CENTER FOR FOOD SAFETY

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Environmental Protection Agency
Office of Pesticide Programs

Docket: EPA-HQ-OPP-2023-0365

Comments on: Draft Herbicide Strategy Framework to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Herbicides. Herbicide Strategy Framework Document

Center for Food Safety appreciates the opportunity to comment on the EPA's Draft Herbicide Strategy Framework to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Herbicides (Herbicide Strategy), on behalf of itself and its 970,000 members and supporters. Center for Food Safety (CFS) is a public interest, nonprofit membership organization with offices in Washington, D.C., San Francisco, California, and Portland, Oregon. CFS's mission is to empower people, support farmers, and protect the earth from the harmful impacts of industrial agriculture. Through groundbreaking legal, scientific, and grassroots action, CFS protects and promotes the public's right to safe food and the environment.

Introduction

CFS appreciates the considerable efforts EPA has devoted to devising a strategy to better assess the effects of herbicides on threatened and endangered species under the Endangered Species Act (ESA). It is true that the Agency does face a significant backlog of pesticides for which it has not completed ESA assessments or consultations with expert wildlife agencies, many of them herbicides. This backlog makes it understandable that EPA would seek a more efficient approach to conduct ESA assessments.

However, it should be acknowledged that this backlog cannot be blamed primarily on lawsuits, since an important reason for much of the pesticide-ESA litigation is the Agency's registration of numerous pesticides without first conducting the requisite listed species analysis and consultation with expert wildlife agencies. The Agency has not been compelled to prioritize pesticide approvals over listed species assessments, but rather has chosen to do so.

EPA's concern with increased efficiency must not be permitted to compromise the integrity of its assessment of pesticidal (herbicidal) impacts on listed species, which must meet a more demanding statutory standard, the Endangered Species Act, than is otherwise required of EPA under FIFRA. In other words, EPA must not make finishing its ESA assessment and consultation duties on pesticides the overarching goal; but rather, the goal must be to provide protection for endangered species and their habitats, which also benefits the broader ecosystem.

In some respects, the Herbicide Strategy resembles an elaborate and richly appointed mansion that is built on shaky foundations. No amount of work on the superstructure or interior can secure them. Fundamental assessment changes are needed, as discussed below.

Mandate to Rely on "Best Scientific and Commercial Data Available"

Studies conducted or sponsored by pesticide registrants are seldom the "best science"

The Herbicide Strategy cannot achieve its protection goals unless implemented on the basis of the "best scientific and commercial data available," as required by the ESA. Thus, it is disappointing to see EPA's intention to rely so heavily on registrant studies and data submitted to the Agency. In developing the all-important magnitude of difference (MoD) values, which function as population-level risk quotients, EPA states that it does and will continue to rely almost entirely on registrant studies and data regarding environmental fate, exposure and toxicity; moreover, the results of registrant field studies are used to decide whether "additional characterization is appropriate" (Herbicide Strategy, p. 32). EPA asserts, without offering any support, that:

> "…registrant submitted data and EPA's ecological analysis use the best available information to understand the potential for impacts to populations. Data submitted to support registration of pesticides provides a robust dataset to understand the potential for population-level effects from the use of pesticides." (Ibid., p. 33)

However, registrant studies and data are often far from meeting the ESA's "best science" mandate. One well-known example is atrazine's low-dose impacts on development and reproduction of amphibian and fish (see generally, CFS 3/2/20). EPA's various reviews of atrazine have privileged studies conducted or funded by chief atrazine registrant, ChemChina/Syngenta (whether formally submitted to EPA to meet data requirements or not). For instance, EPA excluded from quantitative analysis 74 of 75 published laboratory studies of atrazine's mostly lower-dose effects on amphibians in the Agency's 2007 and 2012 atrazine assessments, relying instead on an outlier (Kloas et al. 2009) that found virtually no reproductive effects at relatively high doses, and that was funded by Syngenta and co-authored by a Syngenta employee (Boone et al. 2014). Similarly, EPA's 2016 ecological assessment of atrazine repeatedly cites a Syngenta-funded review of atrazine's effects on aquatic organisms by pesticide industry consultants (Solomon et al. 2008) that downplayed adverse effects, despite the fact that an independent critique of Solomon et al. (2008) by experts in atrazine's aquatic toxicology found that it misrepresented over 50 of the studies it reviewed, and had 122 inaccurate and 22 misleading statements (Rohr and McCoy 2010).

