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THE UNITED STATES DISTRICT COURT
OF ARIZONA

Center for Biological Diversity, et al., *Plaintiffs,* v. United States Environmental Protection Agency, et al., *Defendants.*	Case No. CV-20-00555-DCB **PLAINTIFFS' STATEMENT OF MATERIAL FACTS IN SUPPORT OF MOTION FOR SUMMARY JUDGMENT**

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GLOSSARY OF ACRONYMS

AAPCO	Association of American Pesticide Control Officials
APA	Administrative Procedure Act
DT	Dicamba Tolerant
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EEC	Estimated Environmental Concentrations
FIFRA	Federal Insecticide, Fungicide, Rodenticide Act
FWS	Fish and Wildlife Service
LOC	Level of Concern
OIG	Office of the Inspector General
OTT	Over-the-Top
RQ	Risk Quotient
SFIREG	State FIFRA Issues Research and Evaluation Group
UDL	Use Data Layers
USDA	United States Department of Agriculture
VRA	Volatility Reduction Adjuvant
VSI	Visual Sign of Injury

Pursuant to LRCiv 56.1(a), Plaintiffs Center for Biological Diversity, National Family Farm Coalition, Center for Food Safety, and Pesticide Action Network North America (collectively Plaintiffs) submit this Statement of Material Facts in support of their Motion for Summary Judgment.

I. Introduction

1. The present case is the third in a series challenging Defendant Environmental Protection Agency (EPA)'s decisions, beginning initially in 2016, to approve the herbicide dicamba for spraying on top of growing cotton and soybean crops that pesticide companies have genetically engineered to withstand the herbicide. EPA and the pesticide industry commonly refer to this later in the season spraying as "over-the-top" or "OTT" dicamba use. EPA issued the challenged approval in this third litigation on October 27, 2020, A.4,[1] a little over four months after the Ninth Circuit Court of Appeals struck down EPA's prior dicamba over-the-top use approval in early June of that year. *See Nat'l Fam. Farm Coal. v. EPA*, 960 F.3d 1120, 1144-45 (9th Cir. 2020) (*NFFC*). Plaintiffs challenge EPA's continued re-approval[2] of over-the-top dicamba spraying in 34 states,

[1] The Administrative Record in this case is organized into 26 different folders listed in alphabetical order from A to Z, and the documents within each folder are assigned separate document identifier numbers starting with numeral 1. *See* Am. Index to Admin. R., ECF 150-2. For the Court's convenience, Plaintiffs have named excerpts of record materials cited in the Statement of Material Facts and Plaintiffs' Motion for Summary Judgment with an identical naming convention as the organization of the Record. For example, document number 4 in folder A of the Record (A.4) is attached as Exhibit A4 to the present filing. Also for the Court's convenience, Plaintiffs have reattached as separate exhibits the extra-record materials previously submitted with Plaintiffs' Motion to Complete, ECF 112, and have distinguished citations to the extra-record materials with the designation "Ex-R" preceding the specific exhibit number.

[2] In what has become EPA's repeated pattern, EPA has since twice amended the registration with amendments but otherwhile reaffirmed the challenged use approval, first in March of 2022 and most recently on February 16, 2023, *see* ECF 73 & 137. Consequently, Plaintiffs have twice amended their complaint to incorporate EPA's March

under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Endangered Species Act (ESA), and the Administrative Procedure Act (APA).

2. In *NFFC*, the direct precursor to this case, the Ninth Circuit struck down EPA's approval of this novel new use, finding it unlawful in no less than a half-dozen ways. *See NFFC*, 960 F.3d at 1144–45. And because the Ninth Circuit issued its decision on direct appellate review, the court also made numerous factual findings based on record evidence concerning the catastrophic harms of over-the-top dicamba use to U.S. agriculture and the environment. *See infra* ¶¶ 29-53. The Ninth Circuit's findings of fact and legal holdings—and EPA's continued disregard of them in its ongoing approval of the very same dicamba use—are material to this Court's review of Plaintiffs' Motion for Summary Judgment.

3. As detailed below, the Administrative Record more than amply establishes why this novel over-the-top dicamba spraying was previously prohibited, why the Ninth Circuit previously vacated the use, and why, for the same reasons and more, this Court should hold EPA's current Registration Decision unlawful and once again vacate it.

II. A Brief Overview of Dicamba

4. Dicamba (3,6-dichloro-2-methoxybenzoic acid) is a benzoic acid herbicide used to control and kill broadleaf weeds. A.9 at 18; M.69 at 3.

5. While dicamba has been used in U.S. agriculture since 1967, the challenged over-the-top dicamba spraying on genetically engineered cotton and soybean is a novel new use, not allowed (nor feasible) until Defendant-Intervenor Bayer (formerly Monsanto) engineered and patented soybean and cotton crops specifically to withstand dicamba. A.4 at 6–7; M.69 at 2–3; *see NFFC*, 960 F.3d at 1125 ("Because of its tendency to drift,

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2022 and February 2023 decisions. ECFs 84 & 149. Plaintiffs refer to EPA's ongoing approval of over-the-top dicamba use collectively as the "Registration Decision" or "Decision," and identify the specific decision by the year the agency action was taken when appropriate.

dicamba had been largely used in late winter or early spring before crops were planted. Post-emergent use of dicamba was limited to crops that are naturally tolerant of dicamba, such as corn and wheat, and was typically limited to use early in the growing season.").

6. As the Ninth Circuit explained, "[d]icamba is an effective weed killer, but its toxicity is not limited to weeds. It can kill many desirable broadleaf plants, bushes, and trees." *NFFC*, 960 F.3d at 1123. Indeed, the Record is replete with evidence of dicamba's broad reach: the past seasons of the challenged use approval resulted in widespread damage to crops and the environment. *See, e.g.*, A.9 at 18; *infra* ¶¶ 17-29.

7. EPA readily admitted that dicamba is extremely toxic to a wide range of flowering plants. As EPA noted in its most recent ecological risk assessment (the 2020 Ecological Risk Assessment), which EPA prepared for the Registration Decision, dicamba is extremely toxic to all broadleaf plants, a broad category that covers a wide variety of agricultural and landscape plants, from fruiting vegetables, fruit trees, grapes, beans, peas, potatoes, tobacco, flowers, and ornamental plants, as well as large trees such as oaks, elms, and maples. *See* A.9 at 18; *see* A.6 at 7 (most fruits and vegetables, non-DT [dicamba-tolerant] cotton and soybean, residential ornamentals and trees).

8. In addition to its toxicity, dicamba "also has a well-known drawback": namely, its extreme volatility and mobility. *NFFC*, 960 F.3d at 1123 ("Dicamba is volatile; moving easily off a field onto which it has been sprayed."); *id.* at 1125 ("Dicamba's toxic effect is magnified by its tendency … to move off a field where it is sprayed.").

9. From the beginning, EPA was well-aware of dicamba's mobility and the potential harms resulting from the new use.[3] EPA noted in its initial approval of over-the-

[3] Bayer (then Monsanto) also knew from the start that its dicamba-resistant crop system would cause extensive drift damage, as revealed in internal company memos from a Missouri farmer's successful lawsuit against dicamba registrants for extensive drift damage to his peach orchard. V.92 at 130–37. For instance, Monsanto proposed [redacted]

top dicamba use that "[d]icamba is very soluble and mobile," M.69 at 17, and repeated the same in its 2020 Decision, A.4 at 22. EPA also knew the new uses could dramatically increase crop injury by sharply increasing and shifting dicamba use to later in the season, when hot conditions increase volatility and crops are more susceptible to damage. EPA acknowledged 3 major forms of offsite movement: "Dicamba may reach surface water via run-off, by spray drift during application, and by vapor drift from volatilization …." A.9 at 22; *see* M.69 at 17.

10. Vapor Drift or Volatility: EPA was concerned with dicamba vapor drift, or volatility. *See* M.69 at 18; V.33 at 20. Vapor drift increases with temperature, and thus is far more common with late spring and summer over-the-top spraying of dicamba than with traditional preplant use. As the Ninth Circuit explained:

> Dicamba vapor can drift if dicamba is applied during a temperature inversion—an atmospheric condition in which cool air at the earth's surface traps warmer air above it, allowing the vapor to remain in a concentrated cloud and move off-field during a light wind. And dicamba vapor can drift if dicamba volatilizes after it has come to rest on plants or the ground. Dicamba can volatilize hours or even days after it has been applied, and it does so more easily and in greater volumes as the temperature rises. During temperature inversions, or after volatilizing on hot days, dicamba can drift long distances, sometimes a mile or more.

NFFC, 960 F.3d at 1125.

11. Damage from dicamba vapor drift is uniquely characterized by broad-scale injury that is uniform in severity, fencerow to fencerow that is easily identified. And unlike spray drift, which increases with greater winds, vapor drift is actually worse under still conditions, with little or no wind, allowing dicamba vapors to easily accumulate. M37ah at 2; Ex-R.1 at 3.

[redacted]" V.75 at 36, [redacted], *see id.* at 117.

12. Unfortunately for farmers and the environment, EPA's concern for dicamba vapor drift from over-the-top dicamba spraying turned out to be well-founded. As the Record shows and EPA admitted, season after season since EPA's initial approval in 2016, vapor drift from over-the-top dicamba spraying has caused significant agricultural and environmental damage. *See infra* ¶¶ 17-29.

13. Spray Drift: EPA also knew that dicamba can contaminate the environment and injure other organisms via spray drift during application. *See* M.69 at 17. As dicamba spray solution is forced under pressure through a nozzle, spray droplets form. Small droplets remain aloft for considerable periods and are carried by even moderate winds to damage crops or wild plants in neighboring fields. Unlike vapor drift, spray drift damage increases with wind speed. *See NFFC*, 960 F.3d at 1125 ("Dicamba droplets can drift during or shortly after spraying if the wind is blowing too hard or the spraying equipment is moving too fast.").

14. Runoff: EPA knew from the beginning that dicamba could move offsite and injure other species via runoff. *See* M.69 at 17 (identifying runoff as a "major route of exposure."); *id.* at 22 (finding risks to plants from dicamba runoff and spray drift). EPA was so concerned with potential harm from dicamba runoff that, as part of the earlier second conditional registration of over-the-top use of dicamba in 2018, EPA specifically ordered field studies to study the potential effect of dicamba runoff. *See* M.168 at 19 (requiring field studies to examine off-field movement of dicamba, including "effects of dicamba-containing agricultural irrigation water on non-target plants").

15. Harm to Endangered Species: EPA also knew that the new use might harm hundreds of endangered species, their critical habitats, and the environment generally. The 2020 Decision allows application on millions of acres in 34 states, and EPA knew that

ESA-protected animals, such as the whooping crane, feed in sprayed crop fields,[4] and that hundreds of other endangered plants and animals found near those fields would be threatened by drift.[5]

16. EPA stated in its 2011 ecological risk assessment of over-the-top dicamba spraying on dicamba-resistant soybean that "no federally-listed taxa can be excluded from the potential for direct and/or indirect effects from the propose new use of dicamba, since there is a potential for indirect effects to taxa that might rely on plants, birds, aquatic animals, and/or mammals for some stage of their life-cycle." V.33 at 2. In its 2016 ecological risk assessment, EPA found that it could not rule out "[p]otential direct risk concerns" for mammals, birds, and terrestrial plants and that "indirect effect risk concerns for all taxa were possible for any species that have dependencies (e.g. food, shelter, and habitat) on mammals, birds, reptiles, terrestrial-phase amphibians, or terrestrial plants."[6] EPA repeated the same findings in the 2020 Ecological Risk Assessment. *See* A.9 at 64 (noting that EPA's screening level assessment found potential effect to mammals, birds, reptiles, and terrestrial-phase amphibians, terrestrial invertebrates, terrestrial plants, and aquatic unicellular plants).

III. Pertinent Procedural and Regulatory History

A. Prior Dicamba Over-the-Top Approvals

17. In November 2016, EPA issued the initial over-the-top dicamba use approval after soliciting public comment. M.69 at 2, 27; A.4 at 7. During the public comment

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[4] EPA, *Addendum to Dicamba Diglycolamine Salt (DGA) and Its Degradate, 3,6-dichlorosalicylic acid (DCSA) Section 3 Risk Assessment: Refined Endangered Species Assessment for Proposed New Uses on Herbicide-Tolerant Soybean and Cotton in 16 states* 9-10 (Mar. 24, 2016) [hereinafter *Risk Assessment in 16 States*] (attached as Exhibit C to the Declaration of Meredith Stevenson, filed concurrently). As explained in the Declaration of Meredith Stevenson, this Court can take judicial notice of EPA's prior risk assessments.

