A COMPREHENSIVE REVIEW OF CHLOROPICRIN FIELD VOLATILITY STUDIES

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The United States Environmental Protection Agency's (USEPA) assessment of the field volatility of chloropicrin in the 2008 RED (Re-registration Eligibility Decision; July 2008) and all its previous iterations were limited to a relatively small number of emissions studies. This original dataset encompassed six shank injection flux studies conducted in the mid-1990s, and one drip application flux study conducted in 2004.

The initial shank-application buffer zone distances proposed by the USEPA in the 2008 RED, which were based on this original dataset (and specifically four studies from Phoenix, Arizona conducted in 1995), were considered by affected stakeholders (registrants, applicators, and growers) to be excessively large in that they not only contradicted the historical record of bystander incidents (which were and continue to be very infrequent occurrences), but were based on data that did not reflect current commercial cultural practices.

Beginning in 2008, at least 32 additional field flux studies have been conducted with chloropicrin using a wide array of application methods (broadcast, bed, and strip; shallow and deep injection; shank and drip), formulations (as sole active ingredient or co-formulated with other fumigants), and soil sealing techniques (soil compaction; tarped and non-tarped; high-barrier films). The one common element to all of these recent studies was that a series of newly developed fumigant application guidelines, called Good Agricultural Practices (GAPs), were followed. The GAPs, which have been officially recognized through the RED process and will be mandatory on all new chloropicrin and other fumigant labels, are specific guidelines that comprehensively address application-related factors including proper soil conditions (tilth, temperature, soil moisture, etc.), observance of weather patterns, application methods, and soil sealing techniques.

Of these 32 new flux studies, 25 were conducted as shank applications; and in all 25 cases, the peak chloropicrin flux rate was lower than that obtained from the 2004 tarped drip study. This is a critical and consistent finding because the USEPA-proposed drip application buffer zones, which are based on the 2004 drip study, are considered by affected stakeholders to be reasonable. Several industry, university, and commodity group surveys have established that buffer zone distances greater than 100 feet are likely to have severe and negative impacts on growers. The USEPA drip application buffer zones are generally less than 100 feet for most commercial application scenarios that are currently practiced.

Four of these 25 shank studies were incorporated into the Amended Final RED (USEPA, May 2009), where these new data supported revised buffer zone tables for the application methods evaluated in the studies. This presentation will summarize the other 19 chloropicrin shank application flux studies conducted since 2008. A summary of the chloropicrin drip-application emissions data will also be presented.

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