



CENTER FOR
FOOD SAFETY

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Re: Docket No. EPA-HQ-OAR-2014-0743

Center for Food Safety (CFS) is a non-profit membership organization that works to protect human health and the environment by curbing the proliferation of harmful food production technologies and by promoting organic and sustainable agriculture. Our membership has rapidly grown to include over 700,000 people across the country that support organic food and farming, grow organic food, and regularly purchase organic products. **As a public interest organization working to uphold a food system that is safe for people and the planet, CFS urges the U.S. Environmental Protection Agency (EPA) to discontinue Critical Use Exemptions (CUE) for methyl bromide and finally eliminate the use of this hazardous, ozone-depleting chemical as the U.S. and international community agreed to more than 15 years ago.**

Elimination of all uses of methyl bromide is long overdue

Methyl bromide (MeBr) has been recognized as an ozone-depleting chemical for over two decades. Despite the chemical's ban in the 1997 Montreal Protocol and the goal of 100% elimination by 2005 for all advanced industrialized countries, the U.S.—and the strawberry industry in particular—has been dragging its feet for far too long. While reductions in use have been achieved, the U.S. continues to lag behind the large majority of industrialized nations that have eliminated the use of MeBr in all relevant industries. Under the Protocol, CUEs are allowed as a way to make the phase-out easier for users, recognizing that the identification of feasible alternatives may be technically or economically difficult and that a gradual reduction may be

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necessary to insulate economies and/or commodities from significant market disruption. Twelve advanced industrialized economies initially took advantage of the temporary exemptions to facilitate a reasonable phase-out of MeBr—Australia, Belgium, Canada, France, Greece, Italy, Japan, the Netherlands, Portugal, Spain, the United Kingdom, and the U.S.¹ All but three countries, Australia, Canada, and the U.S., have since successfully achieved the complete elimination of MeBr in their industries.²

The amount of MeBr the U.S. requests each year is particularly large relative to the rest, accounting for roughly 92 percent (442,337 metric tonnes versus 30,947 MT (Australia) and 10,305 MT (Canada)) of the MeBr exemption requested by advanced industrial nations in 2014.³ Furthermore, while overall use of MeBr in the U.S. has consistently decreased over the past 15 years, its use on strawberries has remained relatively stagnant. Applications for strawberry production, such as pre-plant fumigation of strawberry fruit in fields and in nurseries, now constitute the predominant use of MeBr nationally,⁴ accounting for 93 percent of MeBr CUEs in 2014.⁵

Methyl bromide is hazardous to climate and public health

MeBr carries an extreme public burden, and the exemptions must be discontinued. As EPA acknowledges in its “Methyl Bromide Questions & Answers” page, MeBr is “considered to be a significant ozone depleting substance,”⁶ and its depletion potential has been estimated at 70 percent of the reference chemical Trichlorofluoromethane (CFC-11).⁷ A United Nations scientific panel estimates that 5-10 percent of total ozone depletion globally is caused by MeBr. It is near common knowledge today that depleted ozone, and the subsequent increase of ultraviolet radiation reaching the earth’s surface, poses negative public health impacts, including skin cancer, immune suppression, and cataracts.⁸ The increased ultraviolet radiation also damages ecosystems,

¹ United Nations Environment Programme Ozone Secretariat (no date). “Summary of Critical Use Nominations of Methyl Bromide,” last accessed Jul. 27, 2015, available at: http://ozone.unep.org/new_site/en/Exemptions/Critical_Use_Nominations.php.

² United Nations Environment Programme Ozone Secretariat (no date). “Decision XXIV/5: Critical-use exemptions for methyl bromide 2014,” accessed Jul. 27, 2015, available at: http://ozone.unep.org/new_site/en/Treaties/treaties_decisions-hb.php?dec_id=1028.

³ *Id.*

⁴ J. Arling (2011). “Overview of the Global Phaseout of Methyl Bromide,” EPA Presentation at the Methyl Bromide Alternatives Outreach Conference, Oct. 31, available at: <https://mbao.org/>.