[5] *Id.* at App.1, 30-32.

[6] *Risk Assessment in 16 States*, *supra* n.4, at 2.

period, farmers, scientists, and conservationists supplied EPA with studies, opinions, and real-world farming evidence warning of devastating harms from dicamba's toxicity and tendency to move off-site. *See* M.69 at 27. EPA nonetheless approved the over-the-top dicamba use. EPA's approval is based on the agency's conclusion that the approved dicamba formulation is less volatile than prior dicamba formulations with the addition of a buffering agent called "VaporGrip" that supposedly lowered dicamba's volatility. *See* M.69 at 2; *NFFC*, 960 F.3d at 1126.

18. In addition to relying on the addition of VaporGrip, in an attempt to prevent dicamba drift, EPA also based its 2016 use approval on a lengthy label containing various use restrictions that prohibited spraying in certain wind speeds, during temperature inversions, before expected rainfall and imposed speed limits for spraying, downwind buffers, and spray boom height limitation. *See* M.69 at 31–34; A; *see NFFC*, 960 F.3d at 1127 (detailing the critical restrictions in the 2016 use directions). And, given the development of widespread weed resistance to glyphosate as a result of glyphosate spraying on genetically engineered, glyphosate resistant crops, EPA also required the registrants to develop and implement plans for managing weed resistance to dicamba. *See* M.69 at 34–35.

19. As the Ninth Circuit found, "EPA stated that the lower-volatility dicamba formulations, if used in compliance with restrictions on an approved label, posed little or no risk of adverse effects on the environment and therefore imposed minimal cost." *NFFC*, 960 F.3d at 1127. EPA promised that the addition of the lower-volatility buffering agent and its use directions would eliminate *any* off-site movement of dicamba. *Id.*

20. And even with those lengthy, detailed use restrictions about when and how to spray, EPA was still concerned. In EPA's own words, "because of the concerns about resistance and off-target movement," EPA granted the initial approval under FIFRA's conditional registration provision, 7 U.S.C. § 136a(c)(7)(B), for a limited term of two years, to automatically expire on December 10, 2018. *NFFC*, 960 F.3d at 1126–27; M.69 at 35.

EPA stated that it would let the conditional use approval expire "unless EPA determines before that date that off-site incidents are not occurring at unacceptable frequencies or levels." M.69 at 35; *NFFC*, 960 F.3d at 1127.

21. 2017 Season: The first season after the initial Fall 2016 approval was the disastrous 2017 spring-summer season. The VaporGrip formulation and the lengthy use restrictions did not work, and concerns over the approval turned out to be well-founded. As EPA admitted, "[i]n 2017, over 2,700 official cases of crop damage were reported to state departments of agriculture, estimated to be over 3.6 million acres of soybean (nearly 4% of a total 90.2 million acres planted in 2017 according to USDA)." A.4 at 7. EPA also acknowledged that the reported damage figure was likely an underestimate. *See NFFC*, 960 F.3d at 1127 (quoting Reuben Baris, then-Acting Chief of the herbicide branch of EPA's Office of Pesticides Program that "[n]ot all reports of crop damage were reported to State Department of Agriculture.").

22. As the Ninth Circuit found:

> [A]s the 2017 growing season progressed, complaints of dicamba-caused damage to commercial crops and other plants soared. By the end of the season, according to a report by Professor Kevin Bradley of the University of Missouri, 2,708 formal complaints of dicamba-caused damage were being investigated by state departments of agriculture. Bradley reported that university weed scientists estimated that approximately 3.6 million acres of soybeans in twenty-four states, or about 4 percent of all U.S. soybean acreage, were damaged by off-field movement of dicamba.

Id. at 1127.

23. The amount of dicamba drift damage was so extensive that it prompted Rick Keigwin, then-Director of EPA's Office of pesticide Programs to say, "I don't say this in jest, but 2018 cannot look like 2017." *NFFC*, 960 F.3d at 1127.

24. Faced with such unprecedented damage, EPA responded by approving label amendments in 2017, adding more use instructions for over-the-top dicamba spraying for the 2018 season. The amendments further complicated the wind speed restrictions to

prohibit applications during both low/no wind (wind speed less than 3 miles per hour) and also windy conditions (wind speed of more than 10 miles per hour), allowing application only between sunrise and sunset. They also categorized the new dicamba formulations as "restricted use pesticides" under FIFRA so that they could only be applied by certified applicators, and required additional training for applicators. *NFFC*, 960 F.3d at 1127; *see* A.4 at 7.

25. 2018 Season: Unfortunately, despite EPA's declaration that "2018 cannot look like 2017," *supra* ¶ 23 (citing *NFFC*, 960 F.3d at 1127), "[t]he 2018 growing season was again marked by many complaints of off-site dicamba damage. In the country's major soybean-producing states, the sharp increase in 2017 of complaints to state agriculture departments about dicamba damage to crops was followed by only a slight decrease in complaints in 2018." *NFFC*, 960 F.3d at 1128. As the Ninth Circuit found:

> [B]y July 15, 2018, university weed scientists estimated that in eighteen states there were about 1.1 million acres of soybean with dicamba damage. The other sixteen states where OTT dicamba was approved were not included in the report. "By the same date the previous year, ..., university weed scientists had estimated 2.5 million acres of damaged soybeans.

NFFC, 960 F.3d at 1128.

26. EPA admitted to the same in its 2020 Decision, noting that "[t]he Association of American Pesticide Control Officials (AAPCO) reported that approximately 1,400 official complaints of alleged dicamba injury were reported to the state regulatory authorities." A.4 at 8. The damage reported went far beyond traditional soybean crops, and included "neighboring trees, orchards, vineyards, berries, melons, tomatoes and other vegetable crops." *Id.* EPA also admitted that the consensus amongst state pesticide officials, university researchers, and growers was that drift damage was "underreport[ed]," meaning that the actual dicamba drift damage was higher. *Id.*; *NFFC*, 960 F.3d at 1137 ("The record clearly shows that complaints understated the amount of dicamba damage.").

27. Despite overwhelming evidence of unacceptable dicamba drift damage from 2017-2018, on November 1, 2018, EPA nonetheless granted requests from Defendant-Intervenors Bayer and BASF to amend and continue the over-the-top dicamba use approval. *See* A.4 at 7; *NFFC*, 960 F.3d at 1129. EPA prepared a new registration decision, along with a handful of new assessments, and again conditionally registered over-the-top dicamba use for another two-year term. *NFFC*, 960 F.3d at 1129.

28. Plaintiffs first challenged EPA's initial 2016 approval in January 2017 in a direct petition for review to the Ninth Circuit Court of Appeals. *Nat'l Fam. Farm Coal. v. EPA*, No. 17-70196 (9th Cir. Jan. 20, 2017); *see NFFC*, 960 F.3d at 1130 (describing past litigation history). After EPA amended the use directions in 2017, Plaintiffs amended their petition for review to include EPA's 2017 label amendments, which the Ninth Circuit granted. Briefing was completed and the Ninth Circuit heard oral arguments in August 2018. However, before the court of appeals issued a decision, EPA issued the 2018 approval that granted another two-year conditional registration for over-the-top dicamba use, along with additional assessments. *NFFC*, 960 F.3d at 1130. The Ninth Circuit then dismissed Plaintiffs' initial petition for review, but allowed Plaintiffs to file a separate petition for review challenging the 2018 approval, and expedited that review. *Id.*

B. The Ninth Circuit's Resounding Rejection of EPA's 2018 Approval

29. After another round of briefing and another oral argument, the Ninth Circuit issued its decision on June 3, 2020, holding that EPA's 2018 over-the-top dicamba approval lacked substantial evidence in support, in violation of FIFRA.[7] In a scathing 56-page opinion detailing the horrors of the past seasons, the Ninth Circuit concluded that in approving over-the-top dicamba spraying, "EPA [had] substantially understated risks that it acknowledged and failed entirely to acknowledge other risks" under FIFRA. *Id.* at 1124.

[7] Because the Court based its vacatur on its holding under FIFRA, the Court did not reach the question whether the registration decision also violated the ESA.

The Ninth Circuit vacated the 2018 over-the-top dicamba use approval, and the three dicamba pesticide product formulations registered for that use (two of which are challenged in the present action).

30. Specifically, the Ninth Circuit found six separate FIFRA violations: three FIFRA-cognizable risks that EPA had "acknowledged" but "substantially understated," *id.* at 1124, and three other risks that EPA "failed entirely to acknowledge," *id.*

The First Set of FIFRA Violations: Risks EPA Substantially Understated

31. As to the first three violations—risks that EPA "substantially understated," the Ninth Circuit held that EPA understated (1) "the [dicamba-resistant] seed acreage that had been planted in 2018, and therefore the amount of dicamba herbicide that had been applied to post-emergent crops that year," *id.* at 1136; (2) the number of dicamba drift incidents, which was directly "contradicted by overwhelming record evidence that dicamba damage was substantially under-reported," *id.* at 1137–38; and (3) the amount of dicamba drift damage, *id.* at 1138.

32. As to seed acreage, the Ninth Circuit held that EPA improperly relied on a seed acreage prediction by Intervenor Bayer when in fact, the record showed it was at least a 25% underestimate of the actual dicamba-resistant soybean acreage, and the corresponding over-the-top dicamba sprayed in 2018. *Id.* at 1136–37.

33. As to the number of dicamba drift incidents, the Ninth Circuit found that "[t]he record clearly shows that complaints understated the amount of dicamba damage," and held that EPA's conclusion—that state dicamba drift injury reports "could have either under-reported or over-reported" the actual amount of damage—was not supported by substantial evidence. *Id.* at 1137.

34. The Ninth Circuit found that EPA had improperly "minimized the significance of the increase in complaints" even though EPA had admitted that many stakeholders—including AAPCO, university researchers, and some growers—said the complaints were under-reported. *Id.* at 1137. While EPA insisted that "others" indicated

that complaints may have been over-reported, the Court found that "Monsanto, and only Monsanto, was the 'others'" on which EPA relied. *Id.*

35. Instead, the Ninth Circuit found that according to EPA's own documents, drift injury complaints spiked in 2017 and 2018, and EPA had "no explanation for the spike other than" its over-the-top dicamba use approval. *Id.* The Court held that EPA's "purported agnosticism" as to the damage being over or under reported was "contradicted by *over-whelming record evidence that dicamba damage was substantially under-reported*." *Id.* (emphasis added).

36. For example, the Ninth Circuit pointed to the conclusion of an Iowa State professor, Robert Hartzler, who surveyed university field agronomists and sent EPA his conclusion that "[w]e know the reported incidences represent a very small fraction of total drift cases as farmers are reluctant to involve regulatory agencies." *Id.* at 1138 (concluding that less than 25% were reported). Similarly, an Indiana state chemist estimated that only one out of ten farmers damaged by dicamba drift actually filed complaints. *Id.* The Ninth Circuit found that EPA itself had even admitted that "not all reports of crop damage were reported." *Id.* The Ninth Circuit reasoned that if complaints to state departments of agriculture were under-reported, then "the amount of actual dicamba damage was, of course, even greater" than what EPA's 2018 decision document admitted. *Id.*

37. As to the amount of dicamba damage, the Ninth Circuit found that EPA "refused to quantify or estimate the amount of damage caused" or "even to admit that there was any damage at all." *Id.* EPA claimed that non-dicamba-resistant soybean crop damage was merely "potential" and that it did "not have information" to quantify the damages. *Id.* With regards to all other crops, damage to specialty crops, vegetables, and ornamental, fruit, and shade trees, EPA referred to them generally as only "alleged" damage to the "landscape." *Id.*

38. The Ninth Circuit found that EPA did have "information from which it could have quantified dicamba damage, even if it could not have calculated with precision

the reduction in yield caused by the damage." *Id.* EPA officials had given a September 2018 PowerPoint presentation showing that in 2017 that more than 3.6 million acres of soybean were damaged by dicamba, and in the registration decision EPA again used the 3.6 million figure. The same source, Professor Bradley of the University of Missouri, had reported that by mid-July 2018, already another 1.1 million acres had been damaged. *Id.*

39. As such, the Ninth Circuit found that based on the record, EPA also actually had a "great deal of quantitative information about extensive dicamba damage during both 2017 and 2018." *Id.* For example, the Ninth Circuit pointed to emails to EPA officials from university weed scientists and state department of agriculture representatives reporting injury to "specialty crops, vegetables, and ornamental, fruit, and shade trees." *Id.* The Ninth Circuit recounted numerous transmittals from state experts to EPA on damage, including: Dr. Ford Baldwin of Arkansas and Dr. Bradley of Missouri. *Id.* at 1138–39; the Kansas Department of Agriculture: "we have been overrun with dicamba complaints;" *id.* at 1139; the North Dakota State University pesticide program specialist: "what we now know, in 2018, is that minimizing off target movement of dicamba to a reasonable level is NOT possible … this level of movement is completely unacceptable," *id.*; the Tennessee representative: "wave after wave of dicamba exposure," *id.*; and from Professor Larry Steckel of the University of Tennessee: the drift crisis "is like nothing I have ever seen before … Dicamba drift for the past three years has often travelled a half mile to three-quarters of a mile and all too frequently, well beyond that," *id.* (estimating 40% of Tennessee non-DT soybean acres damaged).

