



SLAB SWEATING

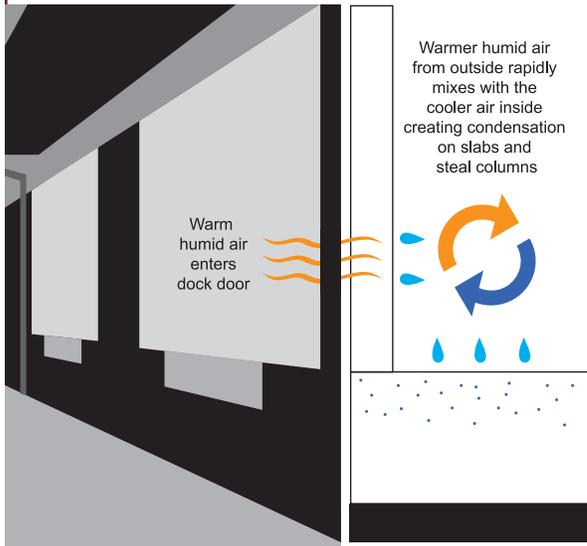
WHAT?

A condition in which moisture periodically develops on the exposed surface of a concrete slab and produces a persistent wet, slippery condition that in some extreme cases may sacrifice worker safety. The condition is most noted in warehouses with large areas of exposed concrete slab in a non-conditioned space.

WHY?

Obviously the root cause of sweating slabs is excess moisture forming on the surface of the slab, but where does it come from?

Most cases of sweating slabs are caused by dew point condensation which occurs when warm humid air enters the building through open dock doors, idle exhaust louvers or other openings. The humidity condenses into moisture on the colder concrete floor slab that is at the dew point temperature. The condition can continue for hours or days based on the temperature of the interior floor slab and the ambient humidity, particularly during seasonal changes. Moisture many times not only condenses on the interior concrete slab but can also be noticed on building columns, hollow metal door frames or other metal building components. This condensation is usually short lived because the steel components warm up to ambient conditions much faster than thicker concrete slabs.



Other causes or contributing factors of sweating slabs...

In many cases, the building occupant will witness areas of the concrete slab that are sweating adjacent to areas exhibiting bone dry conditions, as seen in the photo above. This typically occurs along the small "pourback" strip of concrete slab immediately adjacent to the exterior wall. The likely reason for two abutting areas of slab to exhibit different sweating characteristics is the finishing technique or sealer application used. Depending on the technique or sealer used, one area of concrete will be more porous than the other allowing the moisture to simply be absorbed into the slab. One might discern that the fix is to finish the slab less or even eliminate the sealer at new construction. This change in method would likely lead to a much softer slab that wears faster, creating a dust issue for the occupant and ultimately creating high maintenance costs.

Example:

The interior of a structure has remained at 70 degrees and 50% relative humidity for several weeks causing the interior floor slab to stabilize at 70 degrees. In the event a warm weather front moves into the area bringing warmer temperatures of 80 degrees and higher humidity of 90%, the warm moist air moves into the building through open dock doors, louvers or idle HVAC equipment. The result is condensation forming on all surfaces at or below the dewpoint of 77 degrees. The condition will continue until the surface temperatures rise above 77 degrees which may take hours, days or sometimes, even weeks.

HOW DO I FIX THE PROBLEM?

Slab sweating can be controlled but may not necessarily be completely eliminated using the following steps:

- 1.** Establish good housekeeping practices. Regular sweeping and machine scrubbing with commercial cleaners will remove pore clogging dust and debris from the slab allowing it to remain slightly porous for absorption of slow forming condensation.
- 2.** Examine air movement within the space. Operating roof top exhaust units during humid days may quickly draw warm humid air into the building.
- 3.** Increase air movement inside the building. Large ceiling fans may help circulate less humid air through the building to improve conditions sooner and eliminate slab sweating. Particular attention should be paid to racking so air is also circulating inside the confined product aisles. In extreme cases, commercial dehumidification equipment can be installed to eliminate slab sweating.