

When Politics Trumps Science and Health Suffers

Congress in Farm Bill plows under EPA science-based decision to remove hazardous pesticide from food production



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The U.S. Congress, in the 2014 Farm Bill (*Agricultural Act of 2014*), includes a provision that requires the Environmental Protection Agency (EPA) to ignore the science and law that establishes the safety threshold for exposure to fluoride. The use of the pesticide sulfuryl fluoride, allowed in food production since 2004,¹ in combination with fluoride use in water fluoridation, creates unacceptable hazards under EPA and National Academy of Sciences (NAS) scientific determinations. However, in an intervention that simply defies the scientific literature and thresholds for safety, the bill language orders EPA not to follow the law and science. The regulatory agencies responsible for protecting public health have identified elevated risk of dental fluorosis (breaking down of teeth enamel) in young children, and possibly skeletal fluorosis (joint pain and muscle impairment), while the scientific literature raises serious issues of neurological and brain effects from elevated levels of fluoride.

Regulatory History

Sulfuryl fluoride, commonly known by its trade name Vikane, was first registered in December 1959 as an insecticide used to fumigate closed structures and their contents, including dwellings, garages, barns, storage buildings, commercial warehouses, ships in port, and railroad cars. Food-related tolerances were petitioned by Dow AgroSciences (Dow Chemical) and set for sulfuryl fluoride in 2004 for raw foods and in 2005 for processed food as post-harvest fumigant. These tolerances allowed food storage facilities with processed and raw food to be fumigated.

Both of the food-related tolerances were opposed by Beyond Pesticides,^{2,3} and in 2006 Beyond Pesticides, Fluoride Action Network (FAN), and the Environmental Working Group (EWG) petitioned EPA for a stay of final rules, objecting to the tolerances as allowing an excessive hazard to food consumers.⁴ In the beginning of 2011, EPA responded to this petition by granting objections to the food-relat-

ed tolerances. This decision established a phase out all food-related uses for sulfuryl fluoride over a three-year period ending in 2014.⁵ EPA agreed with the petitioners that under the *Food Quality Protection Act* (FQPA) it is required to calculate the aggregate exposure risks associated with fluoride use in food and water.

After the EPA decision, there was a flurry of activity in Congress to limit EPA's proposed phase out. In April of 2013, U.S. Representative Tom Graves (R-GA) Introduced H.R.1496, the *Pest Free Food Supply Act*. This act would have forced the EPA Administrator to withdraw the proposed tolerance cancellations. The bill was referred to committee, but never moved forward.

In June of 2013, U.S. Senator Joe Donnelly (D-IN) introduced an amendment (SA 1122) to the *Agriculture Reform, and Jobs Act of 2013*, S. 954 or Senate Farm Bill, which instructed EPA to ignore naturally occurring fluoride in drinking water and fluoride in dental health products when determining aggregate exposure to sulfuryl fluoride. Amendments were not accepted during the Senate Farm Bill process, so this amendment was not added.

However, the House version of the Farm Bill, H.R. 2642, *Federal Agriculture Reform and Risk Management Act of 2013*, contained language to require a study on the public health effects of sulfuryl fluoride. This provision was adopted on July 11 in the U.S. House of Representatives' version of the Farm Bill.

As the Senate and House conferees sat down for the Farm Bill conference, tasked with merging their differing versions of the bill, the study amendment in section 9016 of the House version was the only reference to sulfuryl fluoride on the table. However, on January 27, 2014 when the conferenced bill was announced, it essentially contained the Donnelly language instructing the administrator of EPA to exclude nonpesticidal (all water fluoridation) sources of fluoride when determining aggregate risk exposure to sulfuryl fluoride. The act was signed into law on February 7.

Hill watchers are astounded by the lack of legislative process associated with the adoption of language prohibiting an agency from enforcing the law and scientific standards of enabling legislation intended to protect health and the environment. Since the U.S. Sen-

ate had taken no action on this language and the House passed a study amendment, the adoption of a prohibitory provision goes well beyond the scope of the conferencable issues under established legislative process. The proposal to overrule EPA's phase-out of sulfuryl fluoride's food uses, based on a lengthy scientific analysis and input from the NAS, was included in the House-Senate conference bill despite being excluded from the Senate Farm Bill and not taken up by the House. Meanwhile, the daily dose of fluoride through the food supply is dangerously high.