40. Accordingly, based on this record evidence, the Ninth Circuit held that EPA's refusal to quantify the amount of damage caused was contrary to FIFRA and not supported by substantial evidence.

The Second Set of FIFRA Violations: Risks EPA Entirely Failed to Consider

41. As to the second trio of FIFRA violations, the Ninth Circuit found three risks that EPA "entirely failed to acknowledge" but was "statutorily required to consider,"

including (1) dicamba applicators' inability to follow the label instructions in the real world, despite EPA's heavy reliance on these instructions as mitigation, *id.* at 1139–40; (2) the economic costs stemming from the monopolistic effect of dicamba-resistant crop systems; and (3) the social costs of over-the-top dicamba spraying.

42. On the complex label, the Ninth Circuit found "extensive evidence in the record" indicating there was a risk of "substantial non-compliance" with the EPA label and its complex use instructions. *Id.* at 1139.

43. As the Ninth Circuit explained, the term "label" is a misnomer here "as that term is normally understood." *Id.* at 1140. Rather, the product use directions were 40-pages long and had gone through several iterations (2016, 2017 revisions, and 2018 revisions). There were myriad instructions and restrictions, including: time of day; wind speed (between 3-10 mph); temperature inversions; rain within 24 hours; wind direction; in-field downwind buffer; spraying equipment ground speed; spraying equipment length and height above ground; number of applications per season and per crop; certification and training; and others. *Id.* As described *infra*, EPA retained many of the restrictions in the challenged Registration Decision.

44. The Ninth Circuit concluded that record evidence was "substantial" that "even conscientious applicators had not been able to consistently adhere" to the use directions in real world farming conditions. *Id.* Rather, the record evidence showed that the instructions were "*difficult if not impossible*" to follow. *Id.* at 1124 (emphasis added).

45. Citing to the record, the Ninth Circuit noted that according to one agricultural company executive, the dicamba use "label" was "probably the most complex label I have ever seen in my 40-year career." *Id.* at 1140 (estimating that over the course of the entire 2017 summer, his operation only had 44 hours of application time that would have been allowed under the label). Other users told EPA that "there doesn't appear to be any way for an applicator to be 100% legal in their application," and "there is no legal way to spray the field," putting applicators in a "no win" situation. *Id.* at 1140. Others said that

trying to follow the instructions in real world farming conditions in their locations—such as blustery west Texas— "*basically a fairy tale. You can't do it.* Your fairy godmother has to pull out a wand, tap a pumpkin and turn it into a carriage." *Id.* at 1141 (emphasis added).

46. Nor was the evidence merely experiential. The Ninth Circuit cited Purdue University professors' calculation that, taking into account the restrictions based on wind speed and temperature inversions, there were *only 47 hours during the entire month of June* in which spraying the dicamba products would have been legal near Purdue's agricultural station during the 2018 growing season. *Id.* And of those total monthly hours, there were only 2 days where, during an 8-hour day, application would have been possible (11 hours one day, 8 hours another); the remaining hours were scattered throughout the rest of the month in smaller, stray increments. *Id.* The data underscored that, "in the real world," there are not "very many hours" where applicators can be "completely compliant." *Id.* Additionally, a state survey of Illinois commercial applicators showed that only 66% believed they were able to follow the label effectively and included comments like "I believe it is *impossible to make an on-label application* as the label is written … ." *Id.* at 1141 (emphasis added).

47. The Ninth Circuit noted that much of the record evidence dealt with the impossibility of the earlier 2016 and 2017 use directions, but in fall 2018 EPA added even more directions, such as reducing further the time of day when application can occur and total days when application are allowed after planting. *Id.* at 1141. Thus, the record evidence of substantial non-compliance with the prior label showed that compliance with the 2018 label "[would] be even more difficult." *Id.* Yet EPA "nowhere acknowledged the evidence in the record showing there had been substantial difficulty complying with the mitigation requirements of the earlier labels." *Id.* at 1142.

48. As to other economic costs, the Ninth Circuit held that EPA "entirely failed to acknowledge an[other] economic cost that is *virtually certain to result*" from the

registrations: namely, anti-competitive, monopolistic effects to the seed and related agricultural markets. *Id.* (emphasis added).

49. The Ninth Circuit noted that the predecessor to the dicamba-resistant crop system was the glyphosate-resistant crop system, with the seeds and pesticide (Roundup) sold together as a crop system. *Id.* at 1125. These crop systems already had become a near monopoly, with 92% of soybean in 2008 being Roundup Ready. *Id.* at 11142. Then, because of that overuse, the glyphosate-resistant weed problem led to Defendant-Intervenor Bayer's "solution" to the crisis it created: dicamba-resistant crops. *Id.* The Ninth Circuit found that dicamba-resistant crops were quickly "well on their way to the same degree of market dominance." *Id.* By 2017, dicamba-resistant crops constituted 25% of soybeans, and by 2018, 50%. *Id.*

50. The Ninth Circuit pointed to record evidence showing that farmers felt compelled by the increased planting of dicamba-resistant crops and the accompanying and increasing off-field drift damage to change from conventional soybean to dicamba-resistant soybean as a defensive measure. *Id.* at 1142-1143. Seed company executives wrote to EPA in 2017 and 2018, warning them about this anticompetitive economic cost. *Id.* at 1142 ("Even more alarming is the number of my customers who have told me they will plant all Xtend varieties, instead of my [conventional] seed, as a defensive measure against damage from [drift]."); *id.* ("[O]ver and over again from our farmer customers" we are hearing "I guess I will have to plant dicamba resistant soybeans next year to avoid the off target injury. I cannot afford to keep getting my soybeans damaged from dicamba."). Professors and weed scientists told EPA similarly. *Id.* at 1143 ("[D]icamba has a chemistry problem that likely cannot be fixed, or at least no evidence has been provided that it can be successfully applied … renewing the cotton and soybean registrations will leave the industry no choice but to plant 100% of the soybean acreage [with] this technology.")

51. Accordingly, the Ninth Circuit held that the over-the-top registrations "create[] a substantial risk that DT soybeans, and possibly DT cotton, will achieve a

monopoly or near-monopoly." *Id.* at 1143. This "anti-competitive effect" of the registrations "impose a clear economic cost," but EPA failed to even identify it, let alone take it into account. *Id.*

52. Finally, as to social costs, the Ninth Circuit held that EPA had also "entirely failed to acknowledge "a social cost that had already been experienced and was likely to increase." *Id.* There was "extensive evidence" in the record that the dicamba herbicides had "torn apart the social fabric of many farming communities." *Id.* Letters to EPA from stakeholders told them of the high, unprecedented cost, "pitting neighbor against neighbor; farmers threatening other farmers." *Id.* Responses to an Illinois survey included "in 43 years of business I have never seen a more divisive product among neighbors both farm and non-farm." *Id.* ("This technology cannot continue as is if we ever wish to raise a susceptible crop or maintain healthy relationships with our residential and environmental neighbors."). An Arkansas farmer was shot and killed in an argument over dicamba drift damage. *Id.* Not just farmers but homeowners and gardeners suffered damage as well: severe damage to trees, ornamental plants, shrubs, and vegetables. *Id.* ("These are 100-year old oaks. We're senior citizens and we don't have time to plant new trees and watch them get even halfway to maturity."). Accordingly, the Ninth Circuit held that the "severe strain on social relations in farming communities" where the dicamba products were being sprayed was a "clear social cost," but that EPA also failed to identify and take it into account. *Id.*

53. The Court explained that recognizing costs and considering them in the cost-benefit analysis is the critical piece of the FIFRA registration process, without which EPA cannot be sure a registration will not cause unreasonable adverse effects on the environment. *See id.* at 1144. Thus, for all these reasons and considering the record as a whole, the Ninth Circuit then concluded that substantial evidence did not support the new use registration decision because EPA had "failed to perform a proper analysis of the risks and the resulting costs of those uses." *Id.* at 1144. Applying the Ninth Circuit's criteria for

vacatur, the Ninth Circuit vacated the registrations. *Id.* at 1144–45. The Ninth Circuit concluded that EPA made "multiple errors," and its "fundamental flaws" were "substantial." *Id.* In so holding, the Ninth Circuit found it "exceedingly unlikely" that EPA could (lawfully) issue the same registration again for the new uses. *Id.* at 1145.

C. EPA's 2020 Post-Vacatur Cancellation Order

54. Just days after the Ninth Circuit's decision and in light of the Court's vacatur, EPA issued a "final cancellation order" for the 2018 registered over-the-top dicamba products.[8] In the order, EPA declared "pursuant to sections 3 and 6 of FIFRA," that "any distribution, sale, or use of these products in a manner inconsistent with this order" was a violation and that the "order will remain in effect unless and until it is amended or withdrawn." *Id.* at 11.

IV. The "More of the Same" 2020 Decision

55. Despite the Ninth Circuit's resounding rejection of EPA's prior risk assessment and approval, on October 27, 2020, EPA issued the challenged 2020 Decision, once again registering the same dicamba products for the over-the-top use on dicamba-resistant cotton and soybean that had been vacated by the Ninth Circuit less than five months prior. *See* A.4 (2020 Decision); A.5 (Tavium registration notice and label); A.12 (Engenia registration and label); A.13 (XtendiMax registration and label).

56. In issuing the re-approval, EPA had before it past studies, data, and assessments, as well as evidence of dicamba drift damage and other harms from the past registrations, including those found by the Ninth Circuit. *See, e.g.,* Am. Index to Admin. R. ECF 150–2; *see* 20–46, 56–107, 187–210 (listing past submissions, data, studies in Record index). And as discussed *supra*, because the 2020 Decision (and the subsequent 2022 and

[8] EPA, *Final Cancellation of Three Dicamba Products* (June 8, 2020), https://www.epa.gov/sites/default/files/2020-06/documents/final_cancellation_order_for_three_dicamba_products.pdf.

2023 Decisions) made little change to EPA's prior 2018 over-the-top dicamba use approval, the prior evidence of harm is equally relevant to this Court's evaluation of the challenged Decision. Accordingly, the Record is replete with evidence of the extent and amount of dicamba drift damage, between 2017 and 2019, much of which EPA acknowledged in its 2020 assessments. *See* A.4 at 7–8; A.6 at 26–32 (discussing past record harms); M.41 at 31, tbl.8 (USDA farmer survey concluding that only 1 in 25 dicamba drift incidents are reported, with true extent of dicamba damage estimated at 64,000 to a quarter million soybean fields covering 4.19 to 15.66 million acres in 2018 alone); A.3 at 40–41 (maps showing estimates of dicamba drift damage to soybean from 2017 season), 77; M.37o at 57–58, 75–76 (detailing extensive evidence of dicamba drift harms).

57. Just as the prior 2016 and 2018 registration decisions allowed, the 2020 Decision allows for the use of these three dicamba products in 34 states, including Arizona, totaling roughly 90 million acres of U.S. farmland. *See* A.4 at 12, 22.

58. The Record indicates that EPA rushed to re-approve over-the-top dicamba uses under pressure from the senior officials of the then-executive branch. *See* Ex-R.22 at 165 (EPA internal e-mail stating that "we can't postpone. We heard that from our boss."); *id.* ("our senior folks don't have any clue what they are asking us to do.").

