Linda Leehman

From: Heather Darby <Heather.Darby@uvm.edu>
Sent: Monday, February 5, 2024 2:04 PM
To: Linda Leehman
Subject: [External] RE: Question from Sen. Starr

[External]

Hi Linda,
There is new research showing different types of pesticides that have levels of PFAS. Some information below. However this hasn't been shown directly on seed treatments and it is unclear if formulations have changed etc. You can see this is very current research so still much to really look at and understand here. Happy to talk with you both more about this.
Heather

This is an exert from a new paper published in July of 2023 (Current Review of Increasing Animal Health Threat of Per- and Polyfluoroalkyl Substances (PFAS): Harms, Limitations, and Alternatives to Manage Their Toxicity)….

3.3. PFAS and Pesticides

Among the various applications of PFAS, over the years they have been used as formulation additives to aid pesticide delivery and have been identified as degradation products of pesticide active ingredients [40,41]. In the early years, the Environmental Protection Agency did not mention the presence of PFAS in food pesticides, although it did find the chemicals in non-food plant products [42,43]. Analysis conducted in the U.S. found levels of PFOS in common pesticides, among the most commonly used in several states such as California. In a work conducted from 2020 to 2022, there were discovered PFOS levels several tested insecticides commonly used to treat cotton. Furthermore, it was also detected multiple PFAS species in soil and plant grab samples beyond what was observed in the insecticides tested (PFOS) [41]. All of these findings are part of a dispute between federal regulators and independent researchers over the extent of PFAS contamination in U.S. Pesticides and the related response that eventually led to the stops use of PFAS in Pesticide Products. Following reports and studies on the presence of PFAS in insecticides, some countries have begun monitoring and removing some of the risky products from the market. Registrations for this insecticide have been withdrawn in the United States, but are still allowed in some countries. Although PFAS in pesticide production have been withdrawn and limited in recent years, the problem of their presence and subsequent accumulation in the environment remains high due to their persistence over time. In addition, one must consider the possible synergistic action of pesticides and PFAS in the mechanism of toxicity, both categories being among the most environmentally present. The co-presence of PFAS and pesticides could therefore induce an increased toxic action in long-term exposures as occurs, for example, with co-exposures of other contaminants such as heavy metals, pesticides or endocrine disruptors [44,45,46,47,48].

One of the insecticides assessed in the study below was Imidacloprid which is a neonic. However, it was measured from insecticide in out of a container which may be a different formulation than seed treatment. They did not look at seed treatment specifically.

Steven Lasee, Kaylin McDermett, Naveen Kumar, Jennifer Guelfo, Paxton Payton, Zhao Yang, Todd A. Anderson,
Targeted analysis and Total Oxidizable Precursor assay of several insecticides for PFAS,
Journal of Hazardous Materials Letters,
Volume 3,
2022,
100067,
ISSN 2666-9110,
https://doi.org/10.1016/j.hazl.2022.100067.
(https://www.sciencedirect.com/science/article/pii/S266691102200020X)

Abstract: Targeted analysis for 24 Per- and Polyfluoroalkyl Substances (PFAS) was conducted on 10 insecticide formulations used on a United States Department of Agriculture crop research field. Perfluorooctane sulfonic acid (PFOS) was found in 6 of the 10 formulations with concentrations ranging from 3.92 to 19.2 mg/kg. Further analysis of soil and plant samples collected at the site found several additional PFAS, with PFOS being the most prominent. Suspect screening was then conducted on the formulations and provided several suspected PFAS in addition to the 24 targeted analyzed PFAS in 7 of the 10 samples, one of which showed no PFAS during targeted analysis. PFAS-precursor oxidation was then conducted on the two insecticide formulations with the greatest lists of suspected PFAS as validation of potential unknown PFAS in the formulations. This study revealed a previously unknown potential PFAS contamination source for rural and agricultural environments.
Keywords: PFAS; PFOS; Insecticides; Exposure; Agriculture

From: Linda Leehman <LLeehman@leg.state.vt.us>
Sent: Friday, February 2, 2024 8:30 AM
To: Heather Darby <Heather.Darby@uvm.edu>
Subject: Question from Sen. Starr

Hi Heather,
Sen. Starr would like your valued input on the question, “Do treated seeds contain PFAS?”. He’s getting contradictory information and is seeking a reliable source.
Thanks,
Linda

VERMONT
Linda Leehman
Office of Legislative Operations
Senate Committee on Agriculture
Senate Committee on Institutions