



Via Electronic and Certified Mail

May 28, 2026

Lee Zeldin, Administrator
Environmental Protection Agency
Mail code: 1101A
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Zeldin.Lee@epa.gov

RE: Notice of Intent to Sue for Failure to Perform Mandatory Duties under Section 304(a) of the Clean Water Act Relating to Issuing Water Quality Criteria for Atrazine

Dear Mr. Zeldin:

Atrazine is poisoning America. While more than 60 countries have banned the herbicide outright as too dangerous, over 70 million pounds of atrazine are used annually in America, contaminating thousands of watersheds nationwide and inflicting widespread harm to aquatic life and human health.¹

Atrazine threatens public health. Atrazine is found in drinking water supplies in 36 states affecting approximately 40 million Americans.² Atrazine is a well-recognized endocrine disruptor—affecting the hormonal cycles of males and females—linked to changes in menstrual cycles and fertility, and also birth defects.³ Atrazine has been classified as a “probable human carcinogen” by the International Agency for Research on Cancer.⁴ Atrazine also poisons wildlife. The Environmental Protection Agency (“EPA”) itself recognizes that atrazine harms over 1,000 Endangered Species.⁵ Atrazine effects on amphibians are so severe that it leads to “chemical castration” of males.⁶

This letter provides notice that the Center for Biological Diversity, the Center for Environmental Health, and Pesticide Action & Agroecology Network (collectively, “Public Interest Groups”) intend to file suit pursuant to the Clean Water Act (“CWA”), 33 U.S.C. § 1365(a)(2), against the U.S. Environmental Protection Agency and you, in your official capacity as Administrator (collectively, “EPA”), for failing to perform nondiscretionary duties required by the CWA. Specifically, the Public Interest Groups allege that EPA has violated its mandatory

¹ PAN International 2024; U.S. Geological Survey 2024.

² Environmental Working Group, “EWG Tap Water Database: Contaminant, Atrazine.”

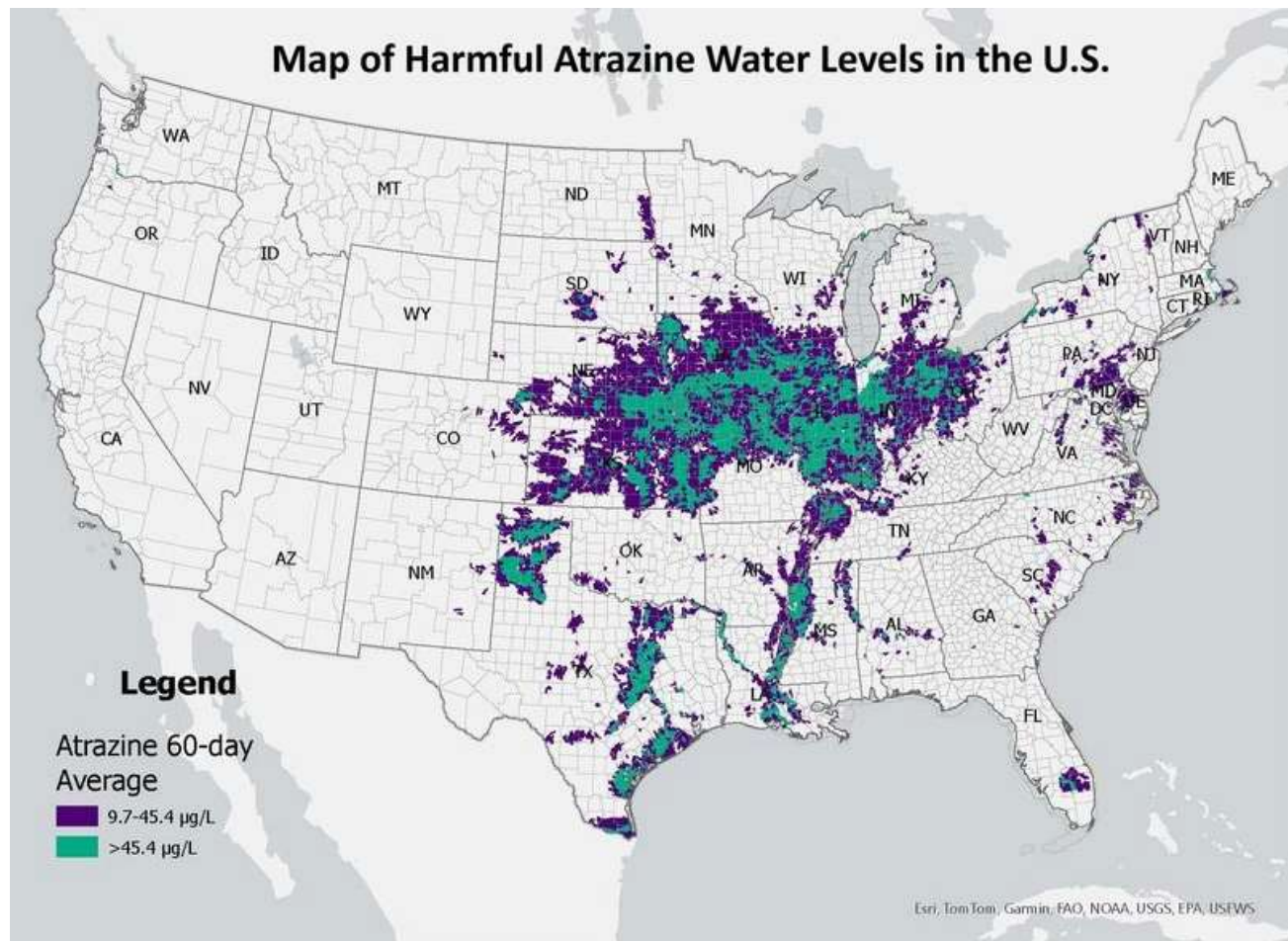
³ Conley 2025.