59. Intervenors Bayer and BASF submitted registration applications for the same products (XtendiMax and Engenia) for over-the-top dicamba spraying on dicamba-resistant cotton and soybean in July 2020, less than a month after the Ninth Circuit had vacated their prior dicamba registrations. B.1 (Xtendimax application); C.6 (Engenia application). Similarly, on August 12, 2020, Intervenor Syngenta submitted an application to amend its Tavium registration, including a request that the registration's upcoming expiration date be extended. D.4; *see* A.4 at 9.

60. From then on, EPA worked around-the-clock to get the new use registrations approved, despite many staff members questioning [redacted]

[redacted]

[redacted]. E.13 at 5 (On [redacted].”); E.16 at 3 ([redacted].”); Ex-R.22 at 153 (discussing distribution agreements of the volatility reduction adjuvant (VRA) and noting that “If we had more time, we might be able to get agreement on some more explicit language to that effect … .”), 164 (“This is the most science involvement from a company I have ever witnessed on a product registration.”), 165 (“so they want to give us field study, complex tox studies, drift studies, etc … couple of weeks before the decision is due?”); *see* E.6 (EPA stating that it was [redacted]).

61. In its rush to re-approve over-the-top dicamba use and register Intervenors’ dicamba products, EPA mainly based its 2020 Decision on *past* studies and dicamba drift incident data that had previously been provided to EPA, even though EPA has since admitted that those prior assessments were tainted by political interference. *See, e.g.*, E.13 at 2 (EPA stating it was [redacted]); *see also* M.37o at 72–74 (EPA’s 57-foot omnidirectional buffer used in 2018 and again in 2020 contradicts EPA scientists’ 2018 recommendation to expand the action area to 443 feet); *see* Am. Index to Admin. R. ECF 150-2; *see* 20-46, 56-107, 187-210 (detailing past submissions, data, studies in Record index).

62. In May 2021, EPA’s Office of the Inspector General (OIG) issued a 29-page investigative report (the OIG Report) entitled “EPA Deviated from Typical Procedures in Its 2018 Dicamba Pesticide Registration Decision.”[9] In that OIG Report, EPA admitted

[9] EPA, Rep. No. 21-E-0146, *EPA Deviated from Typical Procedures in Its 2018 Dicamba Pesticide Registration Decision* (May 24, 2021), https://www.epa.gov/office-inspector-

that "scientific documents created to support the [2018] dicamba decision did not undergo "required internal peer reviews," and there were "senior-level changes to or omissions from scientific documents." *Id.* at 1 ("At a Glance" section), 8.[10] Those documents "excluded some conclusions" from EPA scientists. *Id.* at 1. The OIG Report gave specific examples, including that senior management dictated use of reduced plant height as the measure of dicamba plant harm, overruling EPA scientists' analysis based on the more robust visual signs of injury (VSI) measure. *Id.* at 9–10.

63. The OIG Report did not cover the 2020 Decision, despite it being made by the same EPA administration and officials as the 2018 registration. In the 2020 Decision, EPA acknowledged the superiority of the VSI measure, A.9 at 51 (admitting that "plant height can be highly variable"); *id.* at 54, tbl.I.20 (10% VSI "more robust and environmentally representative measure" than plant height). EPA also continued to apply the same 2018 politically-tainted plant height endpoint in certain critical analyses. *Compare* A.9 at 314 *with id.* at 317, tbI.1 (effect of temperature on distance to effect based on plant height reduction in 2 of 3 studies while in the third (MS Engenia), EPA excluded from its

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general/report-epa-deviated-typical-procedures-its-2018-dicamba-pesticide (attached as Ex. G to the Stevenson Decl.).

[10] Similarly, in an e-mail memorandum dated March 10, 2021 that has since been released and widely circulated in various media outlets, Michel Freedhoff, Ph.D., then the Acting Assistant Administrator for EPA's Office of Chemical Safety and Pollution Prevention, which oversees the Office of Pesticide Program, admitted that "political interference … compromised the integrity of [the 2018 over-the-top dicamba use approval]." E-mail from Michel Freedhoff, then-Acting Assistant Adm'r, EPA's Office of Chem. Safety & Pollution Prevention to EPA employees, https://int.nyt.com/data/documenttools/2021-03-michal-freedhoff-memo-to-epa-oscpp-employees/4e3931843c009f43/full.pdf (last visited Apr. 12, 2023) (attached as Ex. F to Stevenson Decl.). The March 10 memorandum admitted that EPA's then senior leadership directed staff to "rely on a limited data set of plant effect endpoints" in evaluating over-the-top dicamba use, and to "discount specific studies (some with more robust data) used in assessing potential risks and benefits;" as well as "scientific information on negative impacts."

analysis evidence that volatile drift traveled 40 meters to cause 10% VSI rather than at most 14.2 meters).

64. Nor did EPA in its 2020 Decision make any corrections to its prior 2018 tainted assessments or exclude them on the grounds it was tainted by undue political influence, instead the agency relied back on the 2018's underlying assessments and metrics and doubled down on them. Critically, EPA's omnidirectional 57-foot volatility buffer zone remained exactly the same between the 2020 and 2018 registrations, A.4 at 4; *see also* V.86 at 103-107, M.37o at 72-74 (showing that in setting 57-foot ESA buffer in 2018, management overruled EPA scientists' recommendation of 135 meter (443 foot) buffer).

65. Prior to issuing the 2020 Decision, EPA failed to adhere to the required procedural requirements under FIFRA required for new uses such as EPA's re-approval of over-the-top dicamba spraying, even though EPA's approval specifically authorized over-the-top dicamba spraying that would have otherwise expired on its own. *See* A.4 at 3 ("EPA did not hold a public comment opportunity for these registration actions."); D.4 at 1 ("The purpose of this label amendment is to change the directions for use removing the December 20, 2020 automatic expiration and subsequent prohibition of use after this date."). In 2018, when EPA extended and approved over-the-top dicamba spraying, EPA had explained that because "[dicamba] use will expire before the end of 2018 unless these amendments requests are granted … EPA believes it appropriate to consider the extension of these uses *as a 'new use'*… ." M.168 at 17.

66. While FIFRA regulations have a special process set forth in 40 C.F.R. Part 164 to "un-cancel" a previously cancelled pesticide or pesticide use, four months later, in re-registering the same dicamba products for over-the-top use, EPA did not go through any of those Part 164 processes or make any of the findings that are required in them. There is no record explanation why EPA did not do so, or that speaks to the issue at all. Instead, EPA proceeded to re-register the same dicamba uses as if it had never issued the cancellation order, which is still in effect.

67. Additionally, while the prior conditional approvals were limited to two years due to EPA's concern for dicamba drift damage and weed resistance, without any explanation, this time, EPA *unconditionally* registered the three dicamba registrations for a *five*-year term. *See* A.4 at 18, 26.

A. Failure to Address FIFRA Violations Found by the Ninth Circuit

68. The Record makes clear that the challenged Registration Decision failed to address the six FIFRA violations held by the Ninth Circuit. *See supra* ¶¶ 29-53.

Ineffective Label Restrictions

69. Once again, EPA failed to substantiate its reliance on infeasible use instructions to mitigate dicamba drift. As EPA had done in the 2016 and 2018 decisions, EPA relied on complicated, lengthy use restrictions/mitigations to support its registration decision. *See* A.4 at 20 ("EPA has determined that the mandatory control measures on these registrations address spray drift and volatility.").

70. The "mandatory control measures" (A.4 at 20) EPA relied upon are largely identical to the use restrictions from the 2018 decision that the Ninth Circuit had found to be "difficult if not impossible to follow for even conscientious users" in real-world farming conditions. *NFFC*, 960 F.3d at 1124. The repeated use restrictions include: a requirement that certified applicators apply the dicamba products; a limit of two over-the-top applications of dicamba per field per year for both dicamba-resistant cotton and dicamba-resistant soybean; a restriction limiting the time of day for spraying only to between one hour after sunrise and two hours before sunset; mandatory applicator training; prohibition on applying when sensitive crops or certain plants are immediately downwind; a 57-feet omni-directional buffer in areas with endangered species; and a requirement to apply only during wind speeds of 3-10 miles per hour. *See* A.4 at 4-5, tbl.1 (comparing use restrictions between 2018 and 2020 labels).

71. EPA retained the use instructions previously struck down by the Ninth Circuit, and then added even more restrictions in the 2020 Decision. Specifically, the 2020

Decision made three substantive changes: (1) While the prior registrations had based application cutoff on specified crop growth stage or days after planting, the 2020 Decision adopted nationwide calendar cutoff dates for applications: June 30th for applications on dicamba-resistant soybean and July 30th for applications on dicamba-resistant cotton; (2) EPA also made mandatory the addition of a specified volatility reduction adjuvant (VRA) in tank mixtures containing the registered dicamba products, when the use of VRAs was previously advised; and (3) EPA increased the downwind buffer from the previous 110 feet to 240 feet, and up to 310 feet in counties with endangered species, in an attempt to mitigate against dicamba spray drift. *See* A.4 at 4-5, tbl.1 (comparing use restrictions between 2018 and 2020 labels). EPA claimed that with these additional mitigation measures, the re-approval of over-the-top dicamba spraying would not result in unreasonable adverse effects on the environment, as the agency was required to find under FIFRA. *See* A.4 at 3 ("[Taking] into account the control measures required by labeling, EPA determined that the applications meet the standard for registration under FIFRA section 3(c)(5).").

72. The Record contains ample evidence of the infeasibility of the 2020 use instructions, building on the evidence of the impossibility of compliance from past seasons' similar measures for lawful over-the-top dicamba usage that were also before the agency, *see supra* ¶¶ 42-47, 56; V.87 at 4–45; A.1 at 1 ("Label requirements essentially make it impossible to do an on-label application"), 2 (AAPCO letter stating "[m]andatory annual product-specific applicator and handler training and other product stewardship activities … since the introduction of these products in 2016-219 have *not been successful* in significantly reducing the incidents of off-target movement in the major soybean producing states."), 3 ("Exhaustively detailed and specific drift management restrictions on current labels have not been successful in normalizing the incident of off-target movement of dicamba).

73. As to the nationwide calendar cutoff dates (June 30th for spraying over-the-top of dicamba-resistant soybean and July 30th for spaying over-the-top of dicamba-resistant

cotton), EPA found those dates [redacted]. *See, e.g.*, E.19 at 2 ([redacted].”); E.11 at 3 ([redacted]). Elsewhere in the Record, EPA admits that the June 30th cutoff date for spraying over dicamba-resistant soybean [redacted]” E.11 at 3. And detailed *infra*, the disastrous experience of the 2021 and 2022 growing seasons and EPA’s subsequent amendments in a handful of states demonstrate that EPA’s chosen calendar cutoff dates of June and July 30th, which EPA had kept in place for the majority of states despite twice making registration amendments, lacks substantial evidence in support.

74. As to the mandatory requirement to use VRAs in tank mixtures, the Record is replete with evidence indicating its lack of effectiveness at mitigating dicamba drift. In [redacted]: EPA staff pointed out [redacted] E.7 at 3. And EPA, as well as academics, repeatedly questioned the effectiveness of “[redacted]” to effectively reduce dicamba volatility in real-world conditions. *See* E.8 (university researchers noting that effectiveness of the buffering agent is reduced when growers have “soil temperature at 130 or higher, high soil moisture,” and also depends on “the amount of wind that is occurring.”); E.13 at 2 ([redacted]). Elsewhere, the Record also shows that EPA considered, [redacted]

[redacted]. *See* E.18 at 3; M.37aj at 95 (Arkansas weed scientist Norsworthy on need to prohibit glyphosate in tank mix to minimize injury).

75. As to the increase in downwind buffer distances, the Record shows that EPA lacked sufficient evidence to support its conclusion that increasing the downwind buffer would reduce dicamba drift. If anything, EPA openly admitted that it lacked data on how temperature and other natural factors may impact the effectiveness of the buffer distance in reducing dicamba drift. *See* E.8 at 2 (admitting that "limited work has been done to find a breaking point [where the buffer is no longer effective]"). EPA also readily admitted that the [redacted] E.13 at 4 (stating that [redacted]).