Another example of EPA's misplaced reliance on registrant data in preference to higher-quality open literature studies involves glyphosate's terrestrial plant toxicity (see generally CFS 3/12/21). In its draft biological assessment of glyphosate, EPA stated that "registrant submitted data represents the most sensitive endpoints," and chose radish as the most sensitive dicot based on registrant data, with a non-definitive LOAEC < 0.07 lb/acre[1] (EPA Glyphosate BE 2, p. 2-73). However, high-quality studies from the open literature provide far lower endpoints: 0.003 lb/acre for the EC_{25} of potatoes (above-ground biomass) and 0.0074 lb/acre for the EC_{25} of peas (seed weight) (Ibid, 2-74). Both of these studies were conducted by EPA plant scientists. Other high-quality open literature studies that provide dicot endpoints for glyphosate lower than the radish include a third study by EPA plant scientists, demonstrating IC_{25} values for 17 prairie plant species from 0.015 to 0.034 lb. ae/acre (Olszyk et al. 2013), and studies by a team led by Celine Boutin (Boutin et al. 2004; see also CFS 4/30/18, pp. 11-14 for details).

EPA's only reference to "open literature" with respect to toxicity data that we found in the Herbicide Strategy is incidental, a footnote stating merely that registrant guideline studies are used to set toxicity thresholds, and that open literature toxicity data "may also be considered" (Herbicide Strategy, Table 5-1, ft. 3, p. 29). This is not nearly good enough. Registrants have a financial conflict of interest that often results in biased studies and data of lower quality that cannot meet the ESA's "best scientific and commercial data available" mandate, however much EPA might rely on such data for the purposes of pesticide registration.

EPA also relies upon exposure models (Herbicide Strategy, p. 32) to develop MoDs, many of them developed by pesticide industry consultants, and in some cases never ground-truthed prior to application. One prominent example is the Probabilistic Exposure and Risk Model for Fumigants (PERFUM), which was developed by consultants to a pesticide company to achieve reduced buffers for a fumigant (methyl iodide). Those consultants are now employed by a corporate consulting firm, Exponent, which maintains the PERFUM model, and is infamous for concocting junk science to win approval or regulatory relief for its clients' products, which include pesticides and other industrial chemicals. EPA based a disastrously wrong decision to approve over-the-top (OTT) uses of dicamba herbicide formulations on dicamba-resistant soybeans and cotton on junk modeling by Monsanto and Exponent that employed PERFUM to predict that vapor from use of OTT dicamba would not adversely impact off-field plants – when in fact such vapor drift damage has been observed, regularly, to occur hundreds to thousands of yards beyond treated fields. EPA never bothered to validate PERFUM for non-fumigant, semi-volatile pesticides like dicamba, as its advisers had urged, and in other respects allowed the model to be used improperly (CFS 10/17/22). EPA should only employ models if and when they have been rigorously ground-truthed to deliver reasonably accurate results.

Monitoring and incident data

Monitoring and incident data collected after an herbicide's approval can serve as an important check to assess whether model-estimated results and laboratory data upon which registration decisions are based are in fact consistent with what is observed in the environment (Herbicide Strategy, p. 32). EPA is correct to caution against using negative monitoring and incident data to conclude that exposure and impact are absent, since monitoring is not

[1] Not only did this study fail to establish an NOAEC, but it was also apparently conducted with glyphosate acid rather than a typical end use formulation (TEP), as required in EPA regulations (see CFS 3/12/21, p. 9).

continuous and may well miss peaks, and there is abundant evidence that only a small percentage of actual incidents of off-target herbicidal harm are reported in the mostly voluntary incident reporting systems established by EPA and state governments. And though required by law (FIFRA 6(a)(2)) to report adverse incidents, pesticide registrants will also become aware of just a small percentage of actual ecological incidents, and fail to report many of those.

When monitoring and incident data show a level or scope of ecological harm that is beyond expectations based on exposure models and toxicity tests, EPA must first of all take action to mitigate the harms; and in the longer term improve the models and toxicity testing that delivered the wrong results that in turn allowed unpredicted harms to occur, or develop new ones.