⁵ United Nations Environment Programme Ozone Secretariat, “Decision XXIV/5.” *Op. cit.*

⁶ Environmental Protection Agency (2011). “Methyl Bromide Questions & Answers,” *Ozone Layer Protection-Regulatory Programs*, updated Jan. 8, 2011, available at: <http://www.epa.gov/ozone/mbr/qa.html>.

⁷ G. Baker (2004). “California Strawberry Production and Methyl Bromide,” *7(3) International Food and Agribusiness Management Review*, 65, available at: <http://ageconsearch.umn.edu/bitstream/8153/1/0703ba01.pdf>.

⁸ J. Arling (2014). “Methyl Bromide and the Montreal Protocol,” EPA Presentation at the Methyl Bromide Alternatives Outreach Conference, Nov. 4, available at: <https://mbao.org/>; Environmental Protection Agency (no date). “Health Effects of UV Radiation,” *SunWise*, accessed Jul. 27, 2015, available at: <http://www2.epa.gov/sunwise/health-effects-uv-radiation>.

particularly marine and glacial,⁹ and MeBr has five times the global warming potential (GWP) of carbon dioxide.¹⁰

MeBr is also extremely poisonous, classified by EPA as an acute toxin (Category I), but it also can cause chronic health effects. People who apply the pesticide, such as farmworkers, and people living or working nearby may suffer poisonings, neurological harm, and reproductive damage.¹¹ In communities where MeBr is used, people have commonly reported chronic headaches, severe asthma attacks, nausea, sore throats, and dry coughs during the season in which the chemical is applied. A few deaths have occurred in instances when individuals prematurely entered structures after application of MeBr.¹²

Producers need alternatives, not exemptions

MeBr is not necessary for continued viability of the U.S. strawberry industry, as demonstrated by its complete eradication by other advanced industrial economies, including major strawberry producing countries. U.S. strawberry growers need pressure of a firm end date to reduce reliance on MeBr as a fumigant rather than a routine and expected free pass.

The reasons for continued methyl bromide use in U.S. strawberry production vary depending upon a number of factors, including the duration of the planting seasons. In fact, farmers in California typically do not use MeBr for summer plantings due to the short production season.¹³ Increasing summer plantings and encouraging research into breeds with shorter growing seasons, could further efforts to eliminate MeBr use. In the eastern U.S., the continued use of MeBr in strawberries is due to the use of marginal lands for production and the economic difficulty small farmers face by having to switch to a different crop.¹⁴

The U.S. MeBr exemption application acknowledges that research into alternatives has yielded positive results. Steam treatments of soils and physical barriers have both proven comparable to MeBr for the management of weed populations. It further states that a “combination of steam and physical barriers may be effective” as an alternative to MeBr.¹⁵ Research in Japan, the Netherlands, and the U.S. has demonstrated that anaerobic soil disinfestation (ASD) presents a viable, non-synthetic, non-chemical method for controlling soil-borne pathogens in strawberry production

⁹ Environmental Protection Agency (2010). “Environmental Indicators: Ozone Depletion,” *Ozone Layer Protection-Science*, last updated Aug. 19, 2010, available at: <http://www.epa.gov/ozone/science/indicat/index.html>.

¹⁰ Environmental Protection Agency (2014). “Class I Ozone-depleting Substances,” *Ozone Layer Protection-Science*, last updated Nov. 7, 2014, available at: <http://www.epa.gov/ozone/science/ods/classone.html>.

¹¹ Baker, (2004).

¹² *Id.*

¹³ Environmental Protection Agency & U.S. Department of State (2010). “Methyl Bromide Critical Use Renomination for Preplant Soil Use (Open Field or Protected Environment): Strawberry Fruit.” (USA Critical Use Nomination to the UNEP Ozone Secretariat for the 2012 Use Season).

