Message

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Sent: 2/9/2021 8:32:32 PM
To: Weekley, Erin [weekley.erin@epa.gov]; Bednar, Candace [Bednar.Candace@epa.gov]; Green, Jamie [Green.Jamie@epa.gov]
CC: Madden, Venessa [Madden.Venessa@epa.gov]; Schumacher, Kelly [Schumacher.Kelly@epa.gov]
Subject: Human Health and Ecological Benchmarks
Attachments: Human Health and Ecological Benchmarks for Seed Treatment Pesticides.xlsx

As we discussed last week, Venessa Madden and Kelly Schumacher have compiled the attached ecological and human health benchmarks, respectively. We suggest sending the spreadsheet to NDEE along with the following suggested language. Feel free to edit the proposed language, as appropriate. If you have any questions or want to discuss further, please let me, Kelly or Venessa know.

The attached spreadsheet provides human health and ecological benchmarks for select pesticides registered for seed treatment of field corn. The pesticide active ingredients are categorized by type (nematicide, insecticide, or fungicide), as well as Fungicide Resistance Action Committee (FRAC) or Insecticide Resistance Action Committee (IRAC) mode of action classification. The tables indicate whether any sample of groundwater, surface water, wet cake, corn seed, soil, nectar, honey, pollen, and/or other plants collected to date has been analyzed for each active ingredient and whether that active ingredient was detected. To date, it is EPA's understanding that groundwater samples have only been analyzed for thiabendazole, azoxystrobin, clothianidin, and thiamethoxam (as well as glyphosate, which is not registered for seed treatment).

The "Human Health Benchmarks" tab of the attached spreadsheet includes chronic reference dose (cRfD), cancer slope factor (CSF), and chronic or carcinogenic Human Health Benchmarks for Pesticides in Drinking Water (HHBP) values if they are listed in EPA's Office of Pesticides Programs (OPP's) Human Health Benchmarks for Pesticides, last updated in January 2017. HHBPs are levels of certain food use pesticides in drinking water at or below which adverse health effects are not anticipated from lifetime exposures (https://www.epa.gov/sites/production/files/2015-10/documents/hh-benchmarks-factsheet.pdf). They were developed based on EPA's methodology for deriving drinking water health advisories under the Safe Drinking Water Act, which is presented in the following technical supporting document: https://www.epa.gov/sites/production/files/2015-10/documents/hh-benchmarks-techdoc.pdf. HHBPs are not legally enforceable federal standards. Rather, EPA developed HHBPs for informational purposes for use by states, water systems and the public to help understand monitoring data for pesticides that have no drinking water standards or health advisories. For pesticides with both non-carcinogenic and carcinogenic toxicity values, the lower of the chronic HHBP protective of non-cancer health effects or the carcinogenic HHBP based on an excess individual lifetime cancer risk of 1×10^{-4} is provided.

The "Ecological Benchmarks" tab of the worksheet includes acute and chronic aquatic life benchmarks for fish, invertebrates, vascular plants and non-vascular plants based on toxicity values from scientific studies that EPA's Office of Pesticide Program has reviewed and used to estimate risk for pesticides and their degradates. Aquatic life benchmarks are estimates of the concentrations in surface water below which pesticides are not expected to represent a risk of concern for aquatic life. These values are based on the most recent publicly available ecological risk assessments and preliminary problem formulations written in support of pesticide registration (updated in September 2020). In addition, acute (Maximum Concentrations) and chronic (Continuous Concentrations) aquatic life criteria, developed by EPA's Office of Water, are available for chlorpyrifos. The aquatic life benchmarks, as well as the methodology for developing the values, can be found at: https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk#aquatic-benchmarks. EPA developed these benchmarks so that state, tribal and local governments can use them to interpret water monitoring data. For screening purposes, the lowest chronic value in the table is recommended.

For future sampling events, investigators may wish to consider the results from previous analyses regarding the presence and magnitude of a given active ingredient (or a representative from that class of compounds) in various media, as well as the potential for ecological or human health risks. For example, it does not appear that any samples have been analyzed for abamectin, which is the only conventional chemical (vs. biopesticides) registered for corn seed treatment of nematodes and which has a lower HHBP than most of the active ingredients on this list.

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