76. As EPA admitted, "the ease of compliance with the label restrictions will likely vary" depending on:

> the training and integrity of the applicator, the availability and cost of required spray adjuvants (e.g., pH buffering agents and drift reducing agents), the extent of weed pressure, whether weather conditions permit planned applications before cutoff dates, and how well buffer requirements can be incorporated in the farming operation. The complexity of the buffers (varying distances dependent on location [county], wind direction, adjacent sensitive crops or other plants), along with the complexity of the other control measures taken as a whole, may correlate with the ease of compliance.

A.6 at 3.

The Significant Costs of Dicamba Drift

77. The Record is also replete with evidence of the economic cost from dicamba drift on various sectors of U.S. agriculture and environment. *See, e.g.*, M.16 at 2 (weed scientist reporting 6,000 acres of soybean in South Dakota damaged by dicamba drift in summer 2020); *id.* (noting that farmers estimated that "40% of the soybean acres in at least one region of [South Dakota] are being affected by off-target movement of [dicamba]"); M.037af at 2–4 (dicamba drift destroys university soybean breeding program); M.032 at

(dicamba drift destroyed 250-acres of soybean experiments at University of Arkansas valued at $500,000.); V.74 (Arkansas' largest beekeeper shuts down because dicamba is destroying plants his bees need); M.117b at 26–27 (citing examples of people who are experiencing damage to their property and livelihoods, including their organic farms, forests, and apiaries); V.82 (Tennessee tobacco farmer about to go out of business due to dicamba drift), 141 (30-40% soybean yield reductions, amounting to $180 loss per acre or $100,000 for mid-size farm); P.497 at 1–4 (e-mail correspondence from weed scientist detailing dicamba damage to soybean fields and also trees.); V.83 at 13–19 (dicamba drift reducing honey production in several states); V.94 at 1-4 (Illinois orchard to lose 500-600 peach trees); A.6 at 3 (EPA admission that states "have reported budget shortfalls and other resource constraints due to the number of dicamba-related incidents"); M.037q at 5 (Iowan organic farmer stating that while in seasons past his farm harvest included 6,000-7,000 bell peppers, "[t]wo seasons ago we harvested seven peppers. Seven."); V.99 at 1-4 (the Fruit and Vegetable Industry Advisory Committee urging EPA not to renew over-the-top dicamba use due to damage to the industry); *supra* ¶¶ 48-51.

78. In addition to drift damage reports from different sources, EPA also had significant, quantifiable figures on the economic costs of dicamba damage from class action suits on dicamba drift damage on U.S. agriculture. *See, e.g.*, [redacted] at 1-20 ([redacted]); *id.* at 18 ("[T]he economic damage [from volatility] could be significant . . . ."); *id.* at 21-26 (Monsanto PowerPoint identifying off target movement of dicamba as the cause of crop loss, lawsuits and legal implications, negative press, damage to homeowners and organic growers, and infringement on "rights to farm"); A.3 at 12 (news article noted jury awarded $15 million in actual damages, and $250 million in punitive damages in drift damage lawsuit in Missouri, and that Bayer subsequently announced $400 million to settle similar class action suits).

79. EPA summarily noted that "[t]he impacts of offsite movement of dicamba from OTT applications to non-users can be substantial." A.6 at 3. Yet, other than repeating numerous reported drift incidents, nowhere in the Record does EPA attempt to quantify or even estimate the economic costs of dicamba drift, as the Ninth Circuit had held FIFRA required in order to properly weigh the true costs of the proposed registration. *NFFC*, 960 F.3d at 1138.

Anticompetitive Economic Effect

80. The Record for the 2020 Decision again makes clear the anticompetitive cost of EPA's approval of OTT dicamba use. EPA found that in 2017-2018, only about half of the acreage planted with dicamba-tolerant soybeans are treated with dicamba postemergence, and only 60 percent of cotton, A.6 at 43-44, and concluded that "the large proportion of dicamba-tolerant soybean that is not treated relative to other herbicide tolerant soybean varieties and to dicamba usage in dicamba-tolerant cotton, supports anecdotal reports [of defensive planting]," *id.* at 45. *See* M.037s (USDA on defensive adoption); M.017 (Baldwin stating "many growers have surrendered to the company marketing model, defensive planting"); V.76 at 2 ([redacted]), 3 ([redacted]); V.77 at 1 ([redacted]); V.84 at 7 ("It's not fair to say that the growers have embraced [dicamba technology], [i]t was the seed industry that decided to shift their entire seed lines [to dicamba tolerance]").

The Social Costs of Dicamba Drift

81. The Record also demonstrates that the social strife that the Ninth Circuit described as having torn the very fabric of farming communities continued. M.040

(dicamba opponent's farm machinery destroyed); V.94 at 6 (Illinois weed scientist in 2018 stating "I've lived in Illinois for all but two of my 49 years, and I've never seen anything like it before"); *id.* ("I know one farmer who got hit seven times by different growers. When this farmer turned it into the state regulatory agency, the entire community got mad at them,"); P.497 at 2 ("It is the most divisive herbicide technology ever in my 46 years as a weed scientist."); Ex-R.3 at 2 (describing "[f]armers threatening physical harm and retribution against applications, neighbors, and even family members"); Ex-R.5 at 11 ("There have been reports from growers with damaged crops stating that if the government didn't fix the problem they would take matters into their own hands, 'just like what happened in Arkansas a few years ago,'" referring to a murder over dicamba damage.); A.3 at 176.

82. Despite the Ninth Circuit having already held that this is a cognizable cost under FIFRA that EPA must consider and assess before registering over-the-top dicamba use, *NFFC*, 960 F.3d at 1143, EPA justified its refusal to do so by speculating that such social costs would continue even without the Decision, due to illegal dicamba use. A.6 at 46.

B. Risks that EPA Failed to Consider

83. EPA's risk assessments and the Record also identified drift risks that EPA entirely failed to consider, such injury from dicamba runoff, dicamba-contaminated rainfall, wide-area effects of dicamba application, dicamba harm to trees, and potential effects on threatened and endangered species.

Runoff

84. The Record shows that field studies on dicamba-offsite damage demonstrate that dicamba damage from runoff is a significant problem. *See* A.9 at 216, 233, 235, 242, 243, 247. The runoff study submitted by Intervenor Bayer showed dicamba concentrations in runoff from a 1.34-acre field exceeded EPA's plant harm threshold (the most sensitive plant endpoint) 7 days after dicamba spraying, and modeling of that study's result

projected that runoff 30 days after application would still exceed the same threshold. A.9 at 61.

85. EPA repeatedly expressed its concern regarding dicamba runoff in the months leading up to the 2020 Decision. [redacted] E.13 at 1–2. EPA stated [redacted] " E.15 at 1; *see* E.12 at 2 ("[redacted]"); E.15 (noting "[redacted]")

86. Despite these risks, in the 2020 Decision (and unchanged in 2022 and 2023), all EPA did was extend the limitation on spraying when rainfall that may exceed soil field capacity is forecasted from the previous 24 hours in the 2018 registration, to 48 hours, as well as noted generally "best management practices for minimizing runoff should be employed." A.9 at 8. However, EPA acknowledged with the 2018 registration that identifying the conditions likely to cause dicamba runoff "currently exceed the capabilities of most applicators and most regulatory compliance officials." M.37ag at 8; *see* E.15 ([redacted]).

Dicamba-contaminated Rainfall

87. Nor did EPA adequately address damage from dicamba accumulation in rainfall. EPA was aware that intensive dicamba use during rainfall in a concentrated amount of time leads to its accumulation in the air. M.37o at 15; M.64 at 4; M.95 at 4 (report from Missouri with over a hundred incidents when dicamba was detected in

Missouri rainwater and streams, including at levels injurious to sensitive plants). EPA scientists noted "[redacted]." E.12 at 4. Nothing in the 2020 Ecological Risk Assessment addressed this issue.

88. Similarly, in 2019 and 2020, Missouri scientists found "extremely high amounts of dicamba in rainfall" at concentrations injurious to sensitive plants – in three areas of the state. Ex-R.6 at 5.

"Wide Area" Effects

89. "Wide area" effects: "Wide area effects" refer to the "potential risks to non-target organisms that are located … in the surrounding broader landscape," A.9 at 9, 309–10, *see also* E.12 at 3, specifically those "at distances exceeding those observed in available field studies and suggested by available modelling tools," A.9 at 19.

90. The Record shows that "wide area effects" of dicamba damage are a significant concern. The dicamba drift damage episodes reported by registrants from 2017 to 2019 show drift damage occurred as far as 22,704 feet from the potential source. I.1 (Column M., Row 84). As EPA noted, the incident reports "show[] incidents that have occurred beyond the distances from treated fields, including the setback restrictions contained on earlier labeling for these products, intended to address spray drift and vapor drift routes of exposure." A.9 at 19. Even the field studies submitted by the registrants to EPA showed damaged by incursions of dicamba drift from external sources traveling over 1,400 feet, "far greater distances than the labeled in-field setbacks." A.9 at 261; *see also id.* at 59 (dicamba damage incident reported 8,089 feet from treated field), 250, 255, 258, 309 (discussing one study where source of dicamba drift was "beyond the field boundaries by 1000 ft or more.").

91. Yet EPA readily admitted that the studies before it—and the mitigation measures EPA adopted accordingly—only assessed and addressed the potential dicamba effects near-field. EPA stated in the 2020 Ecological Risk Assessment that "EPA cannot

definitively exclude the potential impact of vapor phase drift in the wide area zone based on an evaluation of the available large field off-field movement studies. A.9 at 19, 56 (explaining that the 57-foot volatility buffer "protect[s] against near-field impacts" in ESA counties), 320 (calendar cutoff dates to address "near-field plant effects."); E.11 ([redacted]); E.7 (EPA admitting that it had "scaling issues" where the national average for soybean fields is 80 acres, and the field studies were conducted with approximately 10 to 20 acre fields.); E.12 at 1 ("[redacted]"), 3 ("[redacted]"). Intervenor BASF also told EPA that "[redacted]." E.5 at 2.

Dicamba Damage to Trees

92. The Record also lacks support that over-the-top dicamba use would not result in unreasonable adverse effect on trees. As discussed *supra*, EPA had before it evidence establishing the significant damage of dicamba drift on trees. *See supra* ¶¶ 7, 20, 52; A.9 at 60 (discussing Audubon Arkansas monitoring initiative photographing injured trees; 178 out of 344 records submitted to EPA showed probable dicamba drift damage symptoms to a wide range of trees, including "Carolina buckthorn, catalpa, elms, hackberry, hibiscus, morning glory, magnolias, maples, mulberry, muscadine, oaks, pears, pecan, pepper vine, pokeweed, redbud, smooth sumac, sweetgum, sycamore, trumpet vine, tulip tree, and white popular."); *id.* (Prairie Rivers Network's volunteer monitoring program found likely dicamba drift symptoms on all 70 species of trees and broadleaf plant monitored).

93. Indeed, one 2018 conditional registration requirement was studying the effect of dicamba on trees, shrubs, and other woody perennial species. M.168 at 19. The Record shows that Intervenor Bayer submitted a preliminary Tier 1 study in February 2020, G.31 at 1, 15, and that that study [redacted] F.80 at 9, 32, [redacted], F.80 at 15. The study showed that the same dicamba application rate (0.000153 lb/acre) that inhibits growth of soybean by 25%, A.9 at 49 (soybean 25% inhibition concentration, $IC_{25,}$ = 0.000513 lb/acre), G.31 at 2, [redacted] F.80 at 21, 32.

94. EPA, throughout its assessment had designated soybean as the "plant most sensitive to dicamba" and relied on effects on soybean as its plant harm threshold, A.9 at 31, 49. However, despite the same application rate showing a greater reduction in red oak growth, G.31 at 15, EPA did not commission another Tier 2 study to determine whether red oak should replace soybean as the benchmark "sensitive plant" in EPA's risk assessments. However, this Tier 2 trees study was apparently never completed or submitted, and the 2020 ecological risk assessment only discusses the Tier 1 study. A.9 at 146.

95. The Record noted several deficiencies of the Tier 1 study, including that it was conducted using an older formulation (Clarity) not meant for over-the-top use, involved only one application, and the test ended after just 90 days. G.31 at 2; *see* F.80 at 1. These and other deficiencies led the EPA-contracted reviewers of the study to declare: "[t]his study *is not scientifically sound*" G.31 at 15 (emphasis in original).

