



**Think in terms of a pot of water boiling on a stove...  
Where does the moisture go? UP!**

Since hot, humid air naturally rises towards ceilings in pool rooms, this is where the moisture level will be higher than anywhere else and *stratification* begins. In addition to being unsightly, surfaces that are regularly wet with moisture will show signs of mold, mildew, corrosion, and often ceilings cave in when this moisture is left uncontrolled or not controlled with the proper air flow/air turnover rate within the structure and lack of negative pressure.

Therefore, duct work and air flow design is critical to break up stratification and prevent dead air space along the ceiling areas, and where skylights may be installed.

Careful consideration must be given to correctly distribute the air, the location of supply air duct work, and the location of the return air grille to prevent stratification. The most effectively used air delivery system takes into consideration hot air's natural tendency to rise in natatoriums.

Proper distribution starts with the design of a peripheral loop, delivering a flow of warm, dry air from the dehumidification system to the cold, moist areas. Therefore it is recommended to supply air "low" and install return air at a "high" point in the structure. The return air closer to the ceiling areas will pull this moisture from these areas and return it to the dehumidifier for removing moisture. Ceiling fans blowing upward are also utilized to help break up stratification.

Air flow should not be directed over any pool surface as this speeds up the evaporation process, causes excessive energy costs, limits the effectiveness of dehumidification, and causes "chill affects or drafts" on patrons.

This practice is often recommended along with low return air grille to remove chloramines from the surface area of the water. Unfortunately the stratification of chemicals/chloramines and off-gassing of chemicals at the pool surface level **is a water quality issue, not an air flow or dehumidification issue**. Proper air turnovers can help; but cannot resolve improper chemistry pool pH balance. Pulling highly corrosive, contaminated air through dehumidification systems can also result in deterioration and shortening the life span of duct work and equipment.

Properly sized air delivery systems with high air turnover rates and high return air will prevent stratification damage to the natatorium.