¹⁴ *Id.*

¹⁵ *Id.*

that could replace the use of MeBr. ASD creates anaerobic soil conditions by incorporating carbon-sources into topsoil that is then covered with a physical barrier, such as a plastic tarp, and irrigated to field capacity.¹⁶ The physical barrier maintains soil moisture and sustains anaerobic conditions. Then, anaerobic decomposers use the added carbon for respiration, resulting in a build-up of anaerobic by-products that are toxic to pathogens but degrade rapidly once the physical barrier is removed or holes are created.¹⁷ While these techniques have been tested by organic growers, most of the emphasis for identifying alternatives to MeBr has been placed on identifying toxic chemical substitutes, methyl iodide being a case in point.¹⁸

The push for alternatives to MeBr and the development of innovative, non-toxic chemical based strategies has been fueled primarily by the organic community. In 2007, researchers at the University of California, Santa Cruz (UCSC) sought funding to conduct ASD field trials in California in an effort to find an alternative to MeBr for organic strawberry growers. Initial studies conducted over four years found that ADS was very effective in suppressing pathogens in soils and resulted in 85-100% of the fruit yield observed in fumigated controls.¹⁹ In 2013, UCSC researchers attempted to extend their ASD research into nursery production, but the California Strawberry Commission failed to fund their grant proposal. This is indicative of the resistance of the strawberry industry to seek out and develop non-chemical, cultural practices as a substitute for MeBr. Further research into the efficacy of ASD as an alternative to MeBr is needed, and we urge EPA and other applicable government agencies to solicit requests for proposals (RFPs) on ASD, steam, mustard meal and other non-toxic chemical alternatives to the use of MeBr. These benign methods have been shown to be effective substitutes for MeBr and are applicable to both conventional and organic strawberry fruit and nursery production systems. Additionally, they would be the best choice to ensure the protection of farm workers, the environment, and public health in communities where strawberries are grown.

In addition, strawberry growers, nurseries, non-governmental organizations, and researchers in California's Monterey Bay region have come together to collaboratively initiate an organic strawberry project aimed at developing organic strawberry planting stock, which is currently unavailable. In November of 2014, these organic strawberry growers teamed up with Greenheart Farm nursery in Arroyo Grande, CA to field trial four varieties of organic plug plants grown in a

¹⁶ University of California Division of Agriculture and Natural Resources (2015). "Anaerobic Soil Disinfestation," *USDA-ARS Pacific-Area Methyl Bromide Alternatives Program*, accessed Jul. 27, 2015, available at: http://ucanr.edu/sites/PAWMBA/Production/Strawberries/Anaerobic_Soil_Disinfestation/.

¹⁷ *Id.*

¹⁸ Methyl iodide was the chemical of choice being touted by Arysta Lifescience, but due to widespread public outcry about the acute toxicity of the chemical, the manufacturer withdrew its application to sell it in CA. California Department of Pesticide Regulation (2010). "DPR Announces Decision to Register Methyl Iodide with Most Stringent Restrictions in the Nation," *Press Release*, Dec. 1, available at: <http://www.cdpr.ca.gov/docs/pressrls/2010/101201.htm>.

¹⁹ C. Shennan et al (2014). *Non-Fumigant Approaches for Controlling Fusarium Wilt and Charcoal Rot of Strawberry*, unpublished data from University of California, Santa Cruz; C. Shennan, et al., "Non-fumigant strategies for nematode control for organic strawberry transplant production," *Research Proposal for the California Strawberry Commission*.

soilless, sterile medium.²⁰ The plug plants were grown from meristem cultures of University of California, Davis (UCDavis) certified strawberry varieties and grown without the use of MeBr. Field trial results are forthcoming this summer, and they look promising. Unfortunately, we have yet to identify a source of funds to support this project which has been funded by small, innovative growers themselves and the nursery at a high cost. Several weeks ago, we were informed by Greenheart nursery that it cannot continue to produce organic plug plants because the costs are too high to bear the burden of developing the plant to a commercial scale on its own, without some type of financial assistance. They have reportedly spent approximately \$100,000 to get to this stage of development and many more costs would be incurred to support several years of field testing and to grow a sufficient supply of plug plants to support organic strawberry growers across the state.²¹

