



Florida Department of Agriculture & Consumer Services
CHARLES H. BRONSON, Commissioner

QUESTIONS AND ANSWERS ON IODOMETHANE

1. What is iodomethane?

Iodomethane (methyl iodide) is a new agricultural soil fumigant. In 2007, iodomethane was approved as a new active ingredient by the U.S. Environmental Protection Agency (EPA) for pre-plant agricultural fumigation to control insects, weeds, nematodes and plant pathogens. Iodomethane is a liquid at normal temperature and pressure that readily evaporates following application. Iodomethane has long been used in laboratories as a methylating agent and for microscopy. Iodomethane is naturally produced by some plants and marine algae. Small amounts of iodomethane are present in the air, seawater and the human diet.

2. What iodomethane products are used in Florida?

In July 2008, Florida registered technical iodomethane for use in the production of fumigation products. Florida also registered two agricultural products containing iodomethane which are restricted use pesticides (RUP). These products are made by Arysta LifeScience North America, LLC. One product is Midas 98:2, which contains 98% iodomethane and 2% chloropicrin. The other is Midas 50:50, a mixture of 50% iodomethane and 50% chloropicrin. Chloropicrin is included in many fumigant products as a warning agent. In higher amounts chloropicrin is used as a pesticide with iodomethane for greater overall effectiveness.

3. Why is iodomethane needed for Florida agriculture?

Broad-spectrum agricultural fumigants like iodomethane are needed in Florida because of the high pest pressure in the state, where non-chemical alternatives are not always possible or practical for all crops. One highly effective agricultural fumigant that has been relied upon by growers for many decades is methyl bromide. That fumigant is being phased out of use as a result of an international agreement called the Montreal Protocol. Scientists have concluded that methyl bromide may damage the ozone layer in our atmosphere, which helps to protect us from cancer-causing rays of the sun. Scientists have concluded that the ozone-depleting potential of iodomethane is 22 times lower than that of methyl bromide. Iodomethane is marketed as an alternative fumigant to methyl bromide.

4. Where, when and how is iodomethane applied?

Iodomethane is injected beneath the bare soil with specialized application equipment prior to planting in a single application. Once the iodomethane has been injected into the soil, the treated area is immediately covered with a plastic tarp to help retain the fumigant in the soil. Iodomethane fumigant products are registered for pre-plant use in Florida on tomato, strawberry, pepper, stone fruits, tree nuts, vines, nurseries, turf and field-grown ornamentals.

5. Does iodomethane get into our food?

No. Since iodomethane can damage a crop, planting must wait until the amount of iodomethane in the soil has been sufficiently reduced. By the time of planting, iodomethane levels in the soil have been reduced by soil metabolism, degradation, and degassing to levels that are safe for crop growth. Iodine-containing products that remain in the soil are at low levels and are part of a normal diet.

6. Is iodomethane likely to contaminate our drinking water?

No. The EPA and the Florida Department of Agriculture and Consumer Services (FDACS) have independently assessed the potential for iodomethane to contaminate groundwater. Using computer modeling and assuming reasonably worst-case Florida environmental conditions, both agencies have concluded that iodomethane is unlikely to affect the quality of groundwater or surface water. Furthermore, Arysta (the company that has registered iodomethane) has agreed to conduct additional groundwater monitoring in Florida to address any groundwater concern.

7. How can iodomethane affect human health?

All agricultural fumigants are somewhat toxic because they are intended to control a wide range of pests. By most measures, the toxicity of iodomethane is similar to that of methyl bromide. The EPA has concluded that people will not be exposed to harmful levels when iodomethane products are used according to the stringent requirements of their product labels. Many of the toxic effects of iodomethane are the same as those of iodide, which is a form of iodine. The reason for this is that iodomethane forms iodide when it is broken down in the body. Iodine deficiency in pregnant women is reported to be the leading cause of mental retardation worldwide, and for this and many other reasons, the right amount of iodine in the body is needed for good health. However, too much iodine intake can also be harmful. Breathing high levels of iodomethane can cause excessive amounts of iodide to form in the body. This can lead to disruption of thyroid hormones, which can potentially affect pregnancy and cause other health problems. Thyroid cancer was found in some animals that inhaled high amounts of iodomethane over many months, but this happened only when animals breathed iodomethane at levels and for durations that were much higher than people would likely breathe when they work with iodomethane products. Inhaling very high amounts of iodomethane may affect the central nervous system. Breathing iodomethane at lower levels can irritate the respiratory tract and lungs. Prolonged contact with the skin may cause severe irritation and splashes into the eye may

cause permanent eye damage. However, workers are required to wear a significant amount of personal protective equipment and should not be affected by these health problems. People outside of the application area, where the levels in air are much lower, also should not be affected.

