WARM + COLD = CONDENSATION

A simple example: Take a can of cold pop outside on a 90° day. What happens after a few minutes outside? The can begins to "sweat" and you have condensation on the can because the surface has reached its *dew point temperature*.

The prevention of condensation is perhaps the most important purpose of all for dehumidifying an indoor pool enclosure. Condensation, by nature, is aggressive and will attack many materials by leaching the minerals out of the surface it forms on. Condensation, if allowed to form on ferrous metals, will cause accelerated oxidation of the surface of the metal, creating unsightly rust stains as it drains.

If condensation forms in or on wood, drywall, plaster or other porous materials, it can cause warping, rot, mold, mildew, and/or simply saturate the material until it loses its integrity. If left unchecked, condensation will ultimately compromise the structural integrity of the metal components leading to possible failure of that component.

The most common place for condensation to form in a building structure is on the inside surfaces of windows or skylights or metal frames without thermal breaks. Although most modern window structures and frames are not harmed by condensate, it is unsightly and will cause damage to frames and subsequent dripping can damage the structure around the frames.

The objective for designing mechanical dehumidification systems for indoor swimming pools is to ensure that no surface within the pool enclosure, or within the structural members of the building, will reach "dew point" and cause moisture to condense. Dehumidification helps to accomplish this objective by reducing the relative humidity in the pool enclosure and therefore effectively reducing the dew point temperature.

Air distribution also plays a key role in preventing surfaces from reaching dew point temperature. With a forced air system of ductwork in place, the dehumidification system will completely blanket the area with warm, dry air supplied by the dehumidifier, thereby increasing the surface temperature to a point above the temperature at which moisture will condense.