Another organic strawberry nursery project has been initiated by Driscoll's—the leading producer of strawberries in the U.S. and worldwide. At its company-owned nurseries it has been funding the development of organic strawberry planting stock—plug and bare root plants—to exclusively supply to Driscoll's growers. In a recent press release, the company states: “Growing certified organic starter plants from the nursery to provide organic growers healthy, pest and disease free plants is a priority for Driscoll's. Driscoll's has developed and expanded an organic nursery program certified by CCOF for the last seven years. Currently, Driscoll's maintains the only organic strawberry nursery certified by CCOF, the nation's oldest and largest third-party certifying agency. There are no other known commercial organic strawberry start nurseries certified under the USDA National Organic Program.”²² While Driscoll's research and development of organic planting stock bodes well for the company as a leader in the organic berry industry, it does nothing to advance changes in the overall organic or conventional strawberry and berry industry since its nursery plants are used exclusively by its contract growers.

Clearly, non-chemical intensive alternatives exist to substitute for MeBr in the conventional and organic strawberry industries, but their development has been stymied by a lack of will and commitment on the part of the California and Federal government to solicit research proposals and fund their development. This needs to change and CEUs for MeBr must be eliminated once and for all.

²⁰ Center for Food Safety (2014). “Center for Food Safety Collaborates with Organic Strawberry Farmers in Innovative Research,” *Press Release*, Dec. 11, available at: <http://www.centerforfoodsafety.org/press-releases/3648/center-for-food-safety-collaborates-with-organic-strawberry-farmers-in-innovative-research>; R. Bale (2014). “Even organic strawberries are grown with dangerous pesticides,” *Center for Investigative Reporting Reveal News*, Dec. 11, available at: <https://www.revealnews.org/article-legacy/even-organic-strawberries-are-grown-with-dangerous-pesticides/>.

²¹ Bill DeVor, General Manager & C.O.O. of Greenheart Farms (2015). Personal communication by phone, Jul. 9.

²² Driscoll's Strawberry Association, Inc. (2015). “Driscoll's Commitment to All Organic Nursery Plants,” *Driscoll's Press Release*, Jun. 16, available at: <http://www.driscolls.com/organic-nursery>.

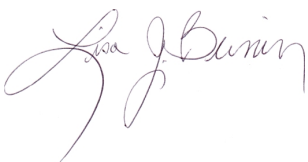
Methyl bromide's time has come

As EPA states on its website, injections of MeBr “will effectively sterilize the soil, killing the vast majority of soil organisms.”²³ And, while approximately two-thirds of land used to grow strawberries in California is not fumigated with MeBr any longer,²⁴ the alternatives most commonly used are other toxic chemicals such as 1,3-dichloropropene and chloropicrin. This suggests the government-driven and funded pursuit of alternatives to MeBr has emphasized finding strategies that accomplish an equivalent level of sterilization, and CFS strongly objects to this approach to growing food. This is not a sane or sustainable strategy for ensuring a secure and stable food future. Soil pathogens and microorganisms all play a vital role in building soil nutrition and fertility, water holding capacity, and helping to regulate soil temperatures. Healthy soils can sequester carbon and have high water-retention capacity, and therefore farmers that build soil health are part of a global climate solution. These essential soil elements create the natural, ecological conditions within which healthy plants can thrive without the use of nutrient-depleting, polluting and unsafe toxic agrochemicals.

With the wealth of knowledge that exists today about the adverse health and ecological impacts of these and other toxic agrochemicals, it is incumbent upon the U.S. government to take action on the use of Methyl Bromide and mandate the use of more sustainable and safe alternative practices and products. Until the U.S. government takes this necessary action, producers will continue to use this hazardous chemical and devise reasons to justify its exemption.

Thank you for the opportunity to comment.

Respectfully submitted,



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²³ Environmental Protection Agency, “Methyl Bromide Questions & Answers,” *Op. cit.*

²⁴ EPA & U.S. Dept of State (2010). *Op. cit.*