Improved Determination of Soil Partioning of Agricultural Fumigants. (S11-wang085109-Poster)

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Abstract:

The sorption of agricultural fumigants onto soils is commonly accounted for through the use of a distribution coefficient (KD). There have been numerous laboratory procedures developed to measure the distribution coefficient; however, a majority of these methods rely on saturated (or solution conditions) that would not be realistic for vadose zone investigations. In addition, the microbial degradation of the compound can significantly impact the result, biasing the KD factor higher. This is particularly important for soil fumigation studies. Incorrect distribution coefficients can lead to erroneous results for predictive transport modeling. Static and multiple extraction headspace methods have been modified to aid in the determination of the KD factor for chloropicrin and methyl isothiocyanate at multiple levels of water saturation, while accounting for the effects of microbial degradation. The result of the preliminary investigations into this methodology have correlated with traditional batch studies for the determination of the KD (r2 = 0.61). The method presented here illustrates one potential mechanism for measuring the degradation and soil sorption separately.

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