Further Studies on the MoldScore Trademark

Moving beyond inside to outside ratios

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Introduction

- Published Guidelines for indoor/outdoor data
  - indoor/outdoor (I/O) ratios
    - with any ratio >1 indicating a problem
    - requiring a minimum concentration of spores and a higher ratio to indicate a problem.
    - using specific types of spores
  - Spearman Rank Correlation
  - Agreement ratios
  - Subtracting outdoor concentrations of specific fungi from those indoors
We have
- Used an aerobiological approach to develop the MoldScore™
- Tested the MoldScore against the opinion of expert aerobiologists
- Compared MoldScore™ to indoor/outdoor ratios
- Spearman Rank Correlation
- Agreement Ratio
Data source

- 100 field data sets
- All included indoor and outdoor spore trap samples
- Distributed over the US from Alaska to Florida
- Distributed throughout the year
- Wide range of spore counts and inside to outside ratios
Data source

- All samples analyzed in our laboratory
  - Subjected to our rigorous quality control procedures
  - Data entered directly into the computer
  - Reports generated directly from the data
- Reports include only date and the state
Software development

- Developed in conjunction with three aerobiologists with broad experience in interpreting indoor/outdoor ratios
- Programmers questioned these experts, and developed code that reflected the multidimensional nature of their answers
- Some factors taken into consideration:
  - concentrations of individual spore types in and outdoors
  - presence or absence of marker spores indoors
  - expected range of outdoor concentrations for specific spore types
  - analytical protocols used,
  - types of substrates on which each spore type can grow.
MoldScore™ was calculated for the 100 field reports.

Three experts judged each report for probability of indoor fungal growth

MoldScore™ was compared to expert scores

The experts repeated their scoring

Results again compared to MoldScore™

Each incident where MoldScore™ missed by 1 standard deviation of overall expert average was examined
Comparison with other approaches

- For the 100 reports we calculated the:
  - Final MoldScore,
  - Straight indoor/outdoor ratio
  - Maximum I/O ratio by spore type
  - Spearman Rank Correlation
  - Agreement Ratio

- We graphically compared each of these methods to the MoldScore.
Average scores of "participants" compared to MoldScore
$y = 0.7789x + 12.422$

$R^2 = 0.698$

$y = 0.8781x + 8.0708$

$R^2 = 0.8631$
Max I/O by spore type
Spearman (Yes, No)

MoldScore

Spearman
(0=no, 50=maybe, 100=yes)
Conclusions

- Can be applied to paired indoor/outdoor spore trap samples
- Results in a score that is an indication of the probability of indoor fungal growth
- Meant to be used in conjunction with a visual inspection by a qualified home inspector or
- In large epidemiological studies