8. Is iodomethane likely to affect wildlife and the environment?

No. Since iodomethane is applied beneath the soil and immediately covered with a tarp, high concentrations are unlikely to come into contact with wildlife. The tarp significantly slows the movement of iodomethane to the atmosphere. Once in the atmosphere, iodomethane is rapidly degraded by sunlight. Within a few days after being applied, iodomethane breaks down into forms of iodine that are found naturally in the environment. Iodine is an essential nutrient in the diets of both animals and humans. Toxicity and environmental fate studies show that iodomethane should not reach levels that would harm wild animals in the environment.

9. What has the EPA done to ensure the safe use of iodomethane in the U.S.?

The EPA has stated that its iodomethane risk assessment was among the most thorough in the Agency's history. The EPA required numerous scientific studies on iodomethane for registration. Those studies quantified the relative toxicity of iodomethane to people and animals and characterized its fate in soil, water, and air. The EPA has required several new safety requirements for iodomethane that are not yet required for other agricultural fumigants. One new requirement is the use of a "buffer zone," an area surrounding the treated field in which bystanders and unprotected workers must not enter until at least 48 hours after application. The size of the buffer zone depends on the area being fumigated, the amount of iodomethane being applied per acre and other factors. No single application may exceed 40 acres. The EPA has also required agricultural workers using iodomethane to wear appropriate protective equipment. Iodomethane is a restricted use pesticide that can be used only under the direct supervision of certified applicators that have undergone extensive training on requirements that apply prior to, during and following soil treatment. All iodomethane applicators must be state-certified and must complete an Arysta training/stewardship program that has been designed with input from the EPA and FDACS. All applicators must pass a test before they can apply iodomethane fumigant products.

The federal registration of iodomethane is set to expire in October 2008. This time-limited registration will enable the EPA to consider any additional measures to mitigate risk which may arise from the Agency's ongoing review of other fumigants, including chloropicrin, an ingredient in Midas 98:2 and Midas 50:50.

10. What has the Florida Department of Agriculture and Consumer Services done to ensure the safe use of iodomethane in Florida?

Over a period of nine months, FDACS conducted a comprehensive new active ingredient review, examining a wide array of studies provided by the registrant and from the open scientific literature. The Department also reviewed the EPA's risk assessment and risk mitigation measures for iodomethane. FDACS engaged in numerous discussions on

iodomethane with a number of diverse groups, including the iodomethane registrant, the EPA, the Florida Department of Health, the Florida Department of Environmental Protection, The Florida Fish and Wildlife Conservation Commission, Florida growers, university academia, Florida farm worker advocates, and the California Department of Pesticide Regulation. Since this review process resulted in numerous changes in the existing Federal label instructions for iodomethane, FDACS required stand-alone iodomethane product labels for use only in Florida. These legally-binding Florida labels require additional safety measures and enhance clarity and enforceability beyond the extensive provisions already required by the EPA in the federal labels. In addition, Florida's review process has resulted in the registrant's commitment to carry out a robust product stewardship program in Florida, assisting applicators in the proper use of the product and working with applicators and FDACS to address any issues that may arise with the use of the product. Moreover, Arysta has agreed to conduct monitoring studies to assess the environmental fate of iodomethane in groundwater and in air in Florida. The additional precautionary steps Florida has taken are designed to ensure the safety of workers and bystanders with the use of these products in our state. FDACS plans to revisit the state registration of iodomethane products after EPA has evaluated additional risk mitigation measures for chloropicrin, an active ingredient that is paired with iodomethane in Midas 98:2 and Midas 50:50.

11. Where can I find additional information about iodomethane?

Further information on iodomethane can be found at these internet websites:

http://www.epa.gov/pesticides/factsheets/iodomethane_fs.htm

<http://www.regulations.gov/search/index.jsp> (Type "iodomethane" in the search box).

<http://toxnet.nlm.nih.gov/cgi-bin/sis/search/f?./temp/~9ZVoF6:1>

<http://monographs.iarc.fr/ENG/Monographs/vol41/volume41.pdf>

<http://www.cdpr.ca.gov/docs/risk/toxsums/pdfs/5783.pdf>

<http://www.cdc.gov/niosh/pel88/74-88.html>

<http://www.cdc.gov/niosh/pdfs/0420.pdf>

<http://www.cdc.gov/niosh/idlh/74884.html>

If you have additional questions, please contact the Bureau of Pesticides at (850) 487-0532.