C. EPA's Reversal Regarding States' Ability to Rely on FIFRA Section 24(c)

96. In issuing the 2020 Decision, EPA also reversed a decades-long EPA precedent. Previously, EPA has long allowed states to issue "special local needs labels" and regulate pesticides more restrictively than the national level using FIFRA's Section 24(c), 7

U.S.C. § 136v(c)(1), to address local agricultural, environmental, or public health needs by granting "additional uses" to federal pesticide labels.

97. However, in the 2020 Decision, EPA eliminated this critical local tool in a three-sentence footnote, without any opportunity for notice and comment. *See* A.4 at 20 n.19. This footnote marked EPA's public departure from its prior rule, after which EPA began disapproving restrictions under FIFRA 24(c).

98. Yet, just one year prior, EPA staff repeatedly discussed EPA's plans to provide public notice and comment on the proposed rule change. See Ex-R.14 at 3 (stating comment period will last 90 days); Ex-R.20 at 3 ("[former Assistant Administrator for EPA's Office of Chemical Safety and Pollution Prevention] wants to seek public comment on whether EPA should start rejecting more restrictive 24(c)s."). EPA also sent a letter to trade groups and posted a website notice, promising notice and comment. Ex-R.15 at 2 (EPA promising "before adopting any changes … we will solicit public comment on our proposed new approaches"); Ex-R. 16 at 4 (same). EPA's Office of Chemical Safety and Pollution Prevention recommended notice and comment, *see* Ex-R.18 at 2, and EPA produced not one but two draft Federal Register Notices and a proposed timeline. Ex-R.14 and Ex-R.17 (draft Notices); Ex-R.19 (timeline).

99. EPA's sudden reversal forced numerous states that had previously used FIFRA 24(c) to add restrictions on over-the-top dicamba uses, such as Iowa, Arkansas, and Minnesota, to weather the 2021 growing season without any state-specific restrictions and experience widespread damage.

D. Failure to Comply with the Endangered Species Act

100. There are over 1,300 species listed as either endangered or threatened in the United States under the Endangered Species Act.[11]

[11] https://www.epa.gov/endangered-species/endangered-species-species-information-factsheets#:~:text=There%20are%20over%201%2C300%20species,under%20the%20Endangered%20Species%20Act.

101. EPA determined that over-the-top use of dicamba would have "no effect" on any listed species, except for the Eskimow curlew and "no effect" on any designated critical habitats. A.9 at 16. As a result, EPA did not consult with the U.S. Fish and Wildlife Service (except informal consultation on the curlew) or the National Marine Fisheries Service. *Id.*

102. To reach these "no effect" determinations, EPA used a 2004 method that tracks the method it uses to make the FIFRA determination of whether effects are "unreasonable." A.9 at 16, 63. To start, this method primarily relies on the concentration at which the chemical is lethal to 50% of individuals (LD50 or LC50). A.9 at 30, 46. This determination is based on using surrogate organisms. A.9 at 32. EPA then uses a risk quotient (RQ) to compare exposure over toxicity. A.9 at 46. The RQs are compared to EPA's Level of Concern (LOC), which is EPA's "interpretive policy" to determine when there is potential for adverse effects on "non-target" organisms. *Id.*

103. For plants, EPA uses the same LOC for both listed and non-listed plants. A.9 at 33-34. ESA-listed plants warrant greater protection. They are listed because they are at risk of extinction. Listed plants generally have limited distribution, small population sizes, and, therefore, are vulnerable to localized extinction. For example, the whorled sunflower (*Helianthus verticillatus*) as endangered due to threats to its survival that include agricultural "chemical vegetation management" (herbicides) and "limited distribution and small population sizes."[12] Accordingly, the sunflower is "vulnerable to localized extinction ... ."[13]

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[12] Endangered and Threatened Wildlife and Plants; Candidate Notice of Review, 79 Fed. Reg. 44,712 (Aug. 1, 2014) (codified at 50 C.F.R. § 17.96 (a) (flowering plants)); *id.* at 44,714 (four counties);

[13] *Id.* at 44,715.

104. In a 2013 report, the National Academy of Sciences criticized this method as "not scientifically defensible" to determine effects of pesticides on ESA-listed species.[14] EPA told Intervenor BASF that [redacted] E.13 at 5.

105. In other biological evaluations on the effects of pesticides EPA used updated methods in response to the 2013 National Academy of Science report, rather than the 2004 method. These include chlorpyrifos (2018), diazinon (2018), malathion (2018), carbaryl (2021), methomyl (2021), atrazine (2021) and glyphosate (2021). *See* Addendum (ADD) at ADD47-50 (Decl. of Dr. Nathan Donley, Ph.D. ¶¶ 7–14) and ADD52-91 (Exs. 1–7).[15] Using newer methods, EPA has not yet determined "no effect" for all species or critical habitats, in fact, EPA finds "may affect" for most listed species and critical habitats. ADD47-50 (Donley Decl. ¶¶ 7–14). For example, for the herbicide glyphosate, EPA determined that zero of 1,795 ESA-protected species assessed would have "no effect" from use of glyphosate, while all 1,795 had "may affect" determinations. EPA determined that zero of 792 designated critical habitats would have "no effect" from use of glyphosate, meaning all 792 critical habitats had "may affect" determinations. *See* ADD49-50 (Donley Decl. ¶ 13) and ADD79-85 (Ex. 6).

106. Action Area: EPA constricted its overlap analysis by limiting the species' ranges and critical habitat locations. EPA started with a list of species and critical habitat in

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[14] National Research Council of the National Academies, *Assessing Risks to Endangered and Threatened Species From Pesticides* (2013), at https://nap.nationalacademies.org/catalog/18344/assessing-risks-to-endangered-and-threatened-species-from-pesticides; *see also Nat'l Fam. Farm Coal. v. EPA*, 966 F.3d 893, 925 (2020) (*Enlist*); *id.* at 932-33 (Watford, J., dissenting).

[15] Plaintiffs' ESA Section 7 citizen suit claim is not a record-based claim and thus Plaintiffs are entitled to apply extra-record evidence in support of it as necessary. *E.g., Western Watersheds v. Kraayenbrink*, 632 F.3d 472, 498 (9th Cir. 2011); *Ellis v. Housenger*, 2015 WL 3660079, *3-4 (N.D. Cal. 2015).

the 34 states labeled for use, but then limited its GIS layer by focusing only on listed non-monocot plants and listed species that have an obligate relationship to non-monocot plants. A.9 at 72. In addition, EPA only identified counties that had a greater than 1% overlap of species range or critical habitat within the already-restricted action area. *Id.*

107. EPA determined the action area by relying on certain "offsets" or buffers based on the most sensitive non-monocot plants and the large number of reports of plant incidents from off-field dicamba exposure. A.9 at 16. In only the 287 of 2671 counties (A.9 at 7) where endangered plants grow near the fields EPA required an in-field 57-foot omnidirectional setback and a 310-ft downwind setback (ESA setbacks). Many counties that have listed species are not included in the list of 287 counties. For example, the Poweshiek skipperling and Dakota skipper rely on plants for survival and have critical habitat in 11 and 8 counties, respectively, that do not have ESA setbacks. ADD50-51 (Donley Dec. ¶ 15). In the counties with ESA setbacks, EPA determined that the "action area" is limited to the edge of the field based on an assumption that dicamba would not leave the field. A.9 at 72. In the majority of counties where cotton and soybean have been grown in the past, EPA extended the action area beyond the fields by 98 feet. [redacted]. *See infra* ¶ 137. Evidence also shows that dicamba can damage plants, including trees, much farther from the field than 98 feet. *See supra* ¶¶ 89-95.

108. Regarding the 57-foot omnidirectional offset to protect endangered species from off-target movement of dicamba contradicts EPA scientists' 2018 recommendation to expand the action area to 443 feet (135 meters) after scientists had confirmed the validity of a 2018 study, which revealed injury to dicamba-sensitive soybeans 136 meters from the edge of a treated field. *See* M.37o at 72–74.

109. To determine the action area, EPA also relied on 10% visual sign of injury (VSI) to arrive at the 310-foot drift buffer. A.9 at 51. EPA does not explain why it did not

use a 5% VSI threshold, which would have called for a 370-foot drift buffer. EPA stated it [redacted]. E.9 at 1-2; E.15 at 3-4 ([redacted]" E.16 at 3; E.13 at 2. [redacted]. E.2 at 1. EPA again mentions [redacted]. E.1 at 1.

110. Critical Habitat: EPA relied on the same action are to determine the effects of over-the-top use of dicamba on critical habitat. In addition, the species itself must use the agricultural field and have a "direct toxic effect concern," and the action area must include dicamba effects on plants that are characteristic of the critical habitat. A.9 at 111. EPA concluded that only critical habitat for the whooping crane met its criteria., EPA determined "no effect" for whooping crane critical habitat because residues of dicamba that "are not reasonably expected to be at a level raising concern for direct effects to the whooping crane." *Id.* This resulted in a "no effect" determination for hundreds of critical habitats overlapping with the approved dicamba uses.

V. History Repeats Itself Again: the 2021 Growing Season and EPA's Damning 2021 Incident Report

111. The 2021 growing season proved just as damaging as prior seasons, with [redacted]. *See* U.1 at 18, 9. In response to reports of widespread damage, EPA began meeting with stakeholders in July 2021. *See* Ex-R.1 to Ex-R.7.

112. Numerous states reported their worst year of dicamba damage yet, including Minnesota where incidents doubled from the prior year, *see* Ex-R.5.at 5, Kansas, *id.* at 7, Missouri. *Id.* at 8 (impacted acres increased), Iowa, Nebraska, and Kansas. Ex-R.3 at 4. The states described "landscape level" and "fencerow to fencerow" damage, Ex-R.3 at 2, with

some suspected damage drifting from up to twenty miles, Ex-R.2 at 2. Arkansas reported "mass, landscape-level impacts" and damage to roughly 2/3 of all non-dicamba-resistant soybean in the state, Ex-R.2 at 3, while Illinois similarly reported county-wide damage. Ex-R.7 at 1.

113. Intervenor BASF confirmed in a 2021 meeting that these incidents came from over-the-top dicamba exposure, calling it "obvious [that] DT OTT applications are driving the core of [the incidents]." Ex-R.4 at 6. EPA agreed that [redacted] U.1 at 6. And not just any dicamba exposure, but over-the-top exposure (e.g., the use approved in this registration). The Report explains [redacted]. *Id.* at 34.

A. The 2021 Report and Its Admissions of Ongoing FIFRA Violations

114. These meetings with stakeholders, along with additional studies and incident reports, culminated in EPA's December 2021 Report, released on December 21, 2021. *See* U.1. The Report summarized information reported from states on label instructions' infeasibility, ongoing underreporting, and widespread damage to crops, including in 63 counties with endangered species. In fact, the Report admitted that the new restrictions resulted in [redacted] U.1 at 43.

115. Specifically, EPA reported over [redacted]. *Id.* Drift from these dicamba products injured [redacted], *id.* at 17, [redacted]

[redacted]. *Id.* at 24.

116. The Report also confirms that the 2020 Decision failed to address the issues found by the Ninth Circuit in June 2020, including the EPA's reliance on infeasible label restrictions, EPA's failure to account for underreporting, as well as the social and economic costs of dicamba drift.

2020 Label Restrictions: Still Ineffective

117. EPA's Report detailed how, yet again, EPA's registrations failed to provide feasible use instructions that farmers can actually follow in the real world. EPA admitted the same problem with [redacted] in the 2020 Decision, U.1 at 32, 33–34, and acknowledged [redacted]. *Id.* at 34–35.

118. [redacted] Even BASF admitted that it "[doesn't] think 100% compliance is reasonable with any product." Ex-R.4 at 6. And EPA stated "[i]n some areas if you map out when are compliant conditions, they're very limited." *Id.* at 7.

119. The Record shows that states agreed with EPA's statements regarding the impossibility of spraying the dicamba products under the current label use instructions. In early September 2021, AAPCO told EPA that "environmental conditions required on the label are so rare that it is impossible to follow," Ex-R.5 at 2, and described the label as the "biggest, gnarliest label ever seen." *Id.* at 10.

120. Specifically, state representatives explained that keeping applications within certain weather conditions is not functional, *id.*, and that temperature cut offs as detailed in the label are especially difficult in southern states where the temperatures get high early in the year. *Id.* at 11. Others explained that adhering to measures for cleaning would require applicators to spend hours every day cleaning out their tanks, *id.* at 10, and "there are *simply not enough hours in a spray season* to [spray dicamba] legally." *Id.* at 11 (emphasis added). A representative from Minnesota expressed concern that no applicator has been fully in compliance with the label since 2018. *Id.* at 10.