⁴ IARC 2025; EHSRC 2025.

⁵ U.S. Environmental Protection Agency, 2021.

⁶ Hayes 2010.

obligations under CWA section 304(a), 33 U.S.C. § 1314(a), to issue water quality criteria for atrazine. 33 U.S.C. § 1365(b)(2); 40 C.F.R. §§ 135.2(b),135.3(b).



Watersheds that Exceed the EPA Level of Concern for Atrazine⁷

Atrazine’s widespread pollution—at levels that exceed EPA’s own levels of concern—justifies immediate action, yet EPA has stalled progress for over 25 years since it first initiated the process to set water quality criteria in 1999. 64 Fed. Reg. 58409 (Oct. 29, 1999). EPA must act now.

I. Atrazine is unquestionably harmful.

Atrazine is a chlorotriazine herbicide used as an active ingredient in pesticides that kill plants by inhibiting photosynthesis. Atrazine is registered for use on several agricultural crops, with the highest use on field corn, sweet corn, sorghum, and sugarcane. Atrazine’s use has contaminated waterbodies, leading to widespread exposure that poses threats to ecosystems and human health.

⁷ U.S. Environmental Protection Agency, Dec. 5, 2024, <https://www.regulations.gov/document/EPA-HQ-OPP-2013-0266-2137>

a. *Atrazine harms aquatic life.*

Generally, atrazine varies from slightly to highly toxic to animals and can cause mortality, impairment to animals' growth and reproduction, and indirect harm from negative ecosystem impacts. Researchers have found a consistent pattern of additive and synergistic toxicity when organisms are exposed to atrazine in mixtures with other chemicals. A recent meta-analysis of 107 datasets concluded atrazine exposure is associated with increased animal mortality, with amphibians, fish, mollusks, insects, and nematodes among the most sensitive groups; animals in larval and juvenile stages showed greater susceptibility; commercial and pure formulations resulted in high mortality rates; and atrazine and other pesticides had synergistic effects that increased the risk of mortality.⁸

Multiple studies found atrazine has a devastating effect on amphibians. One study found that chronic atrazine exposure in adult male frogs caused chemical castration and complete feminization.⁹ Another study showed that atrazine caused immunosuppression in tadpoles and was the strongest predictor of larval trematodes, a parasitic flatworm.¹⁰ Another study found atrazine slowed growth of American toad tadpoles.¹¹ Other studies have found non-lethal but deleterious effects on growth, gonadal development, liver health, and survival even at sub-chronic exposure levels.¹²

Atrazine's damaging effects extend beyond amphibians. A recent review found a range of biochemical, physiological, behavioral, and genetic alterations in fish, even at concentrations deemed environmentally relevant.¹³ One study found a month-long exposure to low atrazine concentrations caused oxidative stress, liver and testis histological damage, and altered thyroid hormone ratio.¹⁴ Some recent studies have found that atrazine can have transgenerational effects, sometimes not manifesting until a generation after initial exposure.¹⁵ Similar effects were also found in invertebrates, like crayfish and mussels.¹⁶ Its accumulated presence in aquatic ecosystems has led to widespread, ecosystem-level harm.¹⁷

Finally, given its use as a photosynthesis-inhibiting herbicide, atrazine's effect on plant life is unsurprising but no less devastating. One study found atrazine inhibited photosynthesis and altered defense responses in the marine aquatic primary producers.¹⁸ Another study affirmed the additive and synergistic effects for such producers, noting impaired photosynthesis, energy supply, biomass, and nutritional value.¹⁹ Another study found that atrazine even disrupts microbe

⁸ Oliveira et al. 2024.

⁹ Hayes et al. 2010; Hayes et al. 2002.

¹⁰ Rohr et al. 2008; Forson and Storfer 2006.

¹¹ Paetow et al. 2023.

¹² Rimayi et al. 2018; Méndez-Tepapa et al. 2023.

¹³ Khoshnood 2024.

¹⁴ Destro et al. 2021.

¹⁵ Cleary et al. 2019; Chin Tai et al. 2023.

¹⁶ Hadeed et al. 2022; Bringolf et al. 2007.

¹⁷ de Souza et al. 2023.

¹⁸ Bai et al. 2015.

¹⁹ Wang et al. 2022.

community composition, the cornerstone for many ecosystem processes in aquatic systems.²⁰ Finally, one study directly connected atrazine’s harmful effect on aquatic plants to other animals in the ecosystem because it alters the nutritional quality of this resource for primary consumers.²¹

b. Atrazine harms human health.

