during occupied hours, but before the occupied air change rates had cleared out they would have been exposed to an unhealthy level of contaminants.



This next graph shows the TVOC levels “recovering” after the lab switched from unoccupied back to occupied ventilation rates in the morning. It took from 6:00am till 7:30am for TVOC levels to reach background levels.



Although all labs may not be targeting 2 ACH as their unoccupied rate, the data shows the risks associated with using nighttime setback without demand control ventilation. Similar results are expected at an unoccupied rate of 4 ACH, except the event would clear out a little more quickly.

Could you do it and save energy? Sure... but not without risks to occupants' health.