121. But real world farming feasibility aside, numerous states reported that even full compliance with the mitigation measures failed to prevent damage. North and South Dakota, for example, reported that some commercial applicators that closely follow the label still "won't even apply OTT dicamba due to potential liability." Ex-R.1 at 2. North and South Dakota also received reports from growers certain they followed the label, still experiencing damage. *Id.* (grower reporting "I did everything right, but 2 days later the wind shifted, the temperature increased, and fields down wind of where the wind shifted were damaged."); *id.* at 1 ("[T]hey have reports of neighbors working together so that Neighbor A assists Neighbor B with the application to make sure OTT dicamba is applied according to the label and damage still occurred to Neighbor A's soybeans.").

122. EPA's Report also provided substantial evidence that the label restrictions failed to reduce volatilization nor prevent spray drift. Indeed, [redacted]. State officials in Minnesota received reports that "dicamba is everywhere" and continues to damage entire fields in a pattern consistent with volatilization rather than drift. Ex-R.5 at 5. Weed scientists similarly reported entire soybean fields damaged with no

difference in severity across fields which is "clearly volatility." Ex-R.6 at 4 (statement of Dr. Hager).

123. Numerous states including North Dakota, Tennessee, Ex-R.5 at 2, Missouri, *id.* at 78, and South Dakota, *id.* at 9, also found that the touted VRAs failed to reduce volatility. *See also* U.1 at 37; *see* Ex-R.7 at 1 ("Seeing quite a bit of volatilization"); Ex-R.3 at 2 (75% damage in Nebraska attributed to volatility); *id.* (largely attributing damage in Missouri to volatility); Ex-R.5 at 2 (North Dakota and Tennessee indicated that the VRAs are not as effective as expected); *id.* at –9 (VRAs not working in Missouri, North Dakota, or South Dakota); Ex-R.6 at 4 ("Dr. Hager mentioned that the [2020] labels do not address volatility risks and the majority of incidents are not due to physical drift. There are entire soybean fields damaged with no difference in severity across field which is clearly volatility.").

124. EPA's cutoff date of June 30 for soybeans, intended to reduce volatility, also proved too late in the season for many states. For example, incidents in Minnesota doubled from 2020 following Minnesota's compliance with the federal cutoff date of June 30th instead of the cutoff date of June 20th from the year prior. Ex-R.5.at 5.

125. In addition to volatilization and the resulting vapor drift, EPA's label restrictions also failed to prevent spray drift. EPA claimed its [redacted]. *See* U.1 at 5. But both Texas, Ex-R.5 at 7, and Kentucky, *id.* at 4, reported ongoing problems with damage from spray drift during the 2021 growing season.

Underreporting

126. The Report also makes clear that once again, EPA continued to underestimate the amount of dicamba drift underreporting. The Report [redacted]. U.1 at 9; *see also id.* at 31 [redacted]

127. State regulators' findings in the Record also confirmed [redacted]. U.1 at 21; *see also* Ex-R.5 at 6-7 (Indiana, Minnesota, Ohio, and Oklahoma representatives all confirm underreporting). A Nebraska state representative estimated that for every acre of damage to soybeans reported this past summer, 10-20 acres went unreported. Ex-R.5 at 8.

128. For several states in the Midwest, experts and states explained this underreporting actually increased in 2021 due to severe drought intensifying visible crop damage and decreasing incident reporting. Ex-R.5 at 2; Ex-R.6 at 2. Growers' insurance policies for drought damage disincentivized reporting dicamba damage because many insurance companies do not pay out on losses associated with drift damage. Ex-R.5 at 5; *see also* Ex-R.1 at 2 ("If [growers] file a drift complaint and the insurance company finds out, the insurance company will not pay out (i.e., insurance will not payout on yield losses associated with chemical injury).").

129. Several states also reported that many growers fail to report incidents simply because they do not believe the reports lead to results. Region 7 reported that "[a] lot of farmers don't trust that reporting does anything. . . . Trust has been lost in certain places." Ex-R.3 at 4. Illinois, too, attributed underreporting to growers' "apathy" and the sentiment that reporting does nothing. Ex-R.7 at 2 ("[S]ometimes no complaints are being filed when there is damage because of apathy- because the person in a position to report doesn't think anything is going to happen[.]").

130. And states admitted that they lack resources to address the unprecedented dicamba damage. Ex-R.3 at 2 ("We couldn't keep up with the workload and farmers gave up and said what's the point."). Several state agencies reported that dicamba complaints require all their resources, while other states, such as Arkansas and Nebraska, have dedicated staff to receive the often 30-40 dicamba complaint calls a day. Ex-R.5 at 2. Arkansas reported its field staff was "inundated" with dicamba calls "so the only thing they

could do was dicamba," while all Minnesota's inspectors focus on only dicamba. *Id.* at 11. Indiana inspectors no longer have time to investigate all dicamba complaints and told EPA that "[d]icamba investigations are changing the way they do business." *Id.*

Social Costs of Over-the-Top Dicamba Spraying

131. The Report also revealed that the 2020 Decision [redacted]

132. Specifically, Region 7 reported "[f]armers threatening physical harm and retribution against applications, neighbors, and even family members" over dicamba damage. Ex-R.3 at 2; U.1 at 28 ("[redacted] Nebraska reported that growers with damaged crops in 2021 continued to threaten "if the government didn't fix the problem they would take matters into their own hands, 'just like what happened in Arkansas a few years ago,'" referring to a fatal shooting that was caused by dicamba drift damage. Ex-R.5 at 11.

133. These social impacts also lead to further underreporting because "[i]ndividuals do not want to turn in their neighbor." Ex-R.1 at 2; Ex-R.5 at 5 (same sentiment in Minnesota).

The Economic Costs of Dicamba Drift Damage

134. States also reported significant financial losses for growers, as well as the incentive and pressure on growers to defensively switch to the dicamba crop system to mitigate these losses.

135. Illinois reported receiving "'Can't eat anymore based on my financial losses' type of complaints," forcing growers to switch to dicamba against their wishes to avoid further damage. Ex-R.7 at 4. Region 7 similarly described farmers' decisions to defensively switch to dicamba resistant soybean as "a farm management business decision – go with nonDT and get damage or plant DT soybeans defensively." Ex-R.3 at 4.

136. Reports from academics presented to EPA also confirmed that defensive planting continued in 2021. Ex-R.6 at 2.

B. Harms to Endangered Species

137. EPA's Report also admitted that the 2020 Decision resulted in [redacted] U.1 at 5, 17, 32, 43, "[redacted]." *Id.* at 5, 32, 45.

138. In a December 2021 meeting with the State FIFRA Issues Research and Evaluation Group (SFIREG), EPA stated, "What EPA is seeing so far indicates that dicamba-related damage still occurred in the 2021 season, including incidents in counties where additional Endangered Species Act-related control measures were required." Ex-R.8 at 2.

139. Specifically, North and South Dakota described incidents in counties with endangered species. Ex-R.1 at 1-2, and Iowa estimated 30 incidents in ESA counties throughout the state. Ex-R.3 at 2.

140. As a result, EPA admitted to SFIREG that "[t]he Agency is no longer certain whether over-the-top dicamba can be used in a manner that is protective of listed species, their designated critical habitats, and non-target plants." Ex-R.8 at 3.

24(c) Rule Change

141. States also expressed frustration that they could not use FIFRA 24(c) to mitigate the damage during the 2021 growing season after EPA's 2020 Decision removed states' abilities to add use restrictions in "special local needs labels." As explained *supra*, this rule change removed states' abilities to quickly respond to dicamba damage through

the quick 24(c) process, instead requiring states to go through formal rulemakings and other state legislative processes under FIFRA 24(a).

142. Minnesota described EPA's removal of its FIFRA Section 24(c) authority to change this cutoff date to address volatility as "having their feet cut out from under them." Ex-R.5 at 10. Illinois, too, expressed concern that putting restrictions in place under FIFRA 24(a) would take approximately four months, Ex-R.7 at [redacted] U.1 at 29.

C. EPA Rejected Stakeholders' Mitigation Suggestions

143. Despite the widespread damage, EPA rejected stakeholders' suggestions to amend the 2020 Decision nationwide with further use restrictions. For example, during EPA's meeting with AAPCO months prior, Arkansas suggested mitigation measures such as an earlier cutoff date of May 25, Ex-R.5 at 7, and Indiana of June 20. *Id.* at 5. [redacted] U.1 at 38.

144. And even though EPA recognized that [redacted]

145. Following the Report's release, EPA publicly admitted—multiple times—that it was no longer certain whether the 2020 Decision complied with FIFRA or the ESA.

146. On FIFRA, EPA stated in its official agency Press Release attached to the December 2021 Report and its Talking Points that "[g]iven the new information from the

2021 growing season, EPA is reviewing whether over-the-top dicamba can be used in a manner that does not pose unreasonable risks to non-target crops and other plants, or to listed species and their designated critical habitats. EPA is also evaluating all of its options for addressing future dicamba-related incidents." Ex-R.10 at 3–4; *see also* Ex-R.9 at 2–3.

147. And on the ESA, Meg Hathaway, a senior regulatory specialist with EPA's Office of Pesticide Programs, publicly admitted what EPA told SFIREG in its December meeting: "The agency is no longer certain whether over-the-top dicamba can be used in a manner that is protective of listed endangered species, critical habitats and non-target plants," a critical admission of EPA's ESA violation. Ex-R.11 at 2; *see also* Ex-R.8 at 3 (same).

VI. The 2022 Decision

148. Soon after the Report's release, EPA began receiving letters and correspondence from different states, seeking to mitigate future damage. *See* Ex-R.23; Ex-R.12. In early January 2022, Minnesota reached out to EPA, requesting a call to discuss a supplemental label for dicamba in the state. Ex-R.23. By February 3, 2022, both Minnesota and Iowa had proposed changes to EPA, while North Dakota continued to consider proposing an earlier June 25 cutoff date. Ex-R.12 at 3, 6. Additionally, Intervenor Bayer told EPA that it was expecting proposed amendments from Wisconsin, *id.* at 5, and that additionally, it was "awaiting word from [Illinois and Indiana] and other states" on potential proposals. *Id.* at 3.

149. In addition to these state-specific changes, Intervenor Bayer pushed for EPA to take immediate action to protect endangered species prior to the 2022 season, stating in a February 3, 2022 email: "[G]iven concerns raised by EPA about the 2021 season, we believe additional ESA-focused interim measures *should be implemented prior to the 2022 season*." *Id.* at 3 (emphasis added). Specifically, Intervenor Bayer suggested restricting applications to pre-emergent only for 2022 in each of the counties where ESA plants were previously identified, unless applicators use a qualified spray hood. *Id.*

150. Intervenors also repeatedly made similar representations to this Court and Plaintiffs. On January 20, 2022, then again on February 15, 2022, Intervenors assured Plaintiffs and this Court that EPA was "considering material label amendments that would apply during the upcoming 2022 season." Intervenors' Opp'n, ECF 68, at 1; *see also* EPA's Resp., ECF 72 (same). Specifically, Intervenors made clear that EPA was considering restrictions in counties with potential ESA concerns, which "would go into effect prior to the 2022 growing season and would include substantial changes in application cutoff dates." *See* Intervenors' Opp'n, ECF 68, at 11

151. However, EPA never acted on Intervenor Bayer's suggestions, instead focusing only on amendments for Iowa and Minnesota: on March 15, 2022, EPA approved label amendments for only Minnesota and Iowa, two out of the thirty-four states where over-the-top uses are authorized, despite EPA's Report of extensive dicamba drift damage in at least 29 states across U.S. landscapes from the 2021 season. *See* Q.9; R.9; S.1.

152. And despite prior discussions with Intervenor Bayer regarding potential amendments in other states, and in spite of EPA and Intervenors' representation to the Court otherwise, EPA only made two minor amendments in those two states, neither of which did anything to address continued potential harm to endangered species that EPA acknowledged in the 2021 Report. *See supra* ¶ 137. Specifically, EPA moved up the cutoff date for dicamba spraying over-the-top of dicamba-resistant crops in those two states, as well as approved a prohibition on spraying when the temperature is over 85 degrees in Minnesota. *See* S.1 at 1 ("The amendment approved through this letter includes additional, state-specific application date (Iowa) and application date and temperature (Minnesota) restrictions intended to further reduce volatility to minimize off-field movement of the active ingredient dicamba."); R.9 at 1 (same); Q.9 at 1 (same).