Usage vs. use data

EPA formerly employed pesticide use parameters specified on the label – including maximum permissible application rates, number of applications per season, etc. – for its exposure calculations in biological evaluations of pesticidal impacts on listed species. This employment of so-called “use data” was and still is appropriate for many reasons, as CFS has argued previously (CFS 6/19/21). Most basically, use data represent the amounts that farmers are legally permitted to spray, at any given time and place; and because these limits are established for mostly agronomic reasons, for instance to accommodate spraying when pest pressure is high, one must conclude that farmers will sometimes use those rates. EPA’s recent shift to “usage data” – the calculated average rate sprayed by farmers at the national or state level – will inevitably understate actual use in many sub-state localities and thereby understate exposure to listed species at many times and places. Moreover, the farmer surveys used by pesticide data reporting firms to develop “usage data” are non-transparent and of dubious quality, since methodology is not disclosed. Reliability declines with the number of surveyed farmers as the surveyed area becomes smaller. In short, label-based use rates represent the best available commercial data, not calculated average usage rates.

Additional Avenues of Environmental Exposure to Herbicides

EPA accounts for only two modes by which pesticides can escape and result in exposure of listed species: spray drift and runoff/erosion. However, there are at least four other avenues by which listed species can be exposed to pesticides: vapor drift, co-distillation, rainfall, and dust.

Vapor drift and co-distillation

EPA excludes volatilization and vapor drift from the draft Herbicide Strategy on the grounds that it represents an “important exposure pathway” for a small number of pesticides; and among the 12 herbicides for which it conducted case studies, EPA mentions volatilization as a factor only for 2,4-D, dicamba, and to a limited extent MCPA (Herbicide Case Studies, pp. 58, 124, 240). In fact, volatilization is an ubiquitous and underappreciated source of off-target plant damage, and EPA’s exclusion of it from its draft Herbicide Strategy is disturbing. Most members of the group of herbicides known as plant growth regulators or auxin mimics are liable to vapor drift, including the heavily used dicamba and 2,4-D. Among EPA's case studies, the Agency fails to even note the volatility of trifluralin and pendimethalin, which have been found to incur volatile losses of 12.5% and 13% of the amount applied, respectively, within 5 days of application (Rice et al. 2002, Table 2; and Cooper et al 1990).

Co-distillation

Another phenomenon closely related to volatilization is co-distillation, which involves the evaporation of an herbicide from water, soil or plant surfaces together with water vapor, while in volatilization the herbicide molecules evaporate from those media without interaction with water vapor (Fennimore 2005). Another case study herbicide, oxyfluorfen, as well as the herbicide EPTC, are subject to co-distillation (aka lift-off) and thereby present serious risks of plant damage (Ibid., Hanson 2014).

Rainfall

Another route of herbicide exposure that EPA needs to consider is rainfall. Studies have demonstrated that dicamba, for instance, reaches levels that cause phytotoxicity to sensitive plants in areas of intensive use (Bradly 2022). Similar findings were made in the Canadian Prairies for a range of heavily used herbicides (e.g. Hill et al. 2002).

Dust

Herbicide residues adhering to dust particles can also pose a threat, particularly in dry and windy areas. Argentine researchers found that glyphosate adhered to dust particles and carried substantial distances in the wind (e.g. Bento et al. 2016).

EPA has long neglected these routes of exposure to herbicides, perhaps because they are difficult to assess. However, the difficulty of assessment does not make the exposure via these routes go away; and to ignore or short shrift them represents an assessment failure that can only increase risks to threatened and endangered species.

Infeasible Mitigations

EPA proposes an incredibly involved and complex array of marginal mitigations for spray drift and runoff/erosion. In some cases, the mitigations, while perhaps reasonable on paper, are entirely infeasible in most real-world settings. For instance, EPA proposes as mitigation a windspeed range from 3 to 7 mph for aerial applications (based on changing AgDRIFT Tier III aerial parameterization from 10 mph to 7 mph) (Herbicide Strategy, pp. 36-37, parenthetical is ft. 21). The idea that an applicator can ensure wind speeds remain within a 4 mph range during an entire run is infeasible.

CFS requests that EPA give consideration to the concerns expressed above. Once again, building down the backlog of ESA pesticides assessments must not be the overriding goal of the

Herbicide Strategy. Credible data and objective analysis to provide protection to listed species must not be sacrificed to speeding up the process.

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