CURRENT ANALYTICAL ADVANCES IN FUMIGATION SCIENCE AT USDA-ARS

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Abstract. Recent work to improve analytical methodology for the detection of fumigants in the gas, or solid / liquid phase will be summarized. A barrier ion discharge detector (BID) is shown to quantitatively detect fumigant gasses in concentrations ranging over several orders of magnitude. Headspace analysis using either solid-phase microextraction or a headspace auto sampler equipped with an adsorbent trap, is shown to accurately quantify fumigant residues in foodstuffs without lengthy sample preparation or the use of solvents. Normal atmospheric pressure mass spectrometers are discussed in the context of their use to quantify the depuration potential of fumigants for worker exposure evaluations.