

**Summary of Analytical Report
For
2007 Near-Field Emissions of MITC Following
Shank Injection and Chemigation applications of Metam-Sodium.**

**by
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Metam sodium fumigant is used to prevent diseases found in soil for potato, mint, onion and tree fruit crops. In Washington State, approximately 10 million pounds of metam-sodium are applied to potato fields each year. Upon contact with moist soil, metam-sodium releases the active ingredient methyl isothiocyanate (MITC) in the form of a gas. If the gas reaches the soil surface, it can become airborne and escape offsite. Exposure to this gas can be harmful to human health.

This study was conducted by WSU in South Franklin County in October 2007. The purpose of this air monitoring study was to evaluate MITC air concentrations directly adjacent to treated fields to understand the maximum air concentrations associated with common methods of metam sodium application. The study compared two methods for applying the soil fumigant: 1) overhead sprinkler application through a central-pivot irrigation system (end guns off) and 2) tractor-powered soil injection with immediate soil compaction. A similar [air monitoring study was conducted in 2006](#).

Air monitoring stations were set up at four points around each field about 15 meters (about 50 feet) outside the edge of the fields. Air was sampled during each application and for 8 days after each application to compare the two methods for amount of escaping gas and to find out if the air levels were higher than established levels of health concern for MITC. The two fields were similar in soil texture, moisture content, and were monitored during the same time period to ensure similar weather and climate variables.

The near-field air monitoring results showed that the shank injection method produced less escaping gas than the sprinkler method. The highest single observation for the shank injection method was 10 parts per billion (ppb) compared to 93 ppb for the sprinkler method. The highest levels in nearby air detected occurred during the applications for both methods (see figures 6 and 7). The maximum level detected with the sprinkler method was more than four times higher than the EPA threshold of health concern for acute inhalation set at 22 parts per billion (ppb). Highest residues measured from the shank injection method were below the level of concern set by EPA. MITC continued to escape from the treated fields after the application was finished but none of the levels measured near the edge of the field exceeded EPA acute inhalation levels of health concern. This study, together with a similar study in 2006, supports the use of shank injection with soil roller compaction to reduce escaping gas emissions, especially when fields are near residential communities.

For more information about MITC and EPA levels of concern go to our [fact sheet](#).

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