

ILLNESSES ASSOCIATED WITH A NOV. 1999
SPRINKLER APPLICATION OF METAM SODIUM IN
EARLIMART, CA.

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The pesticidal action of metam sodium (MS) is dependent on breakdown to gaseous methyl isothiocyanate (MITC). MITC and several other MS degradates (MIC, CS₂, H₂S) are ocular and respiratory irritants. On Nov. 13, 1999, an illegal MS sprinkler application to a field ~1/3 mile southeast of Earlimart, CA produced a plume of airborne degradation products that moved off-site over several neighborhoods. This movement was caused by a shift in wind direction and the development of a post-sundown atmospheric inversion layer. Eye or upper respiratory irritation was documented in 81% of 136 self-selected individuals in zone A (0-0.6 miles from the field), 61% of 18 in zone B (0.6-0.82 miles), 50% of 10 in zone C (0.82-1.08 miles), and 60% of 5 in zone D (>1.08 miles). Non-specific symptoms (headache, nausea, dizziness, shortness of breath, abdominal pain, vomiting, weakness) occurred in 61% of the 173 total individuals evaluated. 16% had respiratory complaints, including 2.9% with exacerbated asthma or other lower airway problems. MITC concentrations were estimated with a Gaussian air dispersion model (ISCST3), using data from a local weather station and prior MITC monitoring studies. Estimated 1-hr time weighted average concentrations in zone A fell between 0.5 and 1 ppm, with estimated peak 1-min concentrations as high as 7 ppm. These air concentration estimates and the corresponding symptoms were consistent with the regulatory values developed in DPR's recently released risk assessment of MITC following agricultural applications of MS (critical acute NOEL=220 ppb, based on eye irritation in humans at 800 ppb [REL=22 ppb]; critical subchronic NOEL=100 ppb, based on nasal epithelial atrophy in rats [REL=1 ppb]). This report highlights the potential health concerns surrounding sprinkler applications of MS.