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INTERPRETIVE GUIDELINES - GENERAL:

NORMAL SPORE LEVELS: Indoor spore levels usually average 30 to 80% of the outdoor spore level at the time of sampling, with the same general distribution of spore types. Filtered air, air-conditioned air, or air remote from outside sources may average 5 to 15% of the outside air at the time of sampling. (These percentages are guidelines, only. The major factor is the accessibility of outdoor air. A residence with open doors and windows with heavy foot traffic may average 95% of the outdoor level while high rise office buildings with little air exchange may average 2%. In addition, dusty interiors may exceed 100% of the outdoors to some degree, but will still mirror the outdoor distribution of spore types.)

PROBLEM INTERIORS: A substantial increase of one or two spore types which are inconsistent with and non reflective of the outside distribution of spore types is usually indicative of an indoor reservoir of mold growth.

EFFECT OF WEATHER: Rain washes the air clean of many spore types while it assists in the dispersion of others. Sampling on rainy or very humid days may result in outdoor counts which are low or which have a significantly different distribution of spore types. Generally, rainy day microflora differs from dry, sunny microflora in that levels of ascospores and basidiospores may be increased (sometimes vastly increased). Non viable methods will reflect this directly with increased counts of ascospores and basidiospores. Viable (Andersen) sampling may result in increased counts of 'sterile mycelia' since many ascospores and basidiospores will not sporulate in culture.

Note: Variation is an inherent part of biological air sampling. The presence or absence of a few genera in small numbers should not be considered abnormal.

INTERPRETIVE GUIDELINES - NON VIABLE SAMPLING METHODS:
(BURKARD, ALLERGENCO, ZEFON AIR-O-CELL)

COMPARISON OF NON VIABLE/VIABLE COUNTS: Typically, spore counts from 'non viable' sampling instruments will be higher (sometimes many times higher) than counts from viable (Andersen) sampling. This is because *all* spores (viable, non viable, parasitic) impact onto the sample slide. With viable sampling, spores must be able to germinate on laboratory media. Also, clumps of spores may form a single colony on media while each individual spore is counted on the non viable slide.

However, there are times when non viable counts of small spores such as *Penicillium/Aspergillus* spores are lower than Andersen counts. Logically, this should not happen. Why this does, in fact happen is difficult to say. Perhaps variations in relative humidity combined with spore aerodynamics and collection velocity result in non deposition of very small spores. Other factors include the many variables in grease media (too thin/too thick/variable stickiness) as well as the presence of heavy background debris which obscures visibility (amorphous particles from the air or artifacts in the grease itself). [For example, when grease is prepared from a mixture of ingredients many times there are small bubbles which remain imbedded throughout the grease. These bubbles make the identification of certain *Penicillium/Aspergillus* spores very difficult and spores may be missed. Also, occasionally we find some measure of incompatibility between grease and our liquid mounting media which may create small disturbances in the plane of view. (These problems are absent with the very clear and stable media in the Zefon cassette.)] Our counting philosophy is conservative. Spores are counted only when we are certain that the particles seen are spores.

The strengths and weaknesses detailed above are good reasons to sample with both a viable and non viable sampling method if at all possible. Each sampling method may turn up something which was missed by the other.

RAW DATA COLUMN: The number in the raw data column represents the number of spores on the entire sample trace. This number is derived either by counting the entire trace or by mathematical calculation depending on the proportion of trace counted. Actual counting protocols may vary from slide to slide (and genus to genus within a single slide) depending on particle load. In general, the greater the amount of background amorphous debris, the smaller the area counted. For this reason we recommend shorter sampling times in dusty interiors or when increased numbers of active persons are present.

BACKGROUND DEBRIS: Background debris is an indication of amounts of non biological particulate matter present on the slide (dust in the air). This amorphous debris is graded from 1+ to 4+, with 4+ indicating the largest amounts. To evaluate dust levels it is necessary to take into account differences in sampling times. This background material is also an indication of visibility for the analyst and resultant difficulty in reading the slide. For example, high background debris may obscure small spores such as the *Penicillium/Aspergillus* group. Counts from areas with 4+ background debris should be regarded as minimum counts and may actually be higher than reported.