METHYL BROMIDE USE PATTERNS IN THE U.S.

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Approximately 60 million pounds of methyl bromide are used in the US each year. In 1994, the US Environmental Protection Agency froze US production and importation at 1991 levels under the Clean Air Act. All production and importation will be prohibited under the Clean Air Act starting January 1, 2001. The US is also a signatory to the Montreal Protocol, an international treaty that froze production and consumption of methyl bromide in developed countries at 1991 levels beginning in 1995. The Montreal Protocol also specifies reductions for developed countries in production and consumption from 1991 levels of 25% by 1999, 50% by 2001, 70% by 2003 and 100% by 2005. The phase-out schedule for developing countries includes a freeze in consumption in 2002 at average 1995-1998 levels, and reductions of 20% in 2005 and 100% in 2015. Under the Montreal Protocol, uses for quarantine and pre-shipment applications are exempt from the production and consumption limits, and critical uses, as agreed upon by the parties to the treaty, will be allowed after 2005. The Clean Air Act does not authorize any exemptions. Provisions of the Montreal Protocol to reduce methyl bromide consumption by 25% in 1999 are more restrictive than the Clean Air Act, which does not specify interim reductions before 2001. However, in 2001, the complete ban on production and importation under the Clean Air Act will supercede the phase-out schedule of the Montreal Protocol.

In order to understand the impact that the phase out of methyl bromide will have on US agriculture, it is necessary to first have a good picture of its current uses. There are several different sources of information on the use of methyl bromide for pre-plant and post harvest uses, which cover different areas of use, are more or less detailed and leave some information gaps in areas where there are known uses. Here we provide a description of the available sources of information that may be combined to obtain a clearer idea of where the use of methyl bromide has played a role in production practices, which will help guide efforts to develop alternatives and assure a smooth phase out of methyl bromide use in the US.

The use of methyl bromide as a pre-plant treatment accounts for over 75% of methyl bromide use in the US. Detailed information on use by state and crop is available from several different sources. The USDA National Agricultural Statistics Service (NASS) regularly surveys a random sample of growers about chemical usage and produces estimates of pesticide use by state and crop. However, not all crops and states are covered, and in the case of a minor use pesticide such as methyl bromide, there frequently are insufficient reports to estimate use. The NASS database provides only limited information on methyl bromide use for some crops in states where methyl bromide is

known to be used. Another USDA source of statistics on methyl bromide use is in commodity specific reports produced by the National Agricultural Pesticide Impact Assessment Program (NAPIAP). NAPIAP has published several reports which detail pesticide use on particular crops across the country, and collects additional data on all pesticide use for that crop. Recent NAPIAP reports include assessments of pesticide use in tomatoes and strawberries, two crops that account for the largest amount of methyl bromide use in the US.

The most detailed information available on pre-plant use of methyl bromide in any state is collected by the California Department of Pesticide Regulation. In their Pesticide Use Database, every pesticide application made in the state is required to be reported. Using location and crop specific information on pesticide applications, it is possible to obtain a fairly accurate picture of methyl bromide use throughout the state and to uncover regional variations. There are limitations to this data however. First, it is common for methyl bromide to be used as a spot treatment when replanting selectively within a vineyard or orchard. In many cases these treatments are reported as if entire acres had been fumigated, when in reality, only a small portion of that acreage had been treated. If these errors are not accounted for, treated areas will be overstated and application rates will be understated. In addition, a substantial amount of methyl bromide use is reported without reference to a specific crop. In 1995, over 1.5 million pounds of methyl bromide were reported as "uncultivated agricultural area." It may be possible to get a clearer picture of what crops were planted on this acreage from the county agricultural commissioners' offices that collect the pesticide use data for the state. The amount of methyl bromide use in this unspecified category has increased in recent years and may mask trends in methyl bromide use for particular crops.

The detailed information available in the California Pesticide Use Database also allows some preliminary calculation of how current restrictions on the use of 1,3-D products in California will impact specific production areas. Using current 1,3-D and methyl bromide usage information, and assuming the rate and formulations that would likely be used by growers who are currently using methyl bromide, the total demand for 1,3-D may be calculated by township. In this manner, the availability of 1,3-D for growers who would likely choose to use it may be better understood.

The use of methyl bromide in the nursery industry accounts for one of the most valuable categories of pre-plant use. Due to the diverse nature of the industry and lack of detailed basic production statistics, the use of methyl bromide is not well documented. There are some sources of information however. NAPIAP recently performed an assessment of pesticide use by nursery growers. Although fumigants were not extensively covered, the percentage of growers in each state who use methyl bromide is available. In another study supported by NAPIAP and conducted by the University of Florida, a more extensive survey of growers in that state was performed, which provides additional information on the use of methyl bromide in Florida. Finally, USDA surveyed forest tree nurseries in 1993, detailing patterns of methyl bromide use in both public and private nurseries.

The use of methyl bromide as a post harvest treatment accounts for a much lower total amount of methyl bromide use than pre-plant applications. However, its use in many of these applications is very valuable. There are several categories of post harvest uses on US produced commodities: product quality, domestic quarantine, and international phytosanitary requirements. Due to the varied nature of post harvest uses, the sources of statistics also vary. For information on the use of methyl bromide to meet the phytosanitary regulations of importing countries, the USDA Animal and Plant Health Inspection Service has compiled some preliminary information on the quantities of exports of commodities to countries that require methyl bromide treatments as a condition of import. What this database does not include are regulations where methyl bromide is not specifically named as a required treatment, but is the only practical treatment. For domestic quarantine, the appropriate state and federal agencies may provide information collected in relation to certification programs. Finally, where commodities are fumigated as part of the production process, but is not required for any regulatory program, commodity groups may provide information on the amount of commodity treated with methyl bromide.

We have attempted to construct a complete database of methyl bromide use data, using the above mentioned sources. Where information was incomplete or unavailable, efforts have been made to fill in the gaps with the cooperation of chemical manufacturers and distributors, growers, commodity groups and researchers.