The Science Behind EPA's Decision to Remove Sulfuryl Fluoride from Food Production

In 2006, the National Research Council (NRC) of NAS released a report that recommended EPA update its fluoride risk assessment to include new data on health risks and better estimates of total exposure. The report, *Fluoride in the Drinking Water*, found that EPA's drinking water standard of 4mg/L Maximum Contaminant Level (MCL) was not adequately protective of health. The report concluded that high fluoride levels put individuals at increased risk of dental fluorosis and possibly skeletal fluorosis.⁶



After this report, EPA's Office of Pesticide Programs (OPP) completed a peer reviewed risk assessment of fluoride exposure.⁷ OPP found that, although sulfuryl fluoride residues in food contribute only a very small portion of total exposure to fluoride when combined with other fluoride exposure pathways (including drinking water and toothpaste), the tolerance did not meet the safety standard under the *Federal Food, Drug, and Cosmetic Act* (FFDCA), and the toler-

ances for food uses of sulfuryl fluoride should be withdrawn.⁸

The Data Supported EPA's Decision

EPA's decision was a clear effort to minimize the health risks that the continued use of sulfuryl fluoride would create, especially for children. The NRC report found that severe enamel fluorosis occurs at an appreciable frequency, approximately 10% on average, among children in U.S. communities with water fluoride concentrations at or near the 4mg/L MCL and that severe enamel fluorosis would be reduced to nearly zero by bringing the water fluoride levels in these communities down to below 2 mg/L.⁹ The report also found that the MCL at the current level is associated with stage II

and stage III skeletal fluorosis and possible neurological problems.¹⁰ By canceling the tolerances for the use of sulfuryl fluoride on raw and processed food (and thus making its use illegal in food production), EPA attempted to help populations with high levels, including natural water fluoridation, avoid obvious health risks.

Beyond the NRC report, sulfuryl fluoride has been linked to other negative health effects in multiple other studies. Sulfuryl fluoride is moderately acutely toxic by oral exposure (Toxicity Category II) and slightly toxic for acute inhalation (Toxicity Categories III and IV) and dermal vapor toxicity (Toxicity Category IV). Sulfuryl fluoride has also been linked to neurotoxicity, and reproductive toxicity. (Cox, 1997)¹²

EPA's decision to remove sulfuryl fluoride from the diet is also important because FQPA amendments to FFDCFA require that a pesticide registered for use by the agency cannot exceed acceptable risk thresholds when its dietary and nondietary uses are evaluated in the aggregate. The sulfuryl fluoride phase-out decision was the first time EPA action ever resulted in a comprehensive pesticide cancellation of agricultural uses (as distinct from a voluntary cancellation by the manufacturer) because of unacceptable aggregate exposure through food and water.¹³ By dismissing aggregate exposure risk, the Farm Bill puts the concerns of chemical-intensive agriculture ahead of the health and safety of the public, despite the availability of alternative agricultural and food storage practices.

Alternatives to Sulfuryl Fluoride

Despite industry claims to the contrary, chemical fumigation is not necessary in agriculture or food storage. Ignoring the commercial viability of organic production and storage methods that have replaced hazardous chemicals in agriculture, the agrichemical industry argues that sulfuryl fluoride is less hazardous than the alternative it points to, methyl bromide. While methyl bromide is an ozone depleter, a 2009 study found that sulfuryl fluoride is a highly potent greenhouse gas, in addition to its contribution to fluorosis and neurological effects. In fact, sulfuryl fluoride can be as much as 4,000 times more efficient at trapping heat than carbon dioxide, the leading atmospheric contributor to climate change.¹⁴ Successful food storage facilities, like Arrowhead Mills and other organic producers, have used least-toxic methods, such as temperature manipulation

(heating and cooling),¹⁵ atmospheric controls (low oxygen and fumigation with carbon dioxide),¹⁶ biological controls (pheromones, viruses and nematodes),¹⁷ and less toxic controls (diatomaceous earth).¹⁸ Neither fumigant is permitted in organic food handling and storage.

However, many existing food storage facilities are simply too old and outdated to effectively prevent pest infestations, leading to a reliance on toxic fumigation. A clean storage or processing facility, fully and regularly maintained, will be much more easily managed and kept free of pests.

Focus on Organic

After EPA's 2011 phase-out decision, the National

Resource Defense Council (NRDC) submitted comments to EPA claiming that the agency's decision would lead to an increase in methyl bromide use under a legal loophole. Methyl bromide has been the chemical of choice in grain storage in chemical-intensive food production systems, but is being replaced by sulfuryl fluoride. Phased out as an ozone depleter in 2005 under the *Montreal Protocol*, to which the U.S. is a signatory, methyl bromide has been allowed to be used in the U.S. under a "critical use exemption." Even though EPA's slow phase out of sulfuryl fluoride was intended to allow time for food storage facilities to transition to alternative practices, NRDC feared the phase-out would lead to the issuance of increased critical use exemptions and increased use of methyl bromide. Beyond Pesticides argues that the exemptions should not be issued under the *Montreal Protocol*, given the commercial availability of alternative practices and the success of these practices worldwide, including in developing countries.

Conclusion

Trading an ozone depleter for a greenhouse gas that causes adverse developmental effects in children is a choice between two unnecessary and toxic options. The sulfuryl fluoride debate brings into focus the urgent need to invest in organic production practices, and no longer get trapped in the debate about whether one unnecessary highly toxic chemical is better than another similarly toxic and unnecessary chemical.

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Photo of an old grain elevator in Estherville, Iowa, by Jonathunder, 2006.

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