

Methyl Iodide

Now it's toxic strawberries from California! "Will strawberry shortcake be known for causing cancer, birth defects and miscarriages," asks a widely circulating article on the web. Well, no. Not unless you make a habit of eating that shortcake in a strawberry field that is being fumigated with methyl iodide. What we are being subjected to here is yet another case of some chemically ignorant person taking a legitimate concern and twisting it into an unrealistic and naive warning.

The claim is that since California has recently approved the use of "toxic" methyl iodide on strawberry fields, eating the berries will endanger health. The truth is that there is absolutely no reason to worry about methyl iodide in strawberries for the simple reason that there isn't any there! This is not at all to say that there is no concern about the use of methyl iodide. It is certainly a toxic substance. That of course is the reason it is used as a fumigant.

Let's backtrack a little. Soil may look dead, but it is actually teeming with life. Bacteria, fungi, insects, nematodes and a variety of weed seeds lie in wait to harass any crops that are planted. Conventional agriculture deals with this problem by treating the soil with fumigants before seeds are planted. The classic fumigant used to be methyl bromide, a gas that was pumped into the soil to kill microbes and weed seeds. But methyl bromide was eventually found to be an ozone depleting gas and its use was banned by the Montreal Protocol. One of the candidates for replacement was methyl iodide because of its chemical similarity to methyl bromide. Unlike methyl bromide, it's a liquid, which actually makes it easier to apply to the soil. It can be easily spread and prevented from evaporating by covering the soil with a tarp. Furthermore, methyl iodide is too unstable to make it to the upper atmosphere and damage the ozone layer. On the other hand, the compound can leach into waterways.

The Environmental Protection Agency in the U.S. approved methyl iodide for use as a fumigant in 2007, but not without controversy. Methyl iodide is actually more toxic than methyl bromide and a number of scientists as well as environmental groups were opposed to the use of this chemical as a fumigant. It is known to interfere with thyroid function, it is alleged to cause developmental problems, and California classifies it as a carcinogen. While there is no evidence it causes cancer in humans, its chemical reactivity suggests that it can react with and disrupt the structure of DNA, which suggest a possible mechanism for carcinogenicity. EPA, however, concluded that if handled properly, with workers using protective clothing and respirators, methyl iodide can be safely used.

California, which has a huge strawberry crop, requires an extra layer of approval beyond that of EPA before a pesticide can be used. After much debate the state has now approved the use of methyl iodide as a fumigant in spite of much opposition, including from some of the state's own experts. The worry is that workers who apply the pesticide will be exposed to toxic doses and the chemical may even drift to neighbouring areas and expose bystanders. No matter how much care is taken accidents will occur. Inhalation of methyl iodide vapour would be especially dangerous to any children who may be inadvertently exposed. Acute poisoning from inhalation can cause dizziness, nausea, diarrhea, slurred speech and convulsions. These concerns though are limited to the application of methyl iodide because the compound breaks down quickly in the environment. There is absolutely no residue on the strawberries. So the concern is for workers, not consumers.

Methyl iodide is not an absolute necessity. Organic strawberries are grown without the use of fumigants and proper crop rotation or steam or heat treatment of the soil can reduce the effect of weeds and microbes. Compost can be used to suppress soil-borne plant diseases. There are also varieties of strawberries that are more resistant to fungi. So with methyl iodide it may be that the risks are not worth taking. But again, it is important to realize that there is no risk to the consumer. The websites that claim we'll be eating killer strawberries and toxic shortcake are out to lunch.