INDOOR AIR QUALITY (IAQ)
TOO HOT/TOO COLD COMPLAINTS

Temperature extremes continuously rank atop the list of occupant complaints in office environments. Inaction or lack of prompt response to these complaints often lead to a broadening of occupant complaints and reported symptoms. Conversely, maintaining proper temperature and humidity levels in the office environment increase comfort, reduce utility bills and can improve personnel performance, alertness and productivity.

ANSI/ASHRAE 55-2010 Standard for Thermal Environmental Conditions for Human Occupancy is the benchmark used in the design, commissioning and testing of buildings and occupied space(s) HVAC systems. This standard incorporates temperature and humidity conditions which 80% of building occupants find acceptable (comfortable). AET experience is the ASHRAE standard must be applied as a guideline only and compliance verified by a minimum of 24-72 hour testing to evaluate multiple HVAC cycles and building uses. Spot temperature checks or reliance on thermostat settings can provide false data. Temperature conditions can fluctuate significantly on both a daily and seasonal basis.

Key issues to look for in your temperature investigations include:

1. ***Poor thermostat location:*** Proper placement is essential. Keep away from indoor heat sources such as copy machines, perimeter walls and sunlight. **Recommendation:** Thermostats should be located in covered locked boxes, only able to be adjusted by building maintenance staff.
2. ***Thermostat Dead Band:*** The dead band is the temperature range where either heating or cooling takes place and the ventilation fan is off; Wide dead bands can result in large temperature fluctuations and inadequate ventilation. **Recommendation:** Adjust the thermostat dead band or replace with a model that maintains fan operations and narrows the dead band.
3. ***Radiant Heat Gain/Losses:*** Persons in perimeter offices with large window areas can be uncomfortable even though the thermostat setting and the measured air temperature are within the comfort range. Complaints and large temperature variations can shift during the day and season as the sun angle changes. **Recommendation:** Add insulation to exterior facing walls and use curtains to reduce heating from direct sunlight. Utilize separate thermostats for perimeter locations.
4. ***Temperature Stratification:*** If the air from the HVAC system is not properly mixed, the temperature near the ceiling can be several degrees warmer than at floor level (i.e. warm air rises and heavier, cooler air sinks). Non-carpeted floors can also be a cold source. Occupant discomfort can be related to the temperature of the floor.
5. ***Drafts:*** Drafts can also be caused from radiant sources and convective currents. In addition, look for the positioning of desks, tables, etc. directly below supply air vents (especially cubicle areas) or in close proximity to radiant heat sources.

AET's proactive approach to building managers regarding temperature complaints includes:

- **P**urchase a digital temperature/relative humidity meter for use by maintenance staff (cost less than $100) to perform periodic inspection/testing of work spaces.
- **R**espond promptly to building occupant complaints. High temperatures are linked to fatigue, irritability and headaches while in cold temperature persons may experience discomfort in their hands and feet, shivering and fatigue.
- **D**ocument spot check temperature findings including the date, time, outdoor temperature conditions and HVAC settings including any changes implemented in building conditions or systems.
- **C**ontact an environmental consultant (such as AET) to evaluate troublesome work areas. Temperature complaints can at times be difficult to diagnose but are easily corrected. Long term temperature conditions including fluctuation require a minimum of 24-72 hour testing. Digital Data Loggers can be used to evaluate temperature conditions over weeks or even months. Most devices can store several weeks or even months of data measurements.
- **I**mplement necessary changes in the office environment to halt IAQ complaints before they escalate into an OSHA reported complaint.

About our organization: AET has 28 years of environmental contracting/consulting experience assisting our clients in facility planning, design, construction, renovation and maintenance issues. Real life solutions and cost savings recommendations including prevention of future complaints is AET's objective in every IAQ investigation. Make AET your first point of contact for your environmental consulting/contracting needs. Call us now at 610-891-0114 or 1-800-9696-AET.

Want to learn more Proactive Controls!!! Email Alan Sutherland, CIH, CHMM at a.sutherland@aetinc.biz. We provide nationwide services; phone consultations are free. Check out the full range of environmental contracting/consulting services we provide at our website at www.aetinc.biz.

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