Atrazine has been repeatedly linked to a range of human health impacts.²² Atrazine has been classified as a “probable human carcinogen” by the International Agency for Research on Cancer.²³ There are associations with atrazine use and aggressive prostate cancer and Non-Hodgkin lymphoma among those diagnosed at younger ages and with cancers of the pharynx and kidney, and soft tissue cancers were observed in lagged analyses.²⁴ There is also a significant exposure–response association between atrazine use and risk of renal cell carcinoma in lagged analysis.²⁵ Women previously exposed to triazines showed a significant relative risk of increased ovarian cancer.²⁶

Atrazine is widely recognized as an endocrine disruptor, meaning it can interfere with the hormones regulating development and reproduction, causing birth defects, reproductive tumors, and weight loss in amphibians as well as humans.²⁷ A range of studies have demonstrated that atrazine has been linked to irregular estrogen levels and menstrual cycles, testosterone production, abnormal birth weight and timing, and unexplained infertility.²⁸

The research on the dangers of atrazine to environmental and human health are well known and well researched. Included in this notice are additional studies, listed in the references below, providing a portion of the scientific and public research documenting the harm of atrazine.

II. EPA’s atrazine water quality criteria have been in arrested development for over two decades.

EPA notified the public it was beginning the process of developing atrazine water quality criteria over 25 years ago. EPA began developing aquatic life criteria for atrazine in 1999. *See* 64 Fed. Reg. 58409 (Oct. 29, 1999). Two years later, EPA published draft aquatic life criteria for atrazine and solicited comments on these criteria. *See* 66 Fed. Reg. 49186 (Sept. 26, 2001) (“2001 Draft Criteria”); *see also* 66 Fed. Reg. 60211 (Dec. 3, 2001) (extending comment period by 60 days). Two years after that, EPA published revised draft aquatic life criteria for atrazine

²⁰ Pratt et al. 2008.

²¹ Malbezin et al. 2024.

²² Zhao et al. 2024; Pathak et al. 2011.

²³ IARC 2025; EHSRC 2025.

²⁴ Remigio et al. 2024.

²⁵ Andreotti et al. 2020.

²⁶ Donna et al. 1989

²⁷ Pathak et al. 2011; Agopian et al. 2013.

²⁸ Conley 2025; Friedmann 2002; Almberg et al. 2017; Center for Food Safety, Atrazine.

and again solicited comments.²⁹ See 68 Fed. Reg. 63092 (Nov. 7, 2003) (“2003 Draft Criteria”). Two years after that, EPA indicated it was developing human health criteria for atrazine. See 70 Fed. Reg. 60078 (Oct. 14, 2005).

EPA acknowledged “concerns” about atrazine, an herbicide used “throughout the U.S. for control of weeds in agricultural crops.” 2003 Draft Criteria at 63094. EPA noted the many ways atrazine may contaminate the environment, both in its application as an herbicide but also from “industrial manufacture, distribution releases, precipitation, field runoff, and drift.” *Id.* Because of its chemical properties, including its “resistan[ce] to natural degradation in water,” EPA noted “potential risks posed by exposure of aquatic organisms to it.” *Id.* Both the 2001 and 2003 Draft Criteria contained quantitative concentrations for both acute and chronic exposure for freshwater and saltwater environments. *Id.* In soliciting comments for a second (and apparently final) time, EPA sought only narrow advice concerning use of one model and its applicability to both fresh and saltwater aquatic life, implying that its criteria were nearing its final form. *Id.* at 63095.

But since then, no further action has been taken on developing and/or finalizing *any* criteria for atrazine.³⁰ In the intervening 23 years, atrazine is still used, still contaminates the environment, and still poses grave threats to humans and aquatic life. While the docket of EPA’s rulemaking inexplicably went cold in 2003, the risks of atrazine endure, and the need for EPA to develop criteria to ensure these risks are addressed is more pressing than ever.

III. The CWA requires EPA to set baseline recommendations for pesticides like atrazine.

a. Water quality standards are one of the foundations of the CWA.

Congress adopted the CWA in 1972 “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” 33 U.S.C. § 1251(a). The CWA prohibits the discharge of pollutants to waters absent an authorization under the Act. 33 U.S.C. § 1311(a). Authorizations to discharge pollutants from point sources to navigable waters are issued under the National Pollutant Discharge Elimination System (NPDES), which, along with other activities authorized by CWA, must ensure that water quality standards are not violated. 33 U.S.C. § 1311(b)(1)(C).

“Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act.” 30 C.F.R. § 131(3)(i). “Such standards serve the dual purposes of establishing the water quality goals for a specific water body and serve as the regulatory basis for the establishment of water-quality-based treatment controls and strategies beyond the technology-based levels of treatment” also required by the

²⁹ Concurrent with EPA Office of Water’s release of the 2003 Draft Criteria, EPA’s Office of Pesticide Programs published its risk assessment for atrazine, in compliance with EPA’s distinct obligations under FIFRA. 2003 Draft Criteria at 63094

³⁰ EPA’s CWA failures extend beