PETITION TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY TO CANCEL THE REGISTRATION OF PESTICIDES THAT CAN PROMOTE RESISTANCE TO MEDICALLY IMPORTANT ANTIBIOTICS AND ANTIFUNGALS

SUBMITTED BY

THE CENTER FOR BIOLOGICAL DIVERSITY

ANTIBIOTIC RESISTANCE ACTION CENTER,
THE GEORGE WASHINGTON UNIVERSITY

CALIFORNIANS FOR PESTICIDE REFORM

CENTER FOR ENVIRONMENTAL HEALTH

CENTER FOR FOOD SAFETY

CRLA FOUNDATION

FRIENDS OF THE EARTH U.S.

PESTICIDE ACTION & AGROECOLOGY NETWORK

UNI CENTER FOR ENERGY & ENVIRONMENTAL EDUCATION

US PIRG

I. SUMMARY OF THE REQUESTED ACTION

Pursuant to the right to petition the government provided in the First Amendment to the U.S. Constitution[1] and the Administrative Procedure Act,[2] Petitioners Center for Biological Diversity, Antibiotic Resistance Action Center—the George Washington University, Californians for Pesticide Reform, Center for Environmental Health, Center for Food Safety, CRLA Foundation, Friends of the Earth U.S., Pesticide Action & Agroecology Network, UNI Center for Energy & Environmental Education, US PIRG, on behalf of themselves and their millions of members and supporters, request for the U.S. Environmental Protection Agency (EPA) to cancel all registrations under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of any pesticide product that contains any of the following active ingredients that are themselves, or whose use can promote cross-resistance to, medically important antibiotics/antifungals: streptomycin and streptomycin sulfate (collectively referred to as streptomycin), oxytetracycline hydrochloride and calcium oxytetracycline (collectively referred to as oxytetracycline), kasugamycin hydrochloride (referred to as kasugamycin), gentamicin sulfate (referred to as gentamicin), and ipflufenoquin, and triazole fungicides (including, but not limited to, cyproconazole, fenbuconazole, flutriafol, difenoconazole, paclobutrazol, myclobutanil, propiconazole, prothioconazole, tebuconazole, tetraconazole, and triadimefon).[3]

Research is clear that the use of antibiotics and antifungals as pesticides poses a threat to public health because it contributes to the evolution of pathogens that are resistant to medicine.[4] Petitioners make this request because of the critical nature of these drugs and drug classes to human and veterinary medicine, along with scientifically established concerns related to increasing resistance and declining efficacy rates as a result of prophylactic and other uses of these antimicrobials outside of the medical field. Streptomycin, gentamicin and oxytetracycline are antibiotics that have been deemed essential for use in human medicine and that exist as essential tools to fight certain types of dangerous infections.

Other antibiotics and antifungal pesticides are closely related to medically important products and widespread use in agriculture can contribute to cross-resistance. Cross-resistance can happen when a bacteria or fungus develops resistance to one substance, such as an antibiotic used as an agricultural pesticide, and concurrently becomes resistant to another substance such as a medicinal antibiotic. This occurs most often when the antibiotic or antifungal is from the same class or has a similar mechanism of action.

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[1] *See* U.S. Const. Amend. I; *see also United Mine Workers v. Ill. State Bar Ass'n*, 389 U.S. 217, 222 (1967) (explaining that the right to "petition for a redress of grievances [is] among the most precious of the liberties safeguarded by the Bill of Rights").

[2] 5 U.S.C. § 553(e).

[3] FIFRA defines a "pesticide" as "any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest[.]" 7 U.S.C. § 136(u).

[4] Qiu et al., *Response of Microbial Antibiotic Resistance to Pesticides: An Emerging Health Threat*, *Sci. of the Tot. Environ.* 850: 158057, https://doi.org/10.1016/j.scitotenv.2022.158057 (2022); Sonkar, V., Devtalla, H. & Kumar, S. *Pesticide-Driven Antimicrobial Resistance in Water Bodies: Insights on Environmental Concerns, Health Implications and Mitigation Strategies*, *Environ. Geochem. Health* 47, https://doi.org/10.1007/s10653-025-02600-y (2025), 282.

Many antibiotics and antifungals approved as agricultural pesticides are in the same class or share similar modes of action to medically important products. The fungicide ipflufenoquin shares the same mode of action as the medical drug Olorofim, raising concerns about antifungal resistance in the treatment of fungal infections in humans.[5] Kasugamycin is in the same aminoglycoside family as streptomycin and gentamicin and can promote in cross-resistance to members of that family. Triazole fungicides used in agriculture are in the same family as azole antifungal medicines, such as fluconazole, isavuconazole, and voriconazole, and can contribute to class-wide azole resistance in fungi.

Additionally, use of antibiotic pesticides directly threatens the wellbeing of humans and animals through contamination of food supplies and crops. Petitioners believe that the most effective way to safeguard human and environmental health is to disallow the use of these ingredients in pesticide products.

Because the registrations of pesticide products containing streptomycin, gentamicin, oxytetracycline, kasugamycin, ipflufenoquin, and triazole fungicides, cause significant unreasonable adverse effects under FIFRA, cancellation of these pesticides is not only warranted but essential for protecting public health, consumers, and imperiled wildlife. In the interim, pending complete cancellation of these products, EPA should take additional steps to suspend the registrations of these pesticides through processes provided under FIFRA.

II. PETITIONERS

The Center for Biological Diversity is a non-profit environmental advocacy group with over 1.7 million members and supporters that seeks to protect plants and animals in their natural ecosystems. Through its Environmental Health Program and Pesticides Reduction Campaign, the Center for Biological Diversity has long advocated for more protective pesticide regulations because of these chemicals' impacts on human health, native biological diversity, and global sustainability.

The Antibiotic Resistance Action Center (ARAC) at the George Washington University was created to preserve the effectiveness of antibiotics by engaging in research, advocacy, and science-based policy. ARAC is comprised of epidemiologists, microbiologists, communications and policy experts focused on finding out-of-the box solutions to combat antibiotic resistance.

Californians for Pesticide Reform is a non-profit coalition whose mission is to protect public health, improve environmental quality and support a sustainable and just agricultural system by building a diverse movement across California to change statewide and local pesticide policies and practices.

The Center for Environmental Health is a nonprofit corporation dedicated to protecting the public from toxic chemicals by working with communities, consumers, workers, government,

[5] Environmental Health News, *US Fungicide Approval Threatens Effectiveness of New British Drug*, https://www.cieh.org/ehn/ehn-extra/2024/january/us-fungicide-approval-threatens-effectiveness-of-new-british-drug (2024).

and the private sector to demand and support business practices that are safe for public health and the environment. The Center for Environmental Health works in pursuit of a world in which all people live, work, learn, and play in healthy environments.

The Center for Food Safety is a public interest, nonprofit membership organization whose mission is to empower people, support farmers, and protect the earth from the harmful impacts of industrial agriculture. Through groundbreaking legal, scientific, and grassroots action, CFS protects and promotes the public's right to safe food and the environment.

CRLA Foundation is a statewide non-profit civil legal aid organization providing free legal services and policy advocacy for California's rural poor, and some of the most marginalized communities--the unrepresented, the unorganized and the undocumented. CRLAF seeks to bring about social justice by working to address the most pressing needs of our community in labor, housing, education equity, healthcare access, worker safety, citizenship, immigration, and environmental justice, through education and outreach, impact litigation, legislative and administrative advocacy, and public policy leadership at the state and local level.

Friends of the Earth U.S. is a non-profit environmental organization with over 226,000 members located across the United States, with a mission to defend the environment and champion a healthier and just world by reducing greenhouse gas emissions and reliance on fossil fuels and ensuring environmental and social justice, human dignity, and respect for human rights.

The Pesticide Action & Agroecology Network's (PAN) mission is to end reliance on hazardous pesticides and achieve health, resilience and justice in food and farming. PAN uses grassroots science, strategic communications and coalition organizing to build power with communities across the U.S. and around the world to confront the harms of industrial agriculture and build solutions.

The UNI Center for Energy & Environmental Education creates opportunities for students, faculty, and staff at the University of Northern Iowa and beyond to work with community leaders to arrive at evidence-based, solution-oriented responses to the problems they wish to address. We offer technical assistance and services, educational programs, and leadership in energy and environmental conservation, community-based agriculture, and environmental health through staff, national service members, and volunteers.

U.S. PIRG is a federation of independent, state-based, citizen-funded Public Interest Research Groups working to advocate for consumers and advancing solutions to problems that affect our health, our safety and our wellbeing.

III. <u>ACTION REQUESTED</u>

Because of the dangers posed by use pesticides that are themselves, or whose use can promote cross-resistance to, medically important medically important antibiotics and antifungal, Petitioners hereby petition EPA to suspend and cancel the use of the pesticide active ingredients detailed below, and products containing those active ingredients including those in Appendix A, pursuant to FIFRA § 136d:

(1) Streptomycin sulfate, PC Code 006310
(2) Streptomycin, PC Code 006306
(3) Oxytetracycline hydrochloride, PC Code 006308
(4) Calcium oxytetracycline, PC Code 006321
(5) Gentamicin, PC Code 006324
(6) Gentamycin sulfate, PC Code 006325
(7) Kasugamycin, PC Code 230001
(8) Ipflufenoquin, PC Code 129120
(9) 1H-1,2,4-Triazole, 1-((4-bromo-2-(2,4-dichlorophenyl)tetrahydro-2-furanyl)methyl)-, PC Code 120503
(10) Cyproconazole, PC Code 128993
(11) Fenbuconazole, PC Code 129011
(12) Flutriafol, PC Code 128940
(13) Difenoconazole, PC Code 128847
(14) Paclobutrazol, PC Code 125601
(15) Myclobutanil, PC Code 128857
(16) Propiconazole, PC Code 122101
(17) Prothioconazole, PC Code 113961
(18) Tebuconazole, PC Code 128997
(19) Tetraconazole, PC Code 120603
(20) Triadimefon, PC Code 109901

IV. LEGAL AND FACTUAL BASIS FOR THE PETITION

A. Federal Insecticide, Fungicide, and Rodenticide Act

Enacted in 1947, FIFRA was created with the express goal of regulating the registration, distribution, sale, and use of pesticides in the United States. The Administrator of the EPA is responsible for carrying out the mandates of FIFRA. Pursuant to this obligation, FIFRA Section 3 requires any pesticide and pesticide product to be registered with EPA before it can be distributed or sold, and EPA is responsible for continuously reviewing all registered pesticides and pesticide products.[6] EPA "issues a license, referred to as a 'registration,' for each specific pesticide product allowed to be marketed; the registration approves sale of a product with a specific formulation, in a specific type of package, and with specific labeling limiting application to specific uses."[7] In order for EPA to evaluate an application for pesticide registration, an application must "describe[e] how the pesticide will be used, the claims made of its benefits, the ingredients, and a description of all tests and studies done and the results thereof, concerning the product's health, safety, and environmental effects."[8]

FIFRA Section 3(c)(5), "Approval of Registration," provides that EPA can register a pesticide only if the agency determines that:

[6] 7 U.S.C. § 136a(a).
[7] 69 Fed. Reg. 47,732, 47,733 (Aug. 5, 2004).
[8] *Pollinator Stewardship Council v. EPA*, 806 F.3d 520, 523 (9th Cir. 2015).

(A) its composition is such as to warrant the proposed claims for it;
(B) its labeling and other material required to be submitted comply with the requirements of this subchapter;
(C) it will perform its intended function without unreasonable adverse effects on the environment; and
(D) when used in accordance with widespread and commonly recognized practice it will not generally cause unreasonable adverse effects on the environment.[9]

The term "unreasonable adverse effects on the environment" is further defined as: "(1) any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide, or (2) a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under section 408 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 346a)."[10] When EPA applies this risk-benefit balancing test, it may only register a pesticide if it finds that the risks associated with the use of a pesticide are justified by the benefits of such use.[11] In order to remain registered, a pesticide must continue to meet this risk-benefit standard, which EPA may reassess at any time.[12]

After an applicant submits sufficient data for pesticide registration, EPA may grant "unconditional registration" under § 136a(c)(5). "Unconditional registration necessarily requires sufficient data to evaluate the environmental risks."[13] If an applicant has not submitted sufficient data to support unconditional registration, EPA may conditionally register the pesticide under certain limited circumstances.[14]

A pesticide or pesticide product remains registered until EPA or the registrant cancels it pursuant to FIFRA Section 6.[15] Under Section 6, if it appears to EPA that a registered pesticide has "unreasonable adverse effects on the environment" when "used in accordance with widespread and commonly recognized practice," then EPA may undertake cancellation proceedings.[16] Any interested person may petition EPA to cancel a registered pesticide product.[17] EPA is required by the Administrative Procedure Act to resolve the petition "within a reasonable time."[18]

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[9] 7 U.S.C. § 136a(c)(5).
[10] *Id*. § 136(bb).
[11] *Washington Toxics Coal. v. Environmental Protection Agency,* 413 F.3d 1024, 1032 (9th Cir. 2005) (explaining that FIFRA uses a "cost-benefit analysis to ensure that there is no unreasonable risk created for people or the environment from a pesticide.").
[12] *Id.* at 1033 ("EPA retains discretion to alter the registration of pesticides for reasons that include environmental concerns." (citing 7 U.S.C. §§ 136d(c)(1)–(2), 136(l)); see also *Natural Resources Defense Council v. Johnson*, 422 F. Supp. 2d 105, 109 (D.D.C. 2006) ("The EPA uses numerous types of review processes to periodically reevaluate a registered pesticide's risks and benefits." (citing *Beyond Pesticides/National Coalition Against the Misuse of Pesticides v. Whitman*, 294 F. Supp. 2d 1, 2 (D.D.C. 2003))).
[13] *Pollinator Stewardship*, 806 F.3d at 523; see also 7 U.S.C. § 136a(c)(5) (listing the findings required for unconditional registration).
[14] See 7 U.S.C. § 136a(c)(7).
[15] *Id*. § 136d.
[16] *Id*. § 136d(b).
[17] 40 C.F.R. § 154.10; *Washington Toxics*, 413 F.3d at 1033.
[18] 5 U.S.C § 555(b).

B. Factual Background

1. *Medically Important Antibiotic Pesticide Usage in the United States*

Currently, there are dozens of active antibiotic pesticide products registered by the EPA. Of these, approximately 25 use streptomycin sulfate,[19] 20 use oxytetracycline hydrochloride,[20] eight use calcium oxytetracycline,[21] and five use kasugamycin.[22] Streptomycin and oxytetracycline are the most commonly used antibiotics in pesticides.[23] In 2021, EPA and the United States Department of Agriculture (USDA) estimated use in just plant agriculture of streptomycin to be 25,533 kilograms and of oxytetracycline to be 18,005 kilograms.[24] Gentamicin sulfate was approved on an emergency basis in Michigan in 2007,[25] but is currently not in any registered pesticide products.

Streptomycin, gentamicin and kasugamycin are members of the aminoglycoside class of antibiotics. The World Health Organization (WHO) list of medically important antibiotics, developed in partnership with the Food and Agriculture Organization, the United Nations Environmental Programme, and the World Organisation for Animal Health, classifies streptomycin as a "critically important" antibiotic.[26] The Food and Drug Administration's recently updated draft guidance classifies aminoglycosides as "critically important" for treating infections in people.[27] In human medicine, streptomycin is used to treat tuberculosis caused by mycobacterium tuberculosis, as well as infections caused by *brucella spp*. and *francisella tularensis*.[28] It is a common treatment for urinary tract and endocardial infections.[29] Kasugamycin has also proven effective against urinary infections in humans, specifically those

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[19] U.S. Envtl. Prot. Agency, *Chemical Name: Streptomycin sulfate*, https://ordspub.epa.gov/ords/pesticides/f?p=113:6:::::P6_XCHEMICAL_ID:3944 (2025).
[20] U.S. Envtl. Prot. Agency, *Chemical Name: Oxytetracycline hydrochloride*, https://ordspub.epa.gov/ords/pesticides/f?p=113:6:::::P6_XCHEMICAL_ID:3203 (2025).
[21] U.S. Envtl. Prot. Agency, *Chemical Name: Calcium oxytetracycline*, https://ordspub.epa.gov/ords/pesticides/f?p=113:6:::::P6_XCHEMICAL_ID:1679, (2025).
[22] U.S. Envtl. Prot. Agency, *Chemical Name: Kasugamycin*, https://ordspub.epa.gov/ords/pesticides/f?p=113:6:::::P6_XCHEMICAL_ID:2657, (2025).
[23] McManus et al., Antibiotic Use in Plant Agriculture, *Annual review of phytopathology* 40, 443–65. https://doi.org/10.1146/annurev.phyto.40.120301.093927 (2002), 443.
[24] Albrecht et al., Antibiotics in Crop Products, *Agricultural and Horticultural Enterprises* 1, 1–6. https://doi.org/10.32473/edis-hs1366-2020 (2023), 1–2.
[25] U.S. Envtl. Prot. Agency, *Registration No. 06MI01*, *Section 18 Emergency Exemption for the application of Gentamicin Sulfate to Apples. Human-Health Risk Assessment*. (Mar. 21, 2007), https://www.regulations.gov/document/EPA-HQ-OPP-2006-0234-0022.
[26] World Health Org., *WHO List of Medically Important Antimicrobials: a risk management tool for mitigating antimicrobial resistance due to non-human use*, 6th Revision, Geneva https://cdn.who.int/media/docs/default-source/gcp/who-mia-list-2024-lv.pdf?sfvrsn=3320dd3d_2 (2024), 19.
[27] U.S. Food & Drug Admin., *Evaluating the Safety of Antimicrobial New Animal Drugs with Regard to their Microbiological Effects on Bacteria of Human Health Concern*, *Draft Guidance for Industry #152* https://www.fda.gov/media/69949/download (2023), 28.
[28] Demars et al., *Persistence and Evidence for Accelerated Biodegradation of Streptomycin in Agricultural Soils*, *Sci. Total Envt.*, 929, 1–9. https://doi.org/10.1016/j.scitotenv.2024.172502 (2024), 2.
[29] U.S. Envtl. Prot. Agency, *R.E.D. FACTS: Streptomycin and Streptomycin Sulfate*, https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/fs_PC-006306_1-Sep-92.pdf (1992), 2.

caused by *Pseudomonas aeruginosa*.[30] Additionally, kasugamycin has been found to target an enzyme important in the pathogenesis of COVID-19[31] and has potential to become an effective treatment for tuberculosis both in itself and by reducing resistance to the anti-tuberculosis drug rifampicin.[32] Gentamicin is an important therapy for treating severe sepsis, particularly in children.

Since its introduction to the agricultural market in the 1950s, bacterial strains of *pseudomonas spp*. and *xanthomonas campestris* have developed resistance against streptomycin.[33] Drug-resistant *pseudomonas aeruginosa*, a type of *pseudomonas spp*., is classified as a "serious threat" to human health by the Centers for Disease Control (CDC).[34]

Antibiotic resistance weakens veterinarians' abilities to treat diseases in our pets and livestock, just as it hinders doctors' abilities to treat infections in their patients. Streptomycin sulfate is used to treat a range of bacterial infections in cows, goats, horses, sheep, and pigs.[35]

Over half of agricultural streptomycin used in the United States is to treat fire blight on apples and pears.[36] The antibiotic is also used to treat bacterial blights and spots in beans, celery, pepper, tomato, and potatoes,[37] and has been applied in efforts to fight off citrus greening and citrus canker diseases. However, streptomycin resistance has already developed in species of bacteria similar to that which causes citrus canker, indicating streptomycin will soon become ineffective to treat such infections.[38] Similarly, a study of apple orchards conducted from 2017 to 2019 in 21 counties in Ohio found the presence of transferable streptomycin resistance in epiphytic bacteria and *E. amylovora* strains of bacteria that cause fire blight.[39] The research found that the application of streptomycin for fire blight control exerts selective pressure on nontarget bacteria, which then become a source of resistance genes in orchard environments.[40]

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[30] Nat'l Ctr. for Biotechnology Info., *PubChem Compound Summary for Kasugamycin*, https://pubchem.ncbi.nlm.nih.gov/compound/kasugamycin (2025).
[31] Kamle et al., *Chitinase 3-Like-1 Is a Therapeutic Target That Mediates the Effects of Aging in COVID-19, JCIInsight* 6(21), 1–18. https://doi.org/10.1172/jci.insight.148749 (2021), 5, 10, 12.
[32] Chaudhuri et al., *Kasugamycin Potentiates Rifampicin and Limits Emergence of Resistance in Mycobacterium Tuberculosis by Specifically Decreasing Mycobacterial Mistranslation*, *eLife*, 1–18. https://doi.org/10.7554/eLife.36782 (2018), 1.
[33] Mann et al., *Antibiotic Resistance in Agriculture: Perspectives on Upcoming Strategies to Overcome Upsurge in Resistance*, *Curr. Res. in Microbial Sci.* 2, 1–14. https://doi.org/10.1016/j.crmicr.2021.100030 (2021), 2.
[34] Centers for Disease Control, *Antibiotic Resistance Threats in the United States, 2019*, Atlanta, http://dx.doi.org/10.15620/cdc:82532 (2019), 4.
[35] Advacare Pharma USA, *Streptomycin Sulfate for Injection*, https://www.advacarepharma.com/en/veterinary/streptomycin-sulfate-for-injection. (last visited July 30, 2025).
[36] U.S. Envtl. Prot. Agency, *R.E.D. FACTS: Streptomycin and Streptomycin Sulfate*, https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/fs_PC-006306_1-Sep-92.pdf, (1992), 1.
[37] Albrecht et al., *Antibiotics in Crop Products*, *Agricultural and Horticultural Enterprises* 1, 1–6. https://doi.org/10.32473/edis-hs1366-2020 (2023), 4.
[38] Zhang et al., *A Study on the Mechanism of Resistance to Streptomycin in Xanthomonas oryzae pv. oryzae*, *African J. Biotechnol.*, 79(10). https://doi.org/10.5897/ajb11.628 (2011).
[39] Jimenez Madrid & Lewis Ivey, *An Overview of Streptomycin Resistance in Erwinia amylovora from Ohio Apple Orchards, Plant Health Progress* 24(1), 56–61. https://doi.org/10.1094/PHP-08-22-0074-RS (2023), 58.
[40] *Id*. at 59.

In 2023, the United States Court of Appeals for the Ninth Circuit vacated an EPA rule that would have allowed expansion of the use of streptomycin to citrus crops.[41] While this decision avoided worsening the problems posed by streptomycin, it did not invalidate previous approvals of streptomycin products or confront the dangers posed by continuing uses of streptomycin.

Oxytetracycline, the second most commonly used antibiotic in pesticides, is a type of tetracycline. The WHO classifies tetracyclines as "highly important" for human health.[42] The Food and Drug Administration's recently updated draft guidance classifies tetracyclines as "highly important" for treating infections in people.[43] For human medical applications, oxytetracycline is used to treat many common infections of the respiratory tract, sinuses, middle ear, and urinary tract, as well as for anthrax, plague, cholera, and Legionnaire's disease.[44] For pets, oxytetracycline is used to treat bacterial infections in cats, dogs, cattle, sheep, and horses.[45] Like streptomycin, oxytetracycline is used to treat fire blight in apples and pears and bacterial spot in peaches and nectarines, as well as to prevent yellowing of coconut palm.[46] Oxytetracycline is also used to treat citrus greening, also known as huanglongbing, and citrus canker.[47]

2. *Usage of Agricultural Fungicides that can Promote Cross Resistance in the United States*

In 2022, EPA approved registration of Kinoprol, which has the active ingredient ipflufenoquin, for use on almonds and pome fruits, including apples and pears.[48] There are now currently five registered pesticide products with the active ingredient ipflufenoquin.[49]

Ipflufenoquin shares the same mode of action as Olorofim, a drug used to treat aspergillosis, a group of infections caused by breathing in the spores of the aspergillus fungus.[50]

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[41] *Migrant Clinicians Network v. U.S. Environmental Protection Agency*, 88 F.4th 830, (9th Cir. 2023).
[42] World Health Org., *WHO List of Medically Important Antimicrobials: a risk management tool for mitigating antimicrobial resistance due to non-human use*, 6th Revision, Geneva, https://cdn.who.int/media/docs/default-source/gcp/who-mia-list-2024-lv.pdf?sfvrsn=3320dd3d_2 (2024), 24.
[43] U.S. Food & Drug Admin., *Evaluating the Safety of Antimicrobial New Animal Drugs with Regard to their Microbiological Effects on Bacteria of Human Health Concern*, *Draft Guidance for Industry #152* https://www.fda.gov/media/69949/download (2023), 31.
[44] Shistar & Curle, *Agricultural Uses of Antibiotics Escalate Bacterial Resistance*, *Pesticides & You*, Winter 2016–2017, 9–17. https://www.beyondpesticides.org/assets/media/documents/journal/bp-36.4-w17-Antibiotics-Cited2.pdf (2017), 13.
[45] Hyland, *Oxytetracycline*, VCA Animal Hospitals, https://vcahospitals.com/know-your-pet/oxytetracycline. (last visited Jul. 30, 2025).
[46] U.S. Dept. of Agric., *Tetracycline (Oxytetracycline)*, https://www.ams.usda.gov/sites/default/files/media/Tetracycline%202010%20report%202011.pdf (2011), 2–3.
[47] U.S. Envtl. Prot. Agency, *PRIA Label Amendment – Oxytetracycline*, https://www3.epa.gov/pesticides/chem_search/ppls/080990-00001-20181204.pdf (2018), 10.
[48] U.S. Envtl. Prot. Agency, *Notice of Pesticide Registration of Kinoprol 20 SC*, https://www3.epa.gov/pesticides/chem_search/ppls/008033-00139-20220329.pdf (2022).
[49] U.S. Envtl. Prot. Agency, *Chemical Name: Ipflufenoquin*, https://ordspub.epa.gov/ords/pesticides/f?p=113:6:::::P6_XCHEMICAL_ID:29502 (2025).
[50] Smethurst, US Fungicide Approval Threatens Effectiveness of New British Drug, *Chartered Institute of Environmental Health*, (2024), https://www.cieh.org/ehn/ehn-extra/2024/january/us-fungicide-approval-threatens-effectiveness-of-new-british-drug/.

Olorofim shows promise for treating all invasive fungal diseases for which few or no treatment options exist.[51] Aspergillosis kills around a million people each year globally, and individuals with compromised immune systems, such as transplant patients, those undergoing chemotherapy, and people fighting off severe flu or COVID-19 infections, are particularly at risk.[52]

Agricultural use of ipflufenoquin has been shown to select for resistance to both ipflufenoquin and Olorofim in *Aspergillus fumigatus*,[53] meaning the spraying of ipflufenoquin into the environment directly threatens the capability of Olorofim to heal fungal infections in humans and save lives.

Triazole medicines itraconazole, voriconazole, and posaconazole are alternative antifungals used to treat aspergillosis, but the efficacy of these treatments is similarly under threat from pesticide applications of triazoles.[54] Triazoles such as tebuconazole are persistent, or long-lasting, in soils and water.[55] This persistence extends the window of opportunity for multi-azole resistance development in fungal strains, making continued use of triazoles in pesticides unreasonably risky to human health.

Studies have found that agricultural tebuconazole, epoxiconazole, propiconazole, hexaconazole, and metconazole applications promote the emergence of triazole resistance[56] and that fungicides with similar modes of action to those used in human drug therapy (in other words, antifungals in the triazole family) contribute to the development of multi-resistant fungal populations.[57] The observation that agricultural fungicide applications select for resistance to antifungal drugs has been corroborated by studies in Spain, Belgium, Norway, Great Britain, Denmark, France, China, Italy, Austria, and India.[58] In the United States, researchers have isolated azole-resistant fungal strains from agricultural environments in the Southeast and found evidence of agricultural origins of pan-azole-resistant *A. fumigatus* in clinical settings.[59]

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[51] Maertens et al., *Olorofim for the Treatment of Invasive Fungal Diseases in Patients With Few or No Therapeutic Options: A Single-Arm, Open-Label, Phase 2b Study*, *The Lancet Infect. Dis*., https://doi.org/10.1016/s1473-3099(25)00224-5 (2025).
[52] *Id*.
[53] Rhijn et al., *Apergillus fumigatus Strains That Evolve Resistance to the Agrochemical Fungicide Ipflufenoquin In Vitro are also Resistant to Olorofim*, *Nat. Microbiol.* 9, 29–34. https://doi.org/10.1038/s41564-023-01542-4 (2024), 29.
[54] Cao et al., *Triazole Resistance in Aspergillus fumigatus in Crop Plant Soil After Tebuconazole Applications*, *Environ. Pollut.* 266, 1–8. https://doi.org/10.1016/j.envpol.2020.115124 (2020), 1.
[55] Herrero-Hernandez et al., *Field-Scale Dissipation of Tebuconazole in a Vineyard Soil Amended With Spent Mushroom Substrate and Its Potential Environmental Impact*, *Ecotoxicol. & Environ. Safety* 74(6), https://doi.org/10.1016/j.ecoenv.2011.04.023 (2011), 1480–1488; Papdopoulou et al., *Dissipation and Absorption of Isoproturon, Tebuconazole, Chlorpyrifos and Their Main Transformation Products Under Laboratory and Field Conditions*, *Sci. Total Environ.*, https://doi.org/10.1016/j.scitotenv.2016.06.133 (2016), 86–96, 569–570.
[56] Cao, *supra* note 51, at 7; Ren et al., *Fungicides Induced Triazole-Resistance in Aspergillus fumigatus Associated With Mutations of TR46/Y121F/T289A and Its Appearance in Agricultural Fields*, *J. Hazard. Mater.* 326, https://doi.org/10.1016/j.jhazmat.2016.12.013 (2017), 54–60.
[57] Ribas et al., *Is The Emergence of Fungal Resistance to Medical Triazoles Related to Their Use in The Agroecosystems? A Mini Review, Braz. J. Microbiol.* 47, 793–799, https://doi.org/10.1016/j.bjm.2016.06.006 (2016), 795.
[58] *Id*.
[59] Kang et al., *Evidence For the Agricultural Origin of Resistance to Multiple Antimicrobials in Aspergillus fumigatus, a Fungal Pathogen of Humans*, *G3* 12(2), 1–9. https://doi.org/10.1093/g3journal/jkab427 (2021), 7.

To protect human health and the capacity for doctors to treat patients with dangerous fungal infections, EPA should cancel the registrations of pesticide products containing ipflufenoquin or triazoles.

3. *Antibiotic Resistant Bacteria Threatens to Pose a Major Public Health Crisis*

Before the invention of antibiotics, a seemingly innocuous throat infection or a scrape to the skin could become deadly. Thanks to developments in medicine over the past two centuries, most people no longer fear fatality from such simple ailments. However, antibiotic overuse is undermining the efficacy of these essential treatments, threatening to set off a major public health crisis in which doctors are once again unable to prevent sicknesses like strep throat from turning into a life-threatening case of sepsis.

Already, the CDC considers antibiotic resistance "one of the greatest global public health challenges of our time."[60] According to the CDC's 2019 report "Antibiotic Resistance Threats in the United States," more than 2.8 million antimicrobial-resistant infections occur in the United States each year, resulting in more than 35,000 deaths.[61] The increasing frequency of antibiotic-resistant germs globally has been estimated to lead to potential $3.4 trillion loss in the world's annual gross domestic product.[62] Those who survive antibiotic-resistant infections face prolonged and costly treatments, additional doctor visits and healthcare use, and greater disability. The spread of antibiotic resistance also makes common medical procedures like dialysis, surgery, cesarean sections, and organ transplants much more dangerous.[63] In patients fighting cancer with hematological malignancies or solid tumors, for example, infections are a primary or associated cause of death in 50 percent of cases, and antibiotic resistance is making these infections even more challenging to address.[64] The COVID-19 pandemic only exacerbated the issue due to longer hospital stays and increased inappropriate antibiotic use, leading to an upsurge in the number of bacterial antibiotic-resistant hospital-onset infections by 20 percent.[65]

Every time antibiotics are used, they can contribute to the development of antibiotic-resistant germs, which in turn can quickly spread through communities, food supplies, healthcare facilities, and the environment.[66] Bacteria can also become "multidrug resistant" by developing

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[60] Centers for Disease Control, *Antibiotic Resistance Threats in the United States, 2019*, Atlanta, http://dx.doi.org/10.15620/cdc:82532 (2019), 3.
[61] *Id*. at vii.
[62] Food & Agric. Org. of the U.N., *Antimicrobial Resistance*, https://www.fao.org/antimicrobial-resistance/background/what-is-it/en/#:~:text=For%20agriculture%2C%20this%20causes%20production,can%20contaminate%20the%20food%20chain.
[63] Roach, *Sickness From Antimicrobial Resistance*, Food Animal Concerns Trust, https://www.foodanimalconcernstrust.org/blog/us-undermines-international-effort-to-reduce-death-and-sickness-from-antimicrobial-resistance?rq=antibiotic. (last visited Jul. 30, 2025).
[64] Nanyakkara et al., *Antibiotic Resistance in The Patient With Cancer: Escalating Challenges and Paths Forward*, *CA: A Cancer Journal for Clinicians*, 71(6), 488–504. https://doi.org/10.3322%2Fcaac.21697 (2021), 489.
[65] Centers for Disease Control, *Antimicrobial Resistance Threats in the United States, 2021-2022*, https://www.cdc.gov/antimicrobial-resistance/data-research/threats/update-2022.html, (2025), 1.
[66] Centers for Disease Control, *Antibiotic Resistance Threats in the United States, 2019*, Atlanta, http://dx.doi.org/10.15620/cdc:82532 (2019), 5.

resistance to different antibiotics at the same time, complicating treatment further when these evolved bacteria infect humans.[67] The rate of novel antibiotic development in human medicine is outpaced by antibiotic-resistant mutations.[68] The prevalence and persistence of streptomycin-resistant *Erwinia amylovora* strains is what led to the increased use of oxytetracycline on pear, apple, and peach trees,[69] illustrating the ability of antibiotic resistance to quickly develop in the environment. Because of the ongoing critical importance of existing antibiotics, it is a national priority to maintain the safety and efficacy of these drugs.[70]

It is therefore crucial to limit antibiotic use to only essential circumstances and only for necessary durations, such as when treating bacterial infections (especially for individuals with chronic conditions who are more susceptible to sicknesses) and preventing surgical infections. While the campaign to safeguard antibiotic efficacy has largely targeted healthcare and veterinary industries, encouraging health practitioners to limit antibiotic usage where possible and leading animal caretakers to move away from employing antibiotics for growth promotion and other non-medicinal purposes, these efforts must not be to the exclusion of similar reforms by EPA to limit the amount of antibiotics pumped into the environment.

Currently, antibiotic pesticides are sprayed in large quantities onto crops. EPA has approved this practice despite it being known that the constant presence of antibiotics in the environment or in germs' hosts (animals or humans) accelerates the natural process of antibiotic-resistance development.[71] Streptomycin,[72] oxytetracycline,[73] and kasugamycin[74] are all persistent, or, in other words, resistant to degradation, in soil, anaerobic aquatic conditions, and sediment. Thus, the time for resistance to develop when these antibiotics enter the environment is drawn out.

Resistance development has been confirmed as occurring specifically in instances of streptomycin and oxytetracycline use on crops. For example, one study of cherry radishes showed the existence of significantly higher proportions of culturable antibiotic-resistant bacteria present in the crop when the radishes were treated with oxytetracycline and streptomycin.[75] The health threat posed by this progression has the potential for rapid escalation, as antibiotic-

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[67] *Id*. at 7, 21.
[68] Granados-Chinchilla & Rodríguez, *Tetracyclines in Food and Feedingstuffs: From Regulation to Analytical Methods, Bacterial Resistance, and Environmental and Health Implications, Journal of Analytical Methods in Chem.*, 2017(1), 1–24. https://onlinelibrary.wiley.com/doi/epdf/10.1155/2017/1315497 (2017), 17.
[69] Batuman et al., *The Use and Impact of Antibiotics in Plant Agriculture: A Review*, *Phytopathology Key Challenges*, 114(5), 885–909. https://doi.org/10.1094/PHYTO-10-23-0357-IA (2024), 885.
[70] Exec. Order No. 13,676, *Combating Antibiotic-Resistant Bacteria*, 79 Fed. Reg. 56,931 (Sept. 18, 2014).
[71] Centers for Disease Control, *Antibiotic Resistance Threats in the United States, 2019*, Atlanta, http://dx.doi.org/10.15620/cdc:82532 (2019), 18.
[72] United States Dept. of Agric., *Streptomycin Technical Report*, https://www.ams.usda.gov/sites/default/files/media/Streptomycin%20TR%202011.pdf (2011), 5.
[73] United States Dept. of Agric., *Tetracycline (Oxytetracycline Calcium Complex) Technical Report*, https://www.ams.usda.gov/sites/default/files/media/Tetracycline%20report.pdf (2006), 6.
[74] United States Dept. of Agric., *Kasugamycin Technical Report*, https://www.ams.usda.gov/sites/default/files/media/Kasugamycin_TR.pdf (2021), 6.
[75] Yin et al., *Uptake of the Plant Agriculture-Used Antibiotics Oxytetracycline and Streptomycin by Cherry Radish—Effect on Plant Microbiome and the Potential Health Risk*, *J. Agric. & Food Chem.* 71(11), 4561–70. https://doi.org/10.1021/acs.jafc.3c01052 (2023), 4568.

resistant bacteria strains that develop from antibiotic pesticide use can then continue to spread and mutate in contaminated soil and water.[76] Alternatively, they can proliferate by passing their resistant genes to different existing bacterial strains in a process known as "horizontal gene transfer."[77]

Concrete steps are required to prevent the continued contribution of agricultural antibiotic pesticides to antibiotic resistance. As the Director of WHO stated over ten years ago in the organization's Global Action Plan on Antimicrobial Resistance, "[w]ithout harmonized and immediate action on a global scale, the world is heading towards a post-antibiotic era in which common infections could once again kill."[78] EPA should cancel the registrations of any pesticides that employ medically important antibiotics.

4. Antibiotic and Antifungal Pesticide Residues Harm Human and Wildlife Health

Beyond indirectly threatening human health by facilitating dangerous, difficult to treat bacterial infections, antibiotic pesticides have direct health impacts to human bodies when people are exposed to them. Consumption of antibiotics, including through residues on food, can disrupt the microbiome in mammals. Antibiotics are known to cause gut dysbiosis, which refers to disbalance in the function and composition of gut bacteria, alteration in the distribution of gut bacteria, or changes in bacterial metabolic activities.[79] Often, it is the beneficial bacteria like *Bifidobacterium* and *Lactobacillus* that experience reductions in cases of dysbiosis, at the same time that an overgrowth of potentially harmful microbes like *Clostridium* and *Enterobacteriacae* occurs.[80] The myriad health effects that can result from such imbalances include alterations in immune function, systemic inflammation, constipation, bloating, and nausea.[81] Antibiotics can also stimulate gene transfer among gut bacteria and reduce immune responses in peripheral organs.[82]

Another common theme that has emerged from studies of antibiotic effects on the digestive system is a rapid increase in the presence of *E. coli*.[83] Streptomycin in particular has been found to disrupt the microbiota and induce a breakdown in colonization resistance, which enables *E. coli* to colonize the gut at high levels.[84] This susceptibility to *E. coli* colonization

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[76] Carvalho et al., A Review of Plant-Pharmaceutical Interactions: From Uptake and Effects in Crop Plants to Phytoremediation in Constructed Wetlands, *Environ. Sci. Pollut. Res.* 21, 11729–63, https://doi.org/10.1007/s11356-014-2550-3 (2014), 11729.
[77] Shistar & Curle, *Agricultural Uses of Antibiotics Escalate Bacterial Resistance*, *Pesticides & You*, Winter 2016–2017, 9–17, https://www.beyondpesticides.org/assets/media/documents/journal/bp-36.4-w17-Antibiotics-Cited2.pdf (2017), 13.
[78] World Health Org., *Global Action Plan on Antimicrobial Resistance*, https://iris.who.int/bitstream/handle/10665/193736/9789241509763_eng.pdf?sequence=1 (2015).
[79] Ali & AlHussaini, Pesticides: Unintended Impact on the Hidden World of Gut Microbiota, *Metabolites* 155(14), 1, https://doi.org/10.3390/metabo14030155 (2024), 3.
[80] *Id*. at 4.
[81] *Id*.
[82] Conway et al., The Life of Commensal *Escherichia coli* in the Mammalian Intestine, *EcoSal Plus*, 1(1), 1–16, https://doi.org/10.1128/ecosalplus.8.3.1.2 (2004), 11.
[83] Looft & Allen, Collateral effects of antibiotics on mammalian gut microbiomes, *Gut Microbes*, 463–467, http://dx.doi.org/10.4161/gmic.21288 (2012), 463.
[84] Conway et al., *supra* note 82, at 11.

occurs because streptomycin drastically reduces levels of Firmicutes, one of the two predominant phyla in the mammalian gut, thereby creating a receptive environment for bacteria that typically would not be able to thrive there.[85]

Even small exposures to these antibiotic pesticides are unhealthy. Streptomycin need not even be directly ingested to have directly harmful impacts on human health. One study analyzing the effects of non-therapeutic doses of antibiotics in the form of environmental exposure on the gut microbiota of children found that, in conjunction with exposure to neonicotinoid pesticides, the likelihood of glucose metabolism disorders increased.[86] The researchers concluded that exposure to antibiotics in daily life might be related to impaired intestinal-barrier function, which can lead to auto-inflammatory responses and autoimmune diseases.[87]

Just as antibiotics frequently disrupt the balance of microbiome communities, the presence of antibiotics in the environment can impact the natural compositions of microorganisms in ecosystems. In aquatic environments, kasugamycin inhibits the growth of some bacteria while stimulating the growth of other, more resistant bacteria.[88]

Harbor seals and porpoises in the Puget Sound carried antibiotic resistant bacteria and in some cases bacteria that were resistant to multiple antibiotics.[89] These animals function as indicator species providing insight into the overall health of other species in the Puget Sound. The report points out that antibiotics and other chemicals persistent in the waterways are the likely cause of these species developing resistant bacteria. This can be problematic when endangered species, or species in general, become injured, as antibiotics will not be able to save them.[90] The situation is worsened by the fact that EPA has refused to comply with the Endangered Species Act to ensure pesticides, including antibiotics, are not jeopardizing the continued existence of threatened and endangered species.

5. Unreasonable Harms to Agricultural Communities and Farmworkers

Threats of antibiotic and antifungal exposure and resistance poses a higher risk to agricultural communities and farmworkers. Due to the nature of their work and where they live, farmworkers – and by extension their families – frequently demonstrate high levels of exposure to pesticides in studies.[91] Farmworkers have higher exposure levels to antibiotics and antifungal pesticides because they are often the ones who apply the pesticides, are in the fields shortly after

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[85] Thompson et al., *Manipulation of the Quorum Sensing Signal AI-2 Affects the Antibiotic-Treated Gut Microbiota, Cell Reports*, 10, 1861–71, http://dx.doi.org/10.1016/j.celrep.2015.02.049 (2015), 1861.
[86] Xu et al., *Association Between New Onset Type 1 Diabetes and Real-World Antibiotics and Neonicotinoids' Exposure-Related Gut Microbiota Perturbation*, *World J. Pediatrics* 18, 671–679, https://doi.org/10.1007/s12519-022-00589-3 (2022), 676.
[87] *Id*. at 678.
[88] Huang et al., Exposure Effect of Fungicide Kasugamycin on Bacterial Community in Natural River Sediment, *J. Envtl. Sci. & Health, Part B* 45(5), 485–491, http://dx.doi.org/10.1080/03601231003800412 (2010), 485.
[89] Hannah Thomasy, *Antibiotic-Resistant Bacteria Are Turning Up in Puget Sound Marine Life,* Hakia Magazine, https://hakaimagazine.com/news/antibiotic-resistant-bacteria-are-turning-up-in-puget-sound-marine-life/ (2019).
[90] *Id*.
[91] Donley et al., *Pesticides and Environmental Injustice in The USA: Root Causes, Current Regulatory Reinforcement And a Path Forward. BMC Public Health* 22, 708, https://doi.org/10.1186/s12889-022-13057-4 (2022).

application, and have greater exposure in their communities. Because of their higher exposure risks, farmworkers are more vulnerable to human pathogens that are resistant to antibiotic and antifungal medicines.

EPA's risk assessment for streptomycin found margins of exposure (MOE) that are not of concern when label-required personal protective equipment (PPE) is used.[92] Assumptions that pesticide handlers will be wearing the label-specified PPE, which includes wearing long sleeved shirt, long pants, chemical-resistant gloves, shoes plus socks, and a dust/mist respirator can lead to an inaccurate assessment of risk.[93] In practice, the available evidence demonstrates that pesticide handlers sometimes do not and cannot use PPE, often for reasons beyond their control. In a study of 220 randomly selected dairy farmers interviewed after pesticide application, less than 15% complied with the gear use requirements and, for three pesticides applied, the percentages of farmers using none of the required gear were 56.9%, 38.6%, and 47.5%.[94] A survey of grain farm operators in central Ohio, found that more than 40% saw no need for PPE during pesticide application operations.[95] Similarly, in Minnesota, 44% of farm operators did not wear chemical-resistant gloves, and 78% did not wear other protective gear at least three quarters of the time when handling pesticides.[96]

EPA's risk assessments fail to take into consideration certain exposures that place farmworkers and their families at even greater risks. These exposures include pesticide residues on boots, tools, work clothes, and skin of a family member who handles pesticides or works in areas where they are applied and then returns home.[97] Exposure may also be present from soil or from pesticides drifting through the air into farmworkers' homes, schools, and playgrounds.[98] In risk assessments, EPA does not assess take-home exposures or the risks they pose to farmworkers and their families. EPA also fails to consider the cumulative effects of take-home exposures which can occur via food, drinking water, and residential use.

Exposure risk in farmworker communities is exacerbated by societal and structural imbalances. Pesticide exposure risks are compounded by the fact that farmworkers often do not have health insurance and may have limited access to health care, making them particularly vulnerable to environmental and occupational health hazards.[99] In fact, 71% of workers reported that their employer did not provide health insurance or pay for medical treatment for injuries or

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[92] U.S. Envtl. Prot. Agency, *Risk Assessment* at 26, Dkt. EPA-HQP-OPP-2016-0067-0020.
[93] *Id.*
[94] Perry et. al., *Compliance with Required Pesticide-Specific Protective Equipment Use*, Am. J. Indus. Med. 41(1), 70–73, https://doi.org/10.1002/ajim.10026 (2002).
[95] Pedersen et al., *Agricultural Hazard Data from a Population-Based Survey of Cash Grain Farms: Ohio Observations*, 14 *Appl. Occup. & Envtl. Hyg.* 299, 304, https://doi.org/10.1080/104732299302882 (1999).
[96] Mandel et al., *Factors Associated with Safe Use of Agricultural Pesticides in Minnesota*, 12 *J. Rural Envtl. Health* 301, 303 (1996).
[97] Lu et al., *Pesticide Exposure of Children in an Agricultural Community: Evidence of Household Proximity to Farmland and Take Home Exposure Pathways*, 84 *Envtl. Res*. 290, (2000), 290–91.
[98] Nat'l Res. Council, *Pesticides in the Diets of Infants and Children*, 308-09 (1993), https://www.ncbi.nlm.nih.gov/books/NBK236275/; See e.g., Soren Thiele-Bruhn, *Pharmaceutical Antibiotic Compounds in Soils — A Review*, 166 *J. Plant Nutri. Soil Sci.* 145 (2003) (discussing antibiotics in soil and degradation).
[99] U.S. Dept. of Labor, *Findings from the National Agricultural Workers Survey (NAWS) 2015–2016*, https://www.dol.gov/sites/dolgov/files/ETA/naws/pdfs/NAWS%20Research%20Report%2017.pdf (2018), 41.

illnesses suffered outside of work.[100] Only around 18% of agricultural employers offer health insurance to their workers.[101] The majority of farmworker and agricultural families are rural, low-income, and identify as Hispanic or Latinx, resulting in disproportionate exposure and adverse effects of pesticides in these communities.[102]

6. *Pollinators Are Threatened by Antibiotic Pesticides*

Vulnerable species of bees, bats, butterflies, and more, visit the plants upon which antibiotic pesticides are sprayed as they do the critical work of pollinating plants and crops. Exposures to pesticides are contributing to recent dramatic declines in pollinator populations.[103] EPA's own internal pollinator guidance documents acknowledge pesticides as a major contributor to adverse impacts on bees and emphasize the importance of protecting pollinators from pesticide exposures.[104]

Protection of these pollinators is crucial to the food production system in the United States. "Pollination services add tens of billions of dollars to the value of agricultural crops annually," according to the USDA.[105] Honeybees alone are responsible for pollinating about one-third of the food eaten by Americans, including apples, melons, cranberries, pumpkins, squash, broccoli, and almonds, among others.[106]

Streptomycin in particular is proven to be harmful to pollinators due to its negative effects on bees' immunity caused by changes in the gut microbiome. A number of studies demonstrate these impacts. Adult worker bees treated with an antibiotic mixture containing streptomycin experienced negative impacts to their immune systems; when inoculated with the *Nosema ceranae* parasite, bees treated by streptomycin had significantly higher *Nosema* levels than inoculated bees that had not been previously treated with streptomycin.[107] Microcolonies of bumblebees treated with antibiotic mixtures containing streptomycin and tetracycline or by streptomycin alone had their gut bacterial communities undergo transformations that decreased

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[100] *Id*. at 25.
[101] *Id*.
[102] Donley et al., *Pesticides and Environmental Injustice in the USA: Root Causes, Current Regulatory Reinforcement And a Path Forward*. *BMC Public Health* 22, 708, https://doi.org/10.1186/s12889-022-13057-4 (2022).
[103] Nowierski, *Pollinators at a Crossroads, U.S. Dept. of Agriculture Blog*, https://www.usda.gov/about-usda/news/blog/pollinators-crossroads (2020).
[104] U.S. Envtl. Prot. Agency, *Guidance for Assessing Pesticide Risks to Bees*, https://www.epa.gov/sites/default/files/2014-06/documents/pollinator_risk_assessment_guidance_06_19_14.pdf, (2014); U.S. Envtl. Prot. Agency, *U.S. Environmental Protection Agency's Policy to Mitigate the Acute Risk to Bees From Pesticide Products*, Docket ID EPA-HQ-OPP-2014-0818-0477, https://www.regulations.gov/document/EPA-HQ-OPP-2014-0818-0477 (2017).
[105] U.S. Dept. of Agriculture, *USDA Annual Strategic Pollinator Priorities Report 2022*, https://www.usda.gov/sites/default/files/documents/annual-pollinator-report-2022.pdf, (2022), 6.
[106] U.S. Food & Drug Admin., *Helping Agriculture's Helpful Honey Bees*, https://www.fda.gov/animal-veterinary/animal-health-literacy/helping-agricultures-helpful-honey-bees (2018).
[107] Li et al., *New Evidence Showing That the Destruction of Gut Bacteria by Antibiotic Treatment Could Increase the Honey Bee's Vulnerability to Nosema Infection*, *PLOS ONE*, 12(11), 1–18, https://doi.org/10.1371/journal.pone.0187505 (2017), 9.

the overall fitness of the bees in the colony.[108] One result of streptomycin ingestion by bees is decreased numbers of intestinal bacteria and increased amounts of intestinal yeasts.[109] Similar to mammals, this imbalance of the gut microbiome decreases immunity and leaves bees vulnerable to disease.

Pollinators can experience these negative impacts through environmental exposures as much as they through direct ingestion. Honeybees foraging in areas with high levels of streptomycin residues had gut bacteria with significantly higher streptomycin resistance than that of bees with lower exposures,[110] indicating both negative impacts to the bees' microbiome balance as well as an increased risk of the development and spread of antibiotic-resistant bacteria.

The survival of pollinators is crucial enough because of these species' intrinsic value. However, beyond their intrinsic value, humans have enormous self-interest in keeping pollinators healthy and able to perform their essential contributions to the food production system in the United States. EPA should cancel the registrations of the medically important antibiotic pesticides that threaten these animals.

V. STATEMENT OF LEGAL GROUNDS

A. Pesticide products that contain medically important antibiotics or promotes cross-resistance to medically important antifungals must be cancelled for posing an unreasonable risk to human and environmental health in violation of FIFRA

EPA's registration of pesticides using streptomycin, gentamicin, oxytetracycline, kasugamycin, triazole fungicides, and ipflufenoquin causes "unreasonable adverse effects" on human health and the environment.[111]

1. Streptomycin, gentamicin, kasugamycin and oxytetracycline do not meet FIFRA requirements for registration

EPA does not have adequate evidence to support its conclusions that streptomycin, kasugamycin and oxytetracycline do not have unreasonable adverse effects on human and environmental health. Pesticide registrations are inadequate when "EPA substantially understated the risks it acknowledged" or "entirely failed to acknowledge other risks."[112] Additionally, to register a pesticide, it is required that EPA has "sufficient data to evaluate the environmental

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[108] Meeus et al., *Assessment of Mutualism Between Bombus Terrestris and Its Microbiota By Use of Microcolonies*, *Apidologie*, 44(6), 708–719, https://doi.org/10.1007/s13592-013-0222-9 (2013), 708.
[109] Gilliam et al., *Digestive Enzymes and Micro-Organisms in Honey Bees, Apis Mellifera: Influence of Streptomycin, Age, Season and Pollen*, *Microbios* 55(223), https://eurekamag.com/research/001/800/001800145.php?srsltid=AfmBOooFGBSBJ0Q_K2y4UpGlT11UU4-cZHGLOQ6HME8Vci6uaMM-CE-l (1988), 95–114.
[110] Ludvigsen et al., *Detection and Characterization of Streptomycin Resistance (strA-strB) in a Honeybee Gut Symbiont (Snodgrassella alvi) and the Associated Risk of Antibiotic Resistance Transfer*, *Microbial Ecology* 76(3), 588–591, https://doi.org/10.1007/s00248-018-1171-7 (2018), 588.
[111] 7 U.S.C. § 136a(c)(5)(C), (D).
[112] *National Family Farm Coalition v. U.S. Environmental Protection Agency*, 960 F.3d 1120, 1124 (9th Cir. 2020).

risks."[113] EPA is not permitted to make unsubstantiated assumptions to support its registration decisions with no evidence in the record to support such assumptions.[114]

EPA substantially understated the risk of antibiotic resistance from oxytetracycline use. EPA's own "Environmental Fate and Effects Division's Risk Assessment for Oxytetracycline" concluded that widespread use of oxytetracycline in agriculture "may result in resistance development."[115] Yet, EPA approved expanding oxytetracycline use to citrus fruits in 2018 anyway.[116] EPA incorrectly claimed that antibiotic resistance is not a concern because "there have been 40 years of oxytetracycline use in plant agriculture without any link between this use and resistance in clinical pathogens."[117] However, the same evaluation noted that "information is lacking on… movement of resistance traits from the target bacteria and epiphytic bacteria of concern for human health."[118]

Essentially, EPA concludes that because bacteria resistant to oxytetracycline found in medical settings has not been definitively traced back to plant agricultural origins, the risk of antibiotic-resistance from oxytetracycline pesticide use must be insignificant. This approach is like ignoring fire safety regulations because the building has not burned down yet. Available evidence shows agricultural oxytetracycline usage contributes to antibiotic resistance, as discussed above in Section IV(A)(3).[119] The longer EPA permits oxytetracycline use in pesticides despite the potential unreasonable adverse effects to human health, the more likely oxytetracycline will become ineffective to prevent the many common infections doctors rely on it to treat.

Likewise, EPA has not conducted a sufficient analysis of the spread of antibiotic resistance from agricultural uses of streptomycin or kasugamycin. For example, EPA's analysis of streptomycin's safety with regards to antibiotic resistance does not discuss the potential spread of streptomycin-resistant bacteria and plasmids via insect vectors,[120] despite recent research

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113 *Pollinator Stewardship Council v. U.S. E.P.A.*, 806 F.3d 520, 523 (9th Cir. 2015).

114 *Natural Resources Defense Council v. U.S. Environmental Protection Agency*, 857 F.3d 1030, 1039-40 (9th Cir. 2017) (vacating EPA's registration of the pesticide NSPW-L30SS with the active ingredient nanosilver for failure to substantiate the claim that introduction of the pesticide would reduce the total amount of silver released into the environment).

115 U.S. Envtl. Prot. Agency, *Registration Review: Preliminary Environmental Fate and Ecological Risk Assessment for Oxytetracycline and Proposed New Use on Citrus*, Docket ID EPA-HQ-OPP-2008-0686-0030, https://www.regulations.gov/document/EPA-HQ-OPP-2008-0686-0030 (2016), 32.

116 U.S. Envtl. Prot. Agency, *PRIA Label Amendment – Oxytetracycline*, https://www3.epa.gov/pesticides/chem_search/ppls/080990-00001-20181204.pdf (2018).

117 U.S. Envtl. Prot. Agency, *Review of Oxytetracycline's Safety with Regard to Its Microbiological Effect on Bacteria of Human Health Concern (FDA/CVM Guidance to Industry #152) for Registration Review of Uses on Apple, Pear, Peach and Nectarine Trees*, Docket ID EPA-HQ-OPP-2008-0686-0031, https://www.regulations.gov/document/EPA-HQ-OPP-2008-0686-0031 (2018), 3.

118 *Id*. at 9.

119 See also Qiu et al., *Response of Microbial Antibiotic Resistance to Pesticides: An Emerging Health Threat*, *Sci. of the Total Environ*. 850: 158057, https://doi.org/10.1016/j.scitotenv.2022.158057 (2022); Sonkar, V., Devtalla, H. & Kumar, S., *Pesticide-Driven Antimicrobial Resistance in Water Bodies: Insights on Environmental Concerns, Health Implications and Mitigation Strategies*, *Environ. Geochem. Health* 47, https://doi.org/10.1007/s10653-025-02600-y (2025), 282.

120 *U.S. Envtl. Prot. Agency*, *Review of AgroSource's Analysis of Streptomycin's Safety with Regard to Its Microbiological Effect on Bacteria of Human Health Concern (FDA/CVM Guidance to Industry #152) for*

indicating that bees that have foraged in areas with high streptomycin levels have a higher prevalence of gut bacteria that contain streptomycin resistance genes on transferrable plasmids.[121] The potential for bees to transport streptomycin-resistance miles away from application sites in any direction is an unreasonable risk to human and environmental health. Furthermore, EPA's review of the risk of antibiotic resistance from streptomycin noted that the "presence of microbes of human health concern in the orchard and the transfer potential of streptomycin resistance traits from environmental microbes to those microbes of human health concern is an area of uncertainty."[122] Similarly, EPA's review of the risk of antibiotic resistance from kasugamycin stated, "the potential for any resistance traits to move from environmental bacteria into clinically important bacteria has not been established."[123] Instead, the review focused only on two routes of exposure: residues on food commodities and on workers.[124] This uncertainty indicates that EPA does not have sufficient data to evaluate the risks to the environment and human health from streptomycin and kasugamycin, as required to register a pesticide under FIFRA.

Harm to pollinators is another area in which EPA has not met FIFRA standards for a registration decision, this time by failing to gather adequate data to justify registration of streptomycin. EPA may only register a pesticide if it has determined "no additional data are necessary" to assess its potential adverse environmental effects on bees.[125] To the contrary, EPA has acknowledged that further studies are necessary to understand the risks of streptomycin to bees. In *Migrant Clinicians Network v. U.S. Environmental Protection Agency*, the Ninth Circuit Court of Appeals invalidated new EPA registrations of streptomycin for expanded use on citrus plants based on the agency's own contradictory statements about the available information regarding impacts to bees and its admission that "it based its risk assessment on 'limited pollinator data' since 'the full suite of data now being required for pollinators is not available for streptomycin.'"[126] Just as EPA does not have the requisite data regarding impacts to pollinators to register new uses of streptomycin, EPA does not have the requisite data to show that existing streptomycin registrations are not impermissibly harmful to bees. On the contrary, studies show streptomycin exposure has deleterious health impacts for pollinators, as discussed above in Section IV(A)(6). The continued registration of streptomycin despite its demonstrated adverse effects on the environment, specifically to pollinator wellbeing, is therefore unsound.

Additionally, EPA has failed to factor into its FIFRA analysis that the efficacy of streptomycin is dubious. EPA itself acknowledges that streptomycin resistance already occurs in

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Registration Review, Docket ID EPA-HQ-OPP-2008-0687-0023, https://www.regulations.gov/document/EPA-HQ-OPP-2008-0687-0023 (2018).

[121] Ludvigsen et al. at 588–91.

[122] U.S. Envtl. Prot. Agency, *Review of AgroSource's Analysis of Streptomycin's Safety with Regard to Its Microbiological Effect on Bacteria of Human Health Concern (FDA/CVM Guidance to Industry #152) for Registration Review*, Docket ID EPA-HQ-OPP-2008-0687-0023, https://www.regulations.gov/document/EPA-HQ-OPP-2008-0687-0023 (2018), 6.

[123] U.S. Envtl. Prot. Agency, *Review of Arysta Life Science's Analysis of Kasugamycin's Safety with Regard to Its Microbiological Effect on Bacteria of Human Health Concern (FDA/CVM Guidance to Industry #152)*, Docket ID EPA-HQ-OPP-2016-0519-0008, https://www.regulations.gov/search?filter=EPA-HQ-OPP-2016-0519-0008 (2015), 7.

[124] *Id*. at 2.

[125] 40 C.F.R. § 158.630(d).

[126] *Migrant Clinicians Network v. U.S. Environmental Protection Agency*, 88 F.4th 830, 843 (9th Cir. 2023).

the fire blight bacteria *Erwinia amylovora* as well as other phytopathogenic bacteria,[127] which has instigated the use of oxytetracycline as an alternative treatment for fire blight. The consistent development of antibiotic-resistant bacterial strains from streptomycin usage illustrates that streptomycin is both a dangerous contributor to antibiotic resistance and an ineffective pesticide (requiring use of an alternative pesticide, oxytetracycline, to come into common practice). The registration of streptomycin to treat fire blight therefore violates the FIFRA requirement to ensure a registered product "will perform its intended function."[128] Furthermore, FIFRA has been described as "a cost-benefit analysis" to ensure no unreasonable, unnecessary risks stem from pesticide usage;[129] the inefficacy of streptomycin shows the pesticide has only a very low benefit that cannot justify the high cost of creating more antibiotic-resistant bacterial strains.

In summary, streptomycin, kasugamycin, gentamicin, and oxytetracycline fail to meet FIFRA standards in several ways. Their registrations should be cancelled.

2. *EPA's failure to consider antifungal resistance invalidates the Agency's registrations of pesticide products with ipflufenoquin and triazoles*

In its registration decisions for ipflufenoquin and the triazole tebuconazole, EPA failed to address the unreasonable risk to man and the environment in creating antifungal-resistant strains of the fungus that cause aspergillosis in humans when these antifungals are applied in large quantities as pesticides. To comply with FIFRA, EPA registrations of pesticides must be "supported by substantial evidence" that there is no unreasonable risk, and evidence in the record must be of a "type that 'a reasonable mind might accept as adequate'".[130] For example, in *Migrant Clinicians*, EPA had used FDA Industry Guidance #152 to analyze the risk of antibiotic resistance from streptomycin usage on citrus plants, and the Ninth Circuit court accepted this process as sufficient to justify EPA's decision to register streptomycin based on the legal standard that a reasonable mind might accept EPA's analysis as adequate.[131] In the cases of ipflufenoquin and tebuconazole, however, EPA did not address the risks to human health from antifungal-resistance at all. There is no mention of ipflufenoquin's ability to select for antifungal-resistance in strains that cause potentially fatal infections in humans in EPA's approval of ipflufenoquin[132] or of tebuconazole's ability to do the same in EPA's Proposed Interim Registration Review Decision for tebuconazole.[133] There is no substantial evidence offered to support EPA's registration decisions, and there is no analysis from EPA that a reasonable mind could accept as adequate to dispute the risks to human health from ipflufenoquin or tebuconazole resistance—because there is no analysis of that risk at all.

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[127] U.S. Envtl. Prot. Agency, *Streptomycin Proposed Interim Registration Review Decision*, Docket ID EPA-HQ-OPP-2008-0687-0024, https://www.regulations.gov/search?filter=EPA-HQ-OPP-2008-0687-0024 (2018), 20.
[128] 7 U.S.C. §§ 136a(c)(5)(C).
[129] *Pollinator Stewardship*, 806 F.3d at 522–23.
[130] *National Family Farm Coalition v. U.S. Environmental Protection Agency*, 966 F.3d 893, 922 (9th Cir. 2020).
[131] *Migrant Clinicians*, 88 F.4th at 840–41.
[132] U.S. Envtl. Prot. Agency, *Memorandum Supporting Final Decision to Approve Registration of the New Active Ingredient, Ipflufenoquin*, https://downloads.regulations.gov/EPA-HQ-OPP-2020-0225-0017/content.pdf (2022).
[133] U.S. Envtl. Prot. Agency, *Tebuconazole Proposed Interim Registration Review Decision*, Docket ID EPA-HQ-OPP-2015-0378-0378, https://www.regulations.gov/document/EPA-HQ-OPP-2023-0420-0013 (2022).

EPA's failure to engage with antifungal resistance does not mean such resistance is not a serious issue; agricultural use of ipflufenoquin has been shown to select for resistance to the antifungal drug Olorofim, and agricultural use of tebuconazole has been shown to select for resistance to triazoles that are employed to treat aspergillosis in humans.[134] If effective treatments like Olorofim, itraconazole, voriconazole, and posaconazole are undermined, doctors will have limited means to help patients fend off these dangerous fungal infections.

Continued use of ipflufenoquin and triazoles in pesticides thus does not pass the cost-benefit analysis required under FIFRA, as the risks to human health greatly outweigh the agricultural benefits gained. The number of antifungals available in the medical field for the treatment of systemic fungal infections is relatively limited compared to those used for controlling diseases in plants, and the search for new antifungal drugs is a lengthy process.[135] Consequently, it is essential to preserve the ability of the treatments that are available to doctors to control life-threatening fungal infections in patients.

Given the unreasonable risks of agricultural use of ipflufenoquin and triazole fungicides to human health, EPA must cancel its registration of pesticide products using these active ingredients in accordance with FIFRA regulations.

3. *EPA did not meet its obligations under the Endangered Species Act in registering medically important antibiotics or pesticides that could promote cross-resistance to medically important antifungals*

Section 7(a)(2) of the Endangered Species Act (ESA) requires federal agencies to ensure their actions do not jeopardize endangered species or their habitats by consulting the appropriate wildlife agency, in a process known as "consultation."[136] When taking an action such a registering or reregistering a pesticide, EPA must both "insure" its actions will not jeopardize the survival of any protected species and "minimize" harm to such species that might hinder their conservation and recovery.[137] The first step in this process is to make an effects determination regarding whether or not the agency action may affect a listed species or critical habitat.[138] Failure to comply with this requirement is a procedural defect that invalidates registration of a pesticide product.[139] Limited resources and opposing agency priorities do not justify noncompliance with ESA requirements.[140]

With the registrations of streptomycin, oxytetracycline, and kasugamycin pesticide products, EPA has once again left unfulfilled its duties under the ESA. EPA must address the data gaps in its records for these registrations regarding the potential impacts of pesticide runoff into vulnerable aquatic environments and the risk of ingestion of these antibiotics and/or antifungals by animals when they are sprayed onto crops. For example, scientists have found that

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[134] Rhijn, *supra* note 50; Cao, *supra* note 51.
[135] Ribas, *supra* note 54, at 794, 796.
[136] 16 U.S.C. § 1536(a)(2).
[137] *Id*. § 1536(a)(2); *id*. § 1536(b)(4)(C)(ii).
[138] 50 C.F.R. § 402.14(a).
[139] *Center for Food Safety v. Regan*, 56 F.4th 648, 657 (9th Cir. 2022).
[140] *Center for Biological Diversity, et al., v. Environmental Protection Agency*, 861 F.3d 174, 188 n.10 (D.C. Cir. 2017).

amphibians, which are highly sensitive to changes in their aquatic environment, experienced lethal and sublethal effects to their embryos and larvae from oxytetracycline contamination.[141]

Failure to comply with the ESA's effect determination and consultation requirements is a common theme with EPA's pesticides registrations, which the Ninth Circuit Court of Appeals has already identified as a "troubling" undermining of the political structure.[142] EPA is beholden to the legislative command of Congress and undermines the constitutional structure of government when willfully ignoring its statutory mandates.[143] Just as the registrations of the pesticide products sulfoxaflor[144] and cyantraniliprole[145] have been overturned due to noncompliance with ESA requirements, so should the registrations of any pesticide products using streptomycin, oxytetracycline, or kasugamycin be overturned until consultation is complete.

B. <u>**Immediate suspension of pesticide products undercutting medically important products, pending cancellation, is warranted**</u>

Suspension of a pesticide's registration is warranted under FIFRA § 136d(c)(1) when such action is necessary to prevent an imminent hazard[146] during the time required for cancellation.[147] The term "imminent hazard" is defined as "a situation which exists when the continued use of a pesticide during the time required for [a] cancellation proceeding would be likely to result in unreasonable adverse effects on the environment."[148] The legal standard for imminent hazard as it relates to pesticide registration cancellations and suspensions is not one of total crisis; the bar is met if there is a "'substantial likelihood that serious harm will be experienced during the year or two required in any realized projection of the administrative process.'" [149] In *Environmental Defense Fund, Inc. v. Environmental Protection Agency*, the D.C. Court of Appeals noted that a prohibition of the predominant uses of the pesticides aldrin and dieldrin was an effective and reasonable way to reduce the likelihood of negative impacts from potential exposures to the chemicals in the environment.[150] In other words, the likelihood of negative health impacts from using aldrin and dieldrin justified suspension of the pesticides while their cancellations were pending. The same situation exists in the case of pesticides that contain medically important antibiotics and or promote cross resistance of medically important antifungals. As documented in this petition, these pesticide products threaten ongoing and

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[141] Lourido et al., *Lethal and Sublethal Effects of the Emerging Contaminant Oxytetracycline on The Embryo-Larval Development of Rhinella arenarum*, *Environ. Toxicology and Pharmacology* 89, 1–10. https://doi.org/10.1016/j.etap.2021.103783 (2022), 8–9.
[142] *Regan*, 56 F.4th at 658.
[143] *Id*. at 659.
[144] *Id*.
[145] *Biological Diversity*, 861 F.3d.
[146] 7 U.S.C. § 136(1).
[147] *Id*. § 136d(c)(1) ("If the Administrator determines that action is necessary to prevent an imminent hazard during the time required for cancellation … the Administrator may, by order, suspend the registration of the pesticide immediately.")
[148] *Id*. § 136(1).
[149] *Environmental Defense Fund, Inc. v. Environmental Protection Agency*, 510 F.2d 1292, 1297 (D.C. Cir. 1975) (upholding an EPA suspension and cancellation order for aldrin and dieldrin and citing *Environmental Defense Fund, Inc. v. Environmental Protection Agency*, 465 F.2d 528, 540 (D.C. Cir. 1972)).
[150] *Id*. at 1301.

imminent unreasonable adverse effects with a substantial likelihood of serious harm to the environment and human health.

Quick action from the EPA to remove these products from the market is of the utmost importance. In furtherance of the public interests and the objectives of FIFRA, the registrations of all pesticide products using medically important antibiotics and/or antifungals that promote cross resistance to medically important products should be suspended pending cancellation proceedings to prevent an imminent hazard to human health and the environment.

VI. **CONCLUSION**

This petition sets forth facts that show the continued use of pesticides containing medically important antibiotics and pesticides promoting cross resistance to medically important antifungals pose an unreasonable risk to human health and the environment such that it is contrary to current law. For the forgoing reasons, Petitioners request that, pursuant to its obligations under FIFRA, EPA cancel the products with registration numbers identified in Section III "Action Requested" of this petition pursuant to Section 136d(b) to prevent additional unreasonable adverse effects on the environment, and, pending completion of cancellation proceedings, suspend the registrations pursuant to Section 136d(c)(1). As the government agency responsible for managing pesticide product registrations with the goal of protecting human and environmental health, EPA can and must do better. Petitioners urge EPA to act on this petition without delay.

Respectfully submitted on November 24, 2025,

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Appendix A

Regarding Section III. ACTION REQUESTED

(1) Cancel all pesticide products containing streptomycin sulfate (PC Code 006310), including the following:

1. AG STREPTOMYCIN, Reg. No. 66222-121
2. AGRI-MYCIN 17, Reg. No. 55146-96
3. AGRI-MYCIN 50, Reg. No. 55146-98
4. AS-50 AGRICULTURAL STREPTOMYCIN, Reg. No. 55146-98
5. AGRI-SEED 50 WP, Reg. No. 80990-3
6. EAC STREPTOMYCIN MANUFACTURING USE PRODUCT, Reg. No. 91275-1
7. FERTI-LOME FIRE BLIGH SPRAY, Reg. No. 7401-311
8. FIREMYCIN 17 WP, Reg. No. 80990-4
9. FIREWALL 17WP FUNGICIDE/BACTERICIDE AGRICULTURAL STREPTOMYCIN, Reg. No. 80990-4
10. FIREWALL 50 WP, Reg. No. 80990-3
11. HARBOUR BACTERICIDE, Reg. No. 66222-121
12. REPAR STREPTO-SULFATE TECHNICAL, Reg. No. 69361-8
13. REPAR STREPTOMYCIN 17, Reg. No. 69361-9
14. REPAR STREPTOMYCIN 50, Reg. No. 69361-48
15. STREPTOMYCIN 17, Reg. No. 5481-512
16. STREPTOMYCIN 3000 DUST, Reg. No. 69361-4
17. STREPTOMYCIN 50, Reg. No. 42750-296
18. STREPTOMYCIN 50 ST, Reg. No. 42750-296
19. STREPTOMYCIN SULFATE TECHNICAL, Reg. No. 11678-95
20. STREPTOMYCIN SULFATE TECHNICAL, Reg. No. 55146-79
21. STREPTOMYCIN SULFATE WP, Reg No. 55146-80
22. STREPTROL, Reg. No. 55146-96
23. STREPTROL AGRICULTURAL STREPTOMYCIN, Reg. No. 55146-80
24. TITER 17 WP, Reg. No. 80990-4
25. TITER 50 WP, Reg. No. 80990-3

(2) Cancel all pesticide products containing streptomycin (PC Code 006306):

1. No products currently listed as registered on EPA's Pesticide Product and Label System.

(3) Cancel all pesticide products containing oxytetracycline hydrochloride (PC Code 006308), including the following:

1. ARBOR-OTC, Reg. No. 74578-7
2. ARBORBIOTIC, Reg. No. 88482-1
3. ARBORBIOTIC, Reg. No. FL230002
4. ARBORBIOTIC-PALM, Reg. No. 88482-1
5. BACASTAT TREE INJECTION, Reg. No. 74779-2
6. EAC OXYTETRACYCLINE MANUFACTURING USE PRODUCT, Reg. No. 91275-2

7. FIRELINE 17 WP FUNGICIDE/BACTERICIDE AGRICULTURAL OXYTETRACYCLINE, Reg. No. 80990-1
8. FIRELINE 45 WP, Reg. No. 80990-6
9. MYOJECT ULTRA, Reg. No. 7946-32
10. MYOJECT ULTRA HP, Reg. No. 7946-33
11. OTC TREE INJECTION FORMULA, Reg. No. FL930008
12. OXYTETRACYCLINE HYDROCHLORIDE TECHNICAL, Reg. No. 88482-2
13. RADIUS 17 WP, Reg. No. 80990-1
14. RADIUS 45 WP, Reg. No. 80990-6
15. RECTIFY, Reg. No. FL230001
16. RECTIFY, Reg. No. TX250006
17. Remedium TI, Reg. No. FL220005
18. SPRINGER SYSTEMIC ANTIBIOTIC, Reg. No. 69117-10
19. TERRIER SYSTEMIC ANTIBIOTIC, Reg. No. 69117-10
20. WILLOWOOD OXYTET 17WP, Reg. No. 87290-25

(4) Cancel all pesticide products containing calcium oxytetracycline (PC Code 006321), including the following:

1. CALCIUM OXYTETRACYCLINE TECHNICAL (86%), Reg. No. 35935-113
2. FIREMAN, Reg. No. 55146-97
3. MYCOSHIELD, Reg. No. 55146-97
4. MYCOSHIELD 34 WP, Reg. No. 55146-164
5. MYCOSHIELD BRAND OF AGRICULTURAL TERRAMYCIN, Reg. No. 55146-97
6. OXYTETRACYCLINE CALCIUM TECHNICAL, Reg. No. 55146-99
7. TREE TECH OTC, Reg. No. 64014-11
8. TREE TECH OTC-CA, Reg. No. 64014-11

(5) Cancel all pesticide products containing gentamicin (PC Code 006324):

1. No products currently listed as registered on EPA's Pesticide Product and Label System.

(6) Cancel all pesticide products containing gentamycin sulfate (PC Code 006325):

1. No products currently listed as registered on EPA's Pesticide Product and Label System.

(7) Cancel all pesticide products containing kasugamycin (PC Code 230001), including the following:

1. KASUMIN 2L-CA, Reg. No. 70506-430
2. KASUMIN 4SL, Reg. No. 70506-441
3. Kasugamycin Technical, Reg. No. 91813-74
4. Kasumin 2L, Reg. No. 70506-430

5. Kasumin 4L, Reg. No. 70506-441

(8) Cancel all pesticide products containing ipflufenoquin (PC Code 129120), including the following:

1. AXIOS C, Reg. No. 70506-622
2. AXIOS C FUNGICIDE, Reg. No. 70506-622
3. AXIOS Cion, Reg. No. 70506-622
4. KINOPROL 20 SC, Reg. No. 8033-139
5. KINOPROL TECHNICAL, Reg. No. 8033-140

(9) Cancel all pesticide products containing 1H-1,2,4-Triazole, 1-((4-bromo-2-(2,4-dichlorophenyl)tetrahydro-2-furanyl)methyl) (PC Code 120503), including the following:

1. BROMUCONAZOLE FUNGICIDE, Reg. No. 59639-146
2. BROMUCONAZOLE TECHNICAL, Reg No. 59639-145

(10) Cancel all pesticide products containing cyproconazole (PC Code 128993), including the following:

1. A9898A, Reg. No. 100-1752
2. APROACH PRIMA, Reg. No. 352-883
3. AZURE XTRA FUNGICIDE, Reg. No. 228-728
4. Alto® 100SL Fungicide, Reg. No. 100-1226
5. CYPROCONAZOLE TECHNICAL, Reg. No. 100-864
6. Cyproconazole TG Technical, Reg. No. 62719-778
7. DUPONT APROACH PRIMA FUNGICIDE, Reg. No. 352-883
8. NUP-14035 FUNGICIDE, Reg. No. 228-728
9. QUADRIS XTRA FUNGICIDE, Reg. No. 100-1225

(11) Cancel all pesticide products containing fenbuconazole (PC Code 129011) including the following:

1. ENABLE 2F, Reg. No. 62719-416
2. ENABLE 2F, Reg. No. WI160001
3. ENABLE 2F, Reg. No. DE200002
4. ENABLE 2F, Reg. No. NJ200003
5. ENABLE 2F, Reg. No. NY200002
6. ENABLE 2F, Reg. No. NC200002
7. INDAR 2F, Reg. No. 62719-416
8. INDAR 2F, Reg. No. SC080006
9. INDAR 2F, Reg. No. GA080006
10. INDAR 2F, Reg. No. NJ080002
11. INDAR 2F, Reg. No. MD090003
12. INDAR 2F, Reg. No. PA090002

13. INDAR 2F, Reg. No. NY100007
14. INDAR 2F, Reg. No. OH110001
15. INDAR 2F, Reg. No. WI110004
16. INDAR 2F, Reg. No. MD210001
17. INDAR 75 WSP, Reg. No. 62719-421
18. Indar 2F, Reg. No. MI090002
19. RH-7592 75 WP, Reg. No. 62719-433
20. RH-7592 TECHNICAL, Reg. No. 62719-415

(12) Cancel all pesticide products containing flutriafol (PC Code 128940), including the following:

1. A2123.01, Reg. No. 91234-384
2. A2123.06, Reg. No. 91234-385
3. ADASTRIO, Reg. No. 279-3642
4. ADASTRIO FUNGICIDE, Reg. No. 279-3642
5. ARG Flutriafol Technical, 87373-165
6. Azoxystrobin 296 g/L + Flutriafol 218 g/L SC, Reg. No. 279-3596
7. CHEMINOVA FLUTRIAFOL TECHNICAL, Reg. No. 4787-55
8. CHEMINOVA FLUTRIAFOL TECHNICAL 98.3%, Reg. No. 4787-61
9. CRY-048 FUNGICIDE, Reg. No. 70506-433
10. EQUATION TZ, Reg. No. 279-3596
11. F4278-3, Reg. No. 279-9638
12. F4406-1, Reg. No. 279-3640
13. F4406-1 T&O SC Fungicide, Reg. No. 101563-374
14. F4412-1, Reg. No. 279-3642
15. F4413-1, Reg. No. 279-3643
16. F6123-1 Fungicide, Reg. No. 101563-369
17. F9654-1 Fungicide, Reg. No. 279-3603
18. FLUTRIAFOL 250 G/L SC, Reg. No. 279-3588
19. FLUTRIAFOL 250 G/L SC, Reg. No. TX250008
20. FORTIX FUNGICIDE, Reg. No. 70506-433
21. Flutriafol 500 g/L SC, Reg. No. 279-3594
22. Flutriafol 500 g/L SC, Reg. No. TX150007
23. Flutriafol 500 g/L SC, Reg. No. TX190010
24. INDEPRO FUNGICIDE, Reg. No. 101563-369
25. KALIDA, Reg. No. 101563-374
26. KALIDA FUNGICIDE, Reg. No. 101563-374
27. KALIDA SC FUNGICIDE, Reg. No. 101563-374
28. LUCENTO TM, Reg. No. 279-3603
29. LUCENTO TM FUNGICIDE, Reg. No. 279-3603
30. LUCENTOTM NXT, Reg. No. 279-3603
31. NNF-1681 SC Fungicide, Reg. No. 71711-48
32. Preemptor Fungicide, RAYORA, Reg. No. 279-3620
33. RAYORA FUNGICIDE, Reg. No. 101563-369
34. RAYORA SC FUNGICIDE, Reg. No. 101563-369

35. RHYME FUNGICIDE, Reg. No. 279-3588
36. RONDEL, Reg. No. 91234-384
37. Sivora, Reg. No. 91234-385
38. Sivora SPC, Reg. No. 91234-385
39. TOPGUARD EQ FUNGICIDE, Reg. No. 279-3596
40. TOPGUARD FUNGICIDE, Reg. No. 279-3557
41. TOPGUARD FUNGICIDE SPECIALTY CROPS (FOR SUBLABEL FOR POME AND STONE FRUITS), Reg. No. 279-3557
42. TOPGUARD MAXX (TM), Reg. No. 279-3588
43. TOPGUARD MAXX (TM) FUNGICIDE, Reg. No. 279-3588
44. TOPGUARD TERRA, Reg. No. 279-3594
45. TOPGUARD TERRA FUNGICIDE, Reg. No. 279-3594
46. XYWAY 3D FUNGICIDE, Reg. No. 279-9638
47. Xyway LFR® Fungicide, Reg. No. 279-9658
48. Y6981-R002 LFR® Fungicide, Reg. No. 279-9658
49. Y6981-R002 LFR® Fungicide , Reg. No. AZ240001

(13) Cancel all pesticide products containing difenoconazole (PC Code 128847), including the following:

1. A20259 Crop, Reg. No. 100-1602
2. A21185B, Reg. No. 100-1564
3. A21458B, Reg. No. 100-1588
4. A22388B, Reg. No. 100-1647
5. A23089 Fungicide, Reg. No. 100-1674
6. A253.01, Reg. No. 100-1716
7. A253.02, Reg. No. 91234-207
8. A253.03, Reg. No. 91234-186
9. A253.04, Reg. No. 87373-54
10. A253.05, Reg. No. 91234-171
11. A253.06, Reg. No. 91234-143
12. A253.07, Reg. No. 91234-118
13. A253.08, Reg. No. 91234-208
14. A253.09, Reg. No. 91234-205
15. A253.10, Reg. No. 91234-206
16. A253.11, Reg. No. 91234-246
17. ACADIA ESQ, Reg. No. 91234-118
18. ACADIA ESQ FUNGICIDE, Reg. No. 91234-205
19. AG37594 CS EC Fungicide, Reg. No. 2749-649
20. ALBAUGH MF-1, Reg. No. 45002-28
21. ALBAUGH MF-4.5, Reg. No. 45002-27
22. ALDIA FS & ABOVE ESQ, Reg. No. 34704-1128
23. AMISTAR TOP, Reg. No. 100-1313
24. APPRISE SEED TREATMENT, Reg. No. 55146-160
25. ARG Difenoconazole Technical, Reg. No. 95268-1
26. ASCERNITY CA, Reg. No. 100-1477

27. AVALAIRE AZOXY + DIFEN SBX, Reg. No. 93930-45
28. AX AZOXY-DIFEN, Reg. No. 89167-79
29. AX AZOXY-DIFEN SC, Reg. No. 89167-103
30. AX FLUAZI-DIFENO, Reg. No. 89167-122
31. Academy, Reg. No. 100-1529
32. Aceto Difenoconazole, Reg. No. 33427-21
33. Albaugh IPZ-1, Reg. No. 45002-45
34. Alibi Flora, Reg. No. 100-1506
35. Aprovia® Top Fungicide, Reg. No. 100-1476
36. Ascernity, Reg. No. 100-1477
37. Avalaire Azoxy_Difen, Reg. No. 93930-60
38. Avalaire Cyprodinil+Difenoconazole, Reg. No. 93930-65
39. Avalaire Difen PPZ EC, Reg. No. 93930-56
40. Avalaire Difenoconazole EC, Reg. No. 93930-83
41. Azoxy D Select, Reg. No. 93930-54
42. BRISKWAY, Reg. No. 100-1433
43. Briskway-CA, Reg. No. 100-1433
44. CEREAL PREMIX 5.0 ST, Reg. No. 45002-45
45. CEREAL PREMIX 5L ST, Reg. No. 45002-45
46. CEREAL PREMIX F4 FTU ST, Reg. No. 42750-324
47. CEREAL PREMIX F4 ST, Reg. No. 42750-334

(14) Cancel all pesticide products containing paclobutrazol (PC Code 125601), including the following:

1. A589.01, Reg. No. 91234-225
2. A589.02, Reg. No. 91234-224
3. A589.03, Reg. No. 91234-353
4. ARG Paclobutrazol Technical, Reg. No. 87373-95
5. Aquatrols Paclobutrazol, Reg. No. 94396-30
6. BERATI, Reg. No. 91234-225
7. BONZI ORNAMENTAL GROWTH REGULATOR, Reg. No. 100-996
8. Berati 10 XC, Reg. No. 91234-353
9. CAMBISTAT, Reg. No. 74779-3
10. CAMBISTAT, Reg. No. 74779-3
11. CLARELLE, Reg. No. 100-1412
12. CSI 22-426 Paclo, Reg. No. 53883-519
13. CUTDOWN, Reg. No. 70506-278
14. Cambistat ROW, Reg. No. 74779-19
15. ClearROW, Reg. No. 74779-19
16. Cutless Shrub and Tree Sculptor, Reg. No. 67690-69
17. FSP G, Reg. No. 67690-69
18. Griffin Unitech, Reg. No. 94396-30
19. Hammer Head, Reg. No. 92522-2
20. Hammer Head PGR, Reg. No. 92522-2
21. M1840 Growth Regulator, Reg. No. 524-651

22. M1840 Growth Regulator, Reg. No. MO180006
23. M1840 Growth Regulator, Reg. No. AZ180002
24. M1840 Growth Regulator, Reg. No. IL180001
25. Musketeer® TURF GROWTH REGULATOR, Reg. No. 67690-57
26. PACLO 2SC, Reg. No. 62097-24
27. PACLO PRO ORNAMENTAL GROWTH REGULATOR, Reg. No. 100-996
28. PACLOBUTRAZOL 2SC, Reg. No. 100-1014
29. PACLOBUTRAZOL TECHNICAL, Reg. No. 100-999
30. PACLOBUTRAZOL TECHNICAL, Reg. No. 62097-12
31. PACLOBUTRAZOL WET PASTE MANUFACTURING USE PRODUCT, Reg. No. 100-1128
32. PACZOL ORNAMENTAL GROWTH REGULATOR, Reg. No. 70506-581
33. PACZOL TECHNICAL, Reg. No. 91813-89
34. PICCOLO, Reg. No. 62097-11
35. PICCOLO 10 XC, Reg. No. 62097-25
36. POWER-GUARD 2SC, Reg. No. 100-1014
37. PROFILE 2SC TREE AND TURF GROWTH REGULATOR, Reg. No. 67690-22
38. Pac-Low, Reg. No. 53883-519
39. Pac-Low 2, Reg. No. 53883-519
40. Pac-Low PGR, Reg. No. 53883-519
41. Pac-Low SC, Reg. No. 53883-519
42. Paclow, Reg. No. 53883-519
43. Paclow 2, Reg. No. 53883-519
44. Paclow PGR, Reg. No. 53883-519
45. QUELL, Reg. No. 67690-56
46. Quali-Pro Pac-Low, Reg. No. 53883-519
47. Quali-Pro Pac-Low 2, Reg. No. 53883-519
48. Quali-Pro Pac-Low 2SC, Reg. No. 53883-519
49. Quali-Pro Pac-Low PGR, Reg. No. 53883-519
50. Quali-Pro Pac-Low SC, Reg. No. 53883-519

(15) Cancel all pesticide products containing myclobutanil (PC Code 128857), including the following:

1. 20NACOM182, Reg. No. 92564-83
2. 20NACOM183, Reg. No. 92564-84
3. A299.01, Reg. No. 91234-284
4. A299.02, Reg. No. 91234-283
5. AGRISTAR SONOMA 20EW AG, Reg. No. 42750-165
6. AGRISTAR SONOMA 40WSP, Reg. No. 42750-141
7. AMORTECH MYCLO 20 EW, Reg. No. 42750-166
8. ARG Myclobutanil 40 MUP, Reg. No. 87373-151
9. ARG Myclobutanil Technical, Reg. No. 87373-127
10. AX MYCLO 19.7EC AG, Reg. No. 89167-127
11. AX MYCLOBUTANIL 40WSP, Reg. No. 89167-121

12. Avalaire Myclobutanil 40 WSP, Reg. No. 93930-97
13. BIOADVANCED ® 3 IN 1 INSECT, DISEASE & PLANT MITE CONTROL READY-TO-USE, Reg. No. 92564-84
14. BIOADVANCED ® 3-IN-1 INSECT, DISEASE & PLANT MITE CONTROL READY-TO-USE, Reg. No. 92564-84
15. BIOADVANCED ® ALL IN ONE FLOWER PLANT CARE READY-TO-USE, Reg. No. 92564-84
16. BIOADVANCED ® ALL IN ONE ROSE & FLOWER PLANT CARE READY-TO-USE, Reg. No. 92564-84
17. BIOADVANCED ® SCIENCE-BASED SOLUTIONS 3 IN 1 INSECT, DISEASE & PLANT MITE CONTROL I READY-TO-USE, Reg. No. 92564-84
18. BIOADVANCED ® SCIENCE-BASED SOLUTIONS 3-IN-1 INSECT, DISEASE & PLANT MITE CONTROL I READY-TO-USE, Reg. No. 92564-84
19. BIOADVANCED ® SCIENCE-BASED SOLUTIONS ALL IN ONE FLOWER PLANT CARE READY-TO-USE, Reg. No. 92564-84
20. BIOADVANCED ® SCIENCE-BASED SOLUTIONS ALL IN ONE ROSE & FLOWER PLANT CARE READY-TO-USE, Reg. No. 92564-84
21. BIOADVANCED® 3-IN-1 INSECT, DISEASE & PLANT MITE CONTROL CONCENTRATE, Reg. No. 92564-83
22. BIOADVANCED® 3-IN-1 INSECT, DISEASE & PLANT MITE CONTROL READY-TO-SPRAY, Reg. No. 92564-83
23. BIOADVANCED® ALL-IN-ONE ROSE & FLOWER PLANT CONCENTRATE, Reg. No. 92564-83
24. BIOADVANCED® ALL-IN-ONE ROSE & FLOWER PLANT READY-TO-SPRAY, Reg. No. 92564-83
25. BIOADVANCED® SCIENCE-BASED SOLUTIONS 3-IN-1 INSECT, DISEASE & PLANT MITE CONTROL CONCENTRATE II, Reg. No. 92564-83
26. BIOADVANCED® SCIENCE-BASED SOLUTIONS 3-IN-1 INSECT, DISEASE & PLANT MITE CONTROL READY-TO-SPRAY II, Reg. No. 92564-83
27. BIOADVANCED® SCIENCE-BASED SOLUTIONS ALL IN ONE FLOWER PLANT CARE CONCENTRATE, Reg. No. 92564-83
28. BIOADVANCED® SCIENCE-BASED SOLUTIONS ALL IN ONE ROSE & FLOWER PLANT CARE CONCENTRATE I, Reg. No. 92564-83
29. BIOADVANCED® SCIENCE-BASED SOLUTIONS ALL IN ONE ROSE & FLOWER PLANT CARE READY-TO-SPRAY, Reg. No. 92564-83
30. BIOADVANCED® SCIENCE-BASED SOLUTIONS ALL IN ONE ROSE & FLOWER PLANT CONCENTRATE,

Reg. No. 92564-83
31. BIOADVANCED® SCIENCE-BASED SOLUTIONS ALL IN ONE ROSE & FLOWER PLANT READY-TO-SPRAY,
Reg. No. 92564-83
32. BIOADVANCED® SCIENCE-BASED SOLUTIONS ALL IN ONE ROSE & FLOWER PLANT SPRAY CONCENTRATE I,
Reg. No. 92564-83
33. BIOADVANCED® SCIENCE-BASED SOLUTIONS ALL-IN-ONE ROSE & FLOWER PLANT READY-TO-SPRAY I,
Reg. No. 92564-83
34. CHEMSICO FUNGICIDE M, Reg. No. 9688-123
35. CHEMSICO RTU MP, Reg. No. 9688-121
36. DISARM M FUNGICIDE, Reg. No. 70506-428
37. DISARM M GRANULAR FUNGICIDE, Reg. No. 70506-432
38. EAGLE 0.39G SPECIALTY FUNGICIDE, Reg. No. 62719-461
39. EAGLE 20EW, Reg. No. 62719-463
40. EAGLE 40WP, Reg. No. 62719-417
41. Eagle® 0.62G, Reg. No. 62719-462
42. FERTI-LOME F-STOP LAWN & GARDEN FUNGICIDE AND FERTI-LOME F-STOP LAWN & GARDEN FUNGICIDE READY-TO-SPRAY,
Reg. No. 7401-505
43. FLUOXASTROBIN - MYCLOBUTANIL SC, Reg. No. 70506-428
44. Gravex 20 EW, Reg. No. 91234-283
45. INDICT 40WSP FUNGICIDE, Reg. No. 228-733
46. INDICT Fungicide, Reg. No. 228-731
47. LAREDO EC, Reg. No. 62719-412
48. LAREDO EW, Reg. No. 62719-493
49. LIBERTY MYCLOBUTANIL 240, Reg. No. 89168-115

(16) Cancel all pesticide products containing propiconazole (PC Code 122101), including the following:

1. BLACK FLAG INSECT KILLER PLUS GRANUALS, Reg. No. 9688-316
2. 22 EXPRESS, Reg. No. 1022-596
3. A18993 FUNGICIDE, Reg. No. 100-1475
4. A201.04, Reg. No. 87373-23
5. A201.06, Reg. No. 91234-35
6. A21461 300SE TURF, Reg. No. 100-1604
7. A21461 Crop, Reg. No. 100-1605
8. A21664A 265SE Turf, Reg. No. 100-1627
9. A223.02, Reg. No. 91234-25
10. A223.04, Reg. No. 91234-36
11. A223.05, Reg. No. 91234-221
12. A223.06, Reg. No. 91234-262
13. A225.06 [TM], Reg. No. 91234-122
14. A225.07, Reg. No. 87373-34

15. A225.08, Reg. No. 91234-76
16. A225.10, Reg. No. 91234-79
17. A253.02, Reg. No. 91234-186
18. A253.10, Reg. No. 91234-206
19. ACETO PROPICONAZOLE TECHNICAL, Reg. No. 33427-33
20. ACTYLIS PROP 3.6 FL FUNGICIDE, Reg. No. 2749-653
21. ACTYLIS PROPICONAZOLE 3.6 FL FUNGICIDE, Reg. No. 2749-653
22. AFRAME PLUS, Reg. No. 100-1324
23. AG37588 CS EC Fungicide, Reg. No. 2749-653
24. ALAMO FUNGICIDE, Reg. No. 100-741
25. ALAMO II, Reg. No. 100-1327
26. ALB 4010B, Reg. No. 45002-64
27. ALSA PROPICONAZOLE 14.3 EC, Reg. No. 64014-14
28. AMORTECH PGR 113 II, Reg. No. 89442-3
29. AMTIDE PROPICONAZOLE 41.8% EC FUNGICIDE, Reg. No. 38167-35
30. AMVAC 3-WAY SNOW MOLD FUNGICIDE, Reg. No. 5481-614
31. ANDERSONS GOLD PRODUCTS FF III SNOWMOLD FUNGICIDE WITH FERTILIZER, Reg. No. 5481-614
32. ANDERSONS GOLF PRODUCTS PROPHESY 0.72G FUNGICIDE WITH DGPRO, Reg. No. 9198-219
33. ANTIBLU IP75, Reg. No. 62190-24
34. ANTIBLU M3, Reg. No. 70227-11
35. ANTIBLU SELECT CR, Reg. No. 62190-39
36. ANTIBLU SELECT FE, Reg. No. 62190-39
37. ANTIBLU TK-30, Reg. No. 62190-26
38. ANTIBLU XP-QUATTRO, Reg. No. 62190-33
39. ANTIBLU XP32, Reg. No. 62190-33
40. ANTIBLU XP64, Reg. No. 62190-25
41. APROVIA ACE, Reg. No. 100-1475
42. ARCH NB, Reg. No. 75506-3
43. ARG Propiconazole Technical, Reg. No. 87373-52
44. ARMOR TECH PPZ 143 MC, Reg. No. 86064-4
45. ARMORTECH ZOXY PG II, Reg. No. 89442-53
46. ARTAVIA XCEL, Reg. No. 91234-79

(17) Cancel all pesticide products containing prothioconazole (PC Code 113961) , including the following:

1. USF 0411, Reg. No. 264-1207
2. 19ESP006, Reg. No. 101563-223
3. A2103.01, Reg. No. 91234-345
4. A2103.02, Reg. No. 91234-346
5. ACCELERON D-961 FUNGICIDE SEED TREATMENT, Reg. No. 264-1122
6. ACCELERON PRIME F, Reg. No. 264-1238
7. ACCELERON PRIME FI, Reg. No. 264-1239
8. ACCELERON PRIME FUNGICIDE, Reg. No. 264-1238

9. ACCELERON SOLUTIONS PRIME F, Reg. No. 264-1238
10. ACCELERON SOLUTIONS PRIME FI, Reg. No. 264-1239
11. ALTIPRO, Reg. No. 1381-275
12. ALTIZOLE, Reg. No. 1381-275
13. ARMORTECH PROTHIO 4L, Reg. No. 89442-61
14. AURELIA 480 SC, Reg. No. 101986-4
15. AX PROTHIO-TEB SC, Reg. No. 89167-135
16. Acceleron 26FI Fungicide and Insecticide Seed Treatment, Reg. No. 264-1239
17. Acceleron 26FO Fungicide Seed Treatment, Reg. No. 264-1238
18. Acceleron D-342 Fungicide Seed Treatment, Reg. No. 264-825
19. Acceleron Prime Fungicide Insecticide, Reg. No. 264-1239
20. Aceto Prothioconazole Technical, Reg. No. 33427-36
21. Avixio D-342, Reg. No. 91234-345
22. Brixen Plus, Reg. No. 60063-93
23. CAPAXOR, Reg. No. 264-1207
24. Carve Xtra, Reg. No. 60063-100
25. Cortina Xtra, Reg. No. 60063-93
26. DAI Prothioconazole Technical, Reg. No. 45002-59
27. DELARO 325 SC FUNGICIDE, Reg. No. 264-1055
28. DELARO COMPLETE, Reg. No. 264-1207
29. DELVE, Reg. No. 101986-1
30. DENSICOR FUNGICIDE, Reg. No. 101563-210
31. Delight, Reg. No. 83529-275
32. Densicor, Reg. No. 101563-210
33. EMESTO SILVER, Reg. No. 264-1123
34. EVERGOL ENERGY, Reg. No. 264-1122
35. EVERGOL ENGERGY SB, Reg. No. 264-1122
36. Ellora, Reg. No. 83529-156
37. GF-4630, Reg. No. 352-942
38. HARQUEBUS PLUS SC, Reg. No.
39. Hailir Prothioconazole Technical, Reg. No. 103087-3
40. Jade, Reg. No. 97065-2
41. KOJAMI, Reg. No. 66222-307
42. LIBERTY PROTHIO-TEB SC, Reg. No. 89168-161
43. LS PRO-TRIFLOX 175-150, Reg. No. 101986-1
44. LS Prothio-Tebu 210-210, Reg. No. 101986-3
45. LS Prothio-Trifloxy 125-375, Reg. No. 101986-2
46. LS Prothioconazole Technical Fungicide, Reg. No. 94176-1
47. LUNA PRO, Reg. No. 264-1084
48. MCW PROTHIOCONAZOLE TECHNICAL, Reg. No. 11678-85

(18) Cancel all pesticide products containing tebuconazole (PC Code 128997), including the following:

1. Liberty Teb-Imida SC, Reg. No. 89168-27
2. 16COM027 RTU Insecticide, Miticide, and Fungicide, Reg. No. 92564-72

3. 22 EXPRESS, Reg. No. 1022-596
4. A201.07, Reg. No. 91234-216
5. A2103.02, Reg. No. 91234-346
6. A2114.03, Reg. No. 91234-349
7. A224.03, Reg. No. 91234-132
8. A224.04, Reg. No. 91234-134
9. A224.05, Reg. No. 91234-196
10. A225.11, Reg. No. 91234-124
11. A225.12, Reg. No. 91234-142
12. A228.02, Reg. No. 91234-100
13. ABSOLUTE 500 SC FUNGICIDE, Reg. No. 264-849
14. ABSOLUTE MAXX, Reg. No. 264-849
15. ACADIA TEB, Reg. No. 91234-124
16. ACTYLIS TEB 3.6 FL FUNGICIDE, Reg. No. 2749-664
17. ACTYLIS TEBUCONAZOLE 3.6 FL FUNGICIDE, Reg. No. 2749-664
18. ADAMENT® 50 WG Fungicide, Reg. No. 264-1052
19. ADRENALYN, Reg. No. 60063-62
20. ADRENALYN ETQ TURF, Reg. No. 60063-62
21. ADRENALYN ETQ TURF FUNGICIDE, Reg. No. 60063-62
22. ADRENALYN TURF AND ORNAMENTAL, Reg. No. 60063-62
23. ADRENALYN TURF AND ORNAMENTAL FUNGICIDE, Reg. No. 60063-62
24. AG37953 CS SC Fungicide, Reg. No. 2749-664
25. ALBAUGH MF-4.5, Reg. No. 45002-27
26. AMIRA, Reg. No. 53883-502
27. AMV4820, Reg. No. 5481-585
28. ANTIBLU SELECT CR, Reg. No. 62190-39
29. ANTIBLU SELECT FE, Reg. No. 62190-39
30. APPRISE SEED TREATMENT, Reg. No. 55146-160
31. ARG TEBUCONAZOLE TECHNICAL, Reg. No. 87373--89
32. ARG Tebuconazole Technical II, Reg. No. 87373--84
33. ARMORTECH ZOXY-T, Reg. No. 42750-292
34. ARTAVIA TEB, Reg. No. 91234-142
35. AX PROTHIO-TEB SC, Reg. No. 89167-135
36. AX TEBUCON 3.6 SC FUNGICIDE, Reg. No. 89167-23
37. AX TFM-TEB LIQUID FLOWABLE FUNGICIDE, Reg. No. 89167-26
38. AZOX TEB, Reg. No. 83529-58
39. AZOXY 11% + TEB 26% FL, Reg. No. 42750-292
40. AZOXY TEB, Reg. No. 42750-285
41. AZOXYSTROBIN 11% + TEBUCONAZOLE 18% FL, Reg. No. 42750-285
42. AZOXYTEBUZONE, Reg. No. 71532-38
43. AZTEB SELECT, Reg. No. 89442-27
44. Agrora Tebuconazole Technical, Reg. No. 103862-9
45. Albaugh THX-3, Reg. No. 45002-55
46. Albaugh THX-7, Reg. No. 45002-58
47. Albaugh Tebuconazole Technical Reg. No. 81598-2

(19) Cancel all pesticide products containing tetraconazole (PC Code 120603), including the following:

1. A201.08, Reg. No. 91234-210
2. A201.09, Reg. No. 91234-211
3. ACROPOLIS, Reg. No. 60063-82
4. ACROPOLIS AMC FUNGICIDE, Reg. No. 60063-82
5. ACROPOLIS FUNGICIDE, Reg. No. 60063-82
6. AFFIANCE, Reg. No. 10163-332
7. ANDIAMO, Reg. No. 83070-14
8. ANDIAMO 230 FUNGICIDE, Reg. No. 60063-81
9. ANDIAMO ADVANCE, Reg. No. 60063-79
10. ANDIAMO DUO, Reg. No. 83070-13
11. ARY-0415-007, Reg. No. 70506-616
12. ARY-0415-008, Reg. No. 10163-404
13. BALTHAZAR, Reg. No. 60063-80
14. BALTHAZAR FUNGICIDE, Reg. No. 60063-80
15. BRIXEN, Reg. No. 60063-83
16. BRIXFEN FUNGICIDE, Reg. No. 60063-83
17. Copper-Tetraconazole, Reg. No. 60063-88
18. DOMARK 230 ME FUNGICIDE, Reg. No. 10163-397
19. DOMARK 230 ME FUNGICIDE, Reg. No. ID220008
20. DOMARK 230 ME FUNGICIDE, Reg. No. ID220006
21. EMINENT ESP, Reg. No. 10163-403
22. EMINENT VP, Reg. No. 10163-403
23. Fortix NXT Fungicide, Reg. No. 70506-442
24. LIBERTY 1501 SC, Reg. No. 89168-64
25. LIBERTY AZOXY-TET, Reg. No. 89168-52
26. LIBERTY PYRAC-TRZ, Reg. No. 89168-132
27. Liberty D-AZOXY-TET, Reg. No. 89168--100
28. Liberty TETRA 2ME, Reg. No. 89168-59
29. M14360D, Reg. No. 10163-406
30. MAZINGA ADVANCE, Reg. No. 60063-79
31. MAZINGA FUNGICIDE, Reg. No. 83070-12
32. MENSA, Reg. No. 10163-406
33. METTLE 125 ME FUNGICIDE, Reg. No. 10163-398
34. MINERVA DUO, Reg. No. 83070-11
35. MINERVA DUO FUNGICIDE, Reg. No. 83070-11
36. MINERVA FUNGICIDE, Reg. No. 60063-12
37. MUSCA , Reg. No. 83070-12

(20) Cancel all pesticide products containing triadimefon (PC Code 109901), including the following:

1. ARMADA 50 WDG, Reg. No. 101563-142

2. Aquatrols Triadimefon, Reg. No. 94396-33
3. Aquatrols Triadimefon UniTech, Reg. No. 94396-33
4. BAYLETON 50 TURF AND ORNAMENTAL FUNGICIDE IN WATER SOLUBLE PACKETS, Reg. No.
5. BAYLETON 50 WDG NURSERY AND GREENHOUSE SYSTEMIC FUNGICIDE, Reg. No. 101563-84
6. BAYLETON 50% CONCENTRATE, Reg. No. 101563-2
7. BAYLETON TECHNICAL FUNGICIDE, Reg. No. 101563-1
8. BAYLETON WSP 50 TURF AND ORNAMENTAL FUNGICIDE IN WATER, SOLUBLE PACKETS, Reg. No. 101563-84
9. BAYLETON® FLO TURF AND ORNAMENTAL FUNGICIDE, Reg. No. 101563-112
10. STRIKE PLUS 50 WDG, Reg. No. 101563-142
11. SYSTREX/NUTRIENT, Reg. No. 64014-3
12. TARTAN FUNGICIDE, Reg. No. 101563-113
13. TARTAN STRESSGARD, Reg. No. 101563-113
14. TIDE TRIADIMEFON 430SC, Reg. No. 84229-55
15. TIDE TRIADIMEFON TECHNICAL, Reg. No. 81964-4
16. TRIADIMEFON TECHNICAL, Reg. No. 101563-1
17. TRIBOLT UNITECHO, Reg. No. 94396-33
18. TRIGO, Reg. No. 101563-142
19. Tide Triadimefon 43 SC, Reg. No. 84229-55
20. Tide Triadimefon 500 WDG, Reg. No. 84229-54