153. EPA's sole rationale for these amendments consists of one vague paragraph stating the cutoff dates render it "likely" volatilization will reduce because its 2020

ecological risk assessment found volatilization increases with temperature. *See* Q.9 at 1–2; R.9 at 1–2; S.1 at 1–2.

154. EPA's 2022 Decision did not address the myriad of impacts to other states described in its December 2021 Report. EPA provided no explanation as to why its additional use restrictions only apply to Iowa and Minnesota, or why it only approved a temperature-based prohibition on dicamba use in Minnesota, other than those were the only measures in the only two states for which the registrants had proposed label amendments.

155. Nor did EPA's amendments address difficulties with compliance, as described in its December 2021 Report. EPA did not explain how these very same use restrictions it found infeasible and insufficient just months prior will prevent unreasonable effects on the environment in Minnesota and Iowa. *See* U.1 at 38 ([redacted]

156. EPA also failed to discuss or give any rationale for its action as to the harms to federally protected species EPA found in its December 2021 Report. [redacted]. U.1 at 5, 18.

VII. The 2022 Growing Season and Latest 2023 Decision

157. Despite the 2022 Amendment EPA believed would "likely" reduce damage, EPA's press release announcing its 2023 amendments admitted that "based on incident reports received and discussions with state regulators, weed scientists, and academics, EPA has reason to believe dicamba-related incidents continued through the 2022 growing

season as well."[16] As a result, EPA again made additional amendments (the 2023 Amendment) in February 2023 to the dicamba pesticide registrations approved under the Decision, making changes to "further restrict the use of over-the-top dicamba in Iowa, Illinois, Indiana and South Dakota."[17] *See* W.1 at 2; X.1 at 2; Y.25 at 2.

158. In an attempt to reduce dicamba vapor drift, the 2023 Amendment again moved up the cutoff date for over-the-top dicamba spraying to earlier in the growing season, to June 12th in Iowa, Illinois, and Indiana, and to June 20th in South Dakota. *See* W.1 at 2; X.1 at 2; Y.25 at 2.

159. Unsurprisingly, considering EPA only acted in two states in 2022, EPA's public docket on the over-the-top dicamba spraying shows that, beginning in the summer of 2022, states once again raised concerns of dicamba drift damage to EPA. During a meeting organized through AAPCO, Indiana, Kansas, Michigan, Ohio, and South Dakota reported 2022 incidents on par with previous years, and Kentucky reported an increased number of incidents compared to prior growing seasons.[18]

160. The 2022 AAPCO-States Dicamba Survey also demonstrates ongoing damage in Nebraska, Iowa, Illinois, Indiana, Kansas, Arkansas, and Missouri.[19] Specifically,

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[16] *Id.*

[17] *See* Press Release, EPA, EPA Approves Requested Labeling Amendments that Further Restrict the Use of Over-the-Top Dicamba in Iowa, Illinois, Indiana and South Dakota (Feb. 16, 2023), https://www.epa.gov/pesticides/epa-approves-requested-labeling-amendments-further-restrict-use-over-top-dicamba-iowa#:~:text=Released%20on%20February%2016%2C%202023,Illinois%2C%20Indiana%20and%20South%20Dakota.

[18] AAPCO August 16, 2022 EPA-OPP Dicamba Meeting Minutes 1, https://www.regulations.gov/document/EPA-HQ-OPP-2020-0492-0031 [hereinafter *AAPCO Meeting*] (attached as Ex. I to the Stevenson Decl.).

[19] *See* AAPCO, 2022 AAPCO-States Dicamba Survey, https://aapco.org/wp-content/uploads/2022/09/Data_All_220922.pdf (last visited Apr. 12, 2023) [hereinafter *AAPCO-States Survey*] (attached as Ex. K to the Stevenson Decl.).

Indiana reported in the survey that damage in 2022 was much more widespread and persistent than in the previous two years, with some growers documenting 10-15% yield losses. *AAPCO-States Survey* at 28 (line 4).

161. Numerous experts echoed these concerns and reported damage to research plots, including experts from the University of Illinois, North Dakota State University, Louisiana State University, Kansas State University, University of Kentucky, Purdue University, Mississippi State University, University of Missouri, and the University of Tennessee.[20] At Purdue University, "field research plots were destroyed" in 2022, and University of Missouri expert, Kevin Bradley, reported that the damage renders it "impossible to do certain types of research." *AAPCO-WSSA Survey* at 8.

162. As in previous years, many states and experts indicated that the actual number if drift incidents is much higher than the reported figures because they are seeing visible damage in fields at a frequency that does not match the incident counts. *AAPCO Meeting* at 1. For example, despite the lack of reporting, Michigan made plain that "[t]here [was] extensive damage to soybeans across portions of the state and almost none of the damage is being reported." *AAPCO-States Survey* at 28, line 7.

163. Experts reported the same. Expert Kevin Bradley noted that in Missouri last summer "[r]eporting [was] minimal because no farmer has gotten satisfaction from reports in the past years."[21] *See Weed Meeting* at 3 (Jason Norsworthy, expert from the University of Arkansas, noted "The number of complaints is going down, as [growers] don't see value in submitting complaints."), 4 (Larry Steckel, expert from the University of Tennessee, stated

[20] AAPCO-WSSA 2022 Dicamba Survey, https://aapco.org/wp-content/uploads/2022/08/wssa-dicamba-2022.pdf (last visited Apr. 12, 2023) [hereinafter *AAPCO-WSSA Survey*] (attached as Ex. L to Stevenson Decl.).

[21] Weed Science August 15th 2022 Dicamba Meeting EPA-OPP Notes 3, https://www.regulations.gov/document/EPA-HQ-OPP-2020-0492-0030. [hereinafter *Weed Meeting*] (attached as Ex. H to Stevenson Decl.).

"There are not many reports of off-target movement anymore … However, dicamba damage is all around."), 5 (Aaron Hager, expert from the University of Illinois, stated that "[U]sers in Illinois are experiencing dicamba fatigue and frustration with the lack of resolution from past complaints."), 6 (Joe Ikley, expert at North Dakota State University, stated that 2022 had fewer complaints, but "there is still unreported injury that's observable."); *see also AAPCO Meeting* at 5 ("[I]n Ohio, issues are visible in the fields but for whatever reason, they are not being reported.").

164. Additionally, as in past years, states reported a lack of resources to address the high volume of complaints they received in 2022. *AAPCO Meeting* at 10 ("The representative from Michigan explained that they want to send out inspectors and document damage, but they don't have the resources to do that and are concerned that the department would be flooded with requests to come document."); *id.* at 9 (Arkansas reporting that "[p]rior to 2017, the understanding was that anything FIFRA related had to be investigated and every investigation was an official investigation," but since over-the-top dicamba uses began, "this is a can of worms based on staffing and trying to get the appropriate information with the resources they have available."). The Missouri Department of Agriculture reported 100% turnover in inspectors because they are "tired of the extraordinary workload and the threats." *Weed Meeting* at 3.

165. Notably, states with decreases in incidents last summer did not attribute decreases to either state-based restrictions or federal label restrictions. AAPCO Meeting at 2. Rather, state regulators in Illinois, Indiana, Iowa, Minnesota, Nebraska, and North Dakota attributed the decreases to specific weather patterns in the 2022 season— high winds and wet weather—that resulted in later planting and thus prevented growers from applying dicamba post-emergence. *AAPCO Meeting* at 1. South Dakota also attributed its slight reduction to more growers defensively planting dicamba-resistant seeds, *id.* at 7, and Indiana to growers failing to report and dicamba fatigue, *id.* at 2.

166. Notably, even Minnesota and Iowa refused to attribute the reduction in incidents solely to the 2022 Amendment. Rather, Minnesota attributed its reduction to late planting combined with the early cutoff date. *Id.* at 2. Minnesota officials reported a cool, wet spring that delayed planting so significantly that many growers did not have time to apply dicamba before the June 12th cutoff date. *Id.* Iowa also had a slow start to planting in spring 2022 due to spring weather, spurring numerous requests from applicators for an extended cutoff date, and leading to fewer dicamba applications overall. AAPCO Meeting at 6. Nevertheless, Iowa still received double the number of dicamba incidents versus those seen before the initial 2017 growing season for the total of all pesticide incidents. *Id.* at 2.

167. In response to ongoing damage, numerous states expressed interest in additional 2023 restrictions. Indiana suggested limiting dicamba to pre-plant, pre-emergent, or burndown use only, while South Dakota suggested cutoff dates as early as June 1. *AAPCO-States Survey* at 27. Kentucky also expressed its intention to add restrictions for 2023. *Id.* at 26, line 3.

168. Following those August 2022 meetings, it took more than six months for registrants to act to protect states. The process began when Bayer submitted its first proposal to EPA on September 7, 2022 for a fast-track 2023 amended registration for numerous states. Z.41 at 1; *see also* Y.1; Y.2; Y.3; Y.4. This initial proposal added June 12th cutoff dates for Iowa, Illinois, and Indiana; a June 20 cutoff date for South Dakota, and the same 2022 restrictions for Minnesota. Y.1. The Record indicates that Bayer also proposed a June 12th cutoff date for several other states, though the details are redacted. *Id.* Syngenta and BASF followed with their own proposals. *Id.* In the months following, Intervenors and EPA engaged in an ongoing discussion concerning the scope of the 2023 Amendment. As with Bayer, Syngenta and BASF's earlier proposals identified more than the four states for which EPA ultimately did act.

169. On February 16, 2023, EPA approved the proposed label changes for Iowa, Illinois, Indiana, and South Dakota. As with the 2022 Amendments, EPA explained that

the 2023 amendment "supersedes the previously approved labeling" but otherwise "does not affect any terms and conditions that were previously imposed" and re-affirmed that the registrants "continue to be subject to the existing conditions." Z.21; Z.77.

170. EPA's sparse rationale, once again consisting of a single paragraph in registrants' terms and conditions letters, stated it based the 2023 Amendment on the 2020 ecological risk assessment and a single season of claimed success in Minnesota. *See* Z.21 at 1–2; Z.23 at 1–2; Z.77 at 1–2 (EPA's terms and conditions letters to registrants); *see also* Z.41 at 1–2 (Bayer's rationale adopted by EPA). But according to states and academics, the 2022 growing season in Minnesota did not provide a reliable metric for whether the June 12th cutoff date reduced damage due to an unusually wet spring preventing many growers from using dicamba before the cutoff date as well as underreporting following five years of growing dicamba fatigue. AAPCO Meeting at 1; Weed Science Meeting at 5; AAPCO-States Survey. And Bayer admitted that its rationale for the 2023 amendments, adopted by EPA, was not based on peer-reviewed studies. *See* Z.41 at 4.

171. The Record contains no further explanation or any rationale as to why EPA ultimately only acted to further restrict over-the-top dicamba spraying in those four states, when the data before the Agency showed dicamba drift injury incidents in numerous other states. EPA claims the four states accounted for a "significant percentage" of dicamba damage, Z.21 at 1, Z.23 at 1, Z.77 at 1, but if anything the Record shows that in total, [redacted] U.1 at 18. [redacted] *See id.* But nowhere did EPA explain how its 2023 amendments will mitigate damage in those states.

172. Furthermore, nowhere did EPA explain how the 2023 amendments will protect federally listed species. (Even if the additional restrictions did somehow protect species in Indiana, Illinois, Iowa, Minnesota, and South Dakota, [redacted] U.1 at 18.)

173. Just as it stated in December 2021 that it continued to assess whether dicamba could be sprayed without posing "unreasonable risks" to other crops, EPA again stated on February 16, 2023 that it is still "evaluating all of its options for addressing future dicamba-related incidents."[22]

Respectfully submitted this 12th day of April 2023.

s/ George Kimbrell
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[22] Press Release, EPA, EPA Approves Requested Labeling Amendments that Further Restrict the Use of Over-the-Top Dicamba in Iowa, Illinois, Indiana and South Dakota (Feb. 16, 2023), https://www.epa.gov/pesticides/epa-approves-requested-labeling-amendments-further-restrict-use-over-top-dicamba-iowa#:~:text=Released%20on%20February%2016%2C%202023,Illinois%2C%20Indiana%20and%20South%20Dakota.