

**Concrete Moisture Vapor Emission in Building Structures
ASID Seminar Program**

- I. Concrete Moisture Vapor Transmission effects on indoor air quality and floor coverings
 - A. Thunderstorm – 150,000 tons of water in 4 hours of development (pic)
 - B. Moisture Vapor Transmission
 - 1. Background on a costly phenomena
 - 2. The Sources of detrimental slab moisture
 - 3. The Concrete contribution
 - 4. Consequences of floor failure
 - 5. Testing procedures & specifications
 - 6. Options to problem conditions
 - 7. Ancillary contributors
 - C. Vapor emission F-14 flyby vapor at sound barrier (movie clip)
 - D. 90% of world lives or works on concrete surfaces (pic)
 - E. Tile failure replacement notice in store (pic)
 - F. Influencing Factors
 - 1. Project location
 - 2. Concrete mix design
 - 3. Aggregate type
 - 4. Vapor barrier/retarder
 - 5. Subgrade composition
 - 6. Curing practice
 - 7. Vapor pressure gradient
 - 8. Substrate permeability
 - 9. Alkalinity
 - 10. Underlayments
 - 11. Construction efficiency
 - 12. Material composition change
 - 13. Construction pace
 - 14. Building Environment
 - G. Mandated Construction Changes
 - 1. Asbestos removed from finishes
 - 2. Adhesive makeup changed
 - 3. Concrete additives
 - 4. Flooring materials and wearing quality
 - 5. Efficiency of project turnaround
 - H. VCT failures and pictures (8)
 - 1. Moisture
 - 2. Alkalinity
 - 3. Underlayment (Gypsum)
 - 4. No Vapor Barrier
 - 5. Environment
 - I. Sheet Vinyl Failures And Pictures (6)
 - 1. Moisture
 - 2. Alkalinity
 - 3. Underlayment (Gypsum)
 - 4. No Vapor Barrier

- 5. Environment
- J. Material Changes
 - 1. Removal of asbestos fibers
 - 2. Reduction of V.O.C.'s in adhesives
 - 3. Advent of better quality flooring materials
- K. Wearing life expectations
- L. Polymer Failures (6 pics)
 - 1. Moisture
 - 2. Alkalinity
 - 3. No Vapor Barrier
 - 4. Environment and Use
 - 5. Extreme Moisture Sensitivity
- M. Terrazzo (12 pics)
 - 1. Moisture
 - 2. Alkalinity
 - 3. No Vapor Barrier
 - 4. Environment and Use
 - 5. Extreme Moisture Sensitivity
- N. Rubber/Gym Surfacing (5 pics)
 - 1. Moisture
 - 2. Alkalinity
 - 3. No Vapor Barrier
 - 4. Fast Track Construction
 - 5. Extreme Moisture Sensitivity
- O. Brick/Ceramic Failures (3 pics)
 - 1. Moisture
 - 2. Alkalinity
 - 3. No Vapor Barrier
 - 4. Fast Track Construction
 - 5. Efflorescence
- II. Vapor Barriers 3 pics
 - A. Physical Characteristics of barriers (table)
- III. Concrete and Moisture
 - A. Concrete Substrate Design Characteristics
 - B. Placement Controls
 - C. Concrete Permeability
 - D. Curing Procedures
 - E. Types of Concrete
 - F. Normal concrete – cement, sand, aggregate, and water
 - G. Trashcrete - cement, sand, aggregate, and water
 - H. Legalcrete - cement, sand, aggregate, and water
 - I. Table of Concrete Mix Designs
 - J. Theoretical drying times with a 10 lb problem – model scenario
 - K. A Look at drying time Scenarios (table)
 - L. Concrete Permeability
 - M. Static Vapor Tables and explanation of the moisture movement dynamics
- IV. Floor Manufacturer's Specifications for Moisture Tolerance
 - A. Manufacturer's supporting moisture testing for warranty consideration
 - B. Associations recognizing moisture testing as mandatory

- C. Review of project testing parameters
- D. Five steps before proceeding in a moisture emission problem
- E. Animation of various steps in placing concrete substrate and cycle
- V. Curing Concrete
 - A. Curing Compounds
 - B. Pertinent ASTM Standards
 - C. Curing practices
 - D. General makeup of concrete materials
- VI. Brief look at codes and silicate based products for curing and moisture control
 - A. ACI Codes
 - B. Portland Cement Association
- VII. Mold and Fungus in Buildings
 - A. Algae/fungus requirements for growth
 - B. Food Sources
 - C. Pictures of mold growth in buildings near flooring
 - D. Sick Building Syndrome Characteristics
 - E. Building Related Illness Characteristics
 - F. Causes of both
 - G. Testing Activities in questionable air environments in buildings
 - H. Solutions for some SBS
- VIII. Moisture Vapor Testing
 - A. Testing devices used by industry
 - B. Comparative evaluation of testing methods and reliability
- IX. Alkali Silica Reaction – Concrete Cancer
 - A. What is ASR?
 - B. How does it work?
 - C. What can prevent it from occurring?
- X. Corrective Systems to vapor emission
 - A. Chemical
 - 1. Intent
 - 2. Reality
 - B. Mechanical
 - 1. Intent
 - 2. Reality
 - C. The Warranty
 - 1. Clauses
 - 2. Fine print
 - 3. Length of Coverage
 - 4. Defined coverage
 - D. Liability for design build team – the smoking gun
 - E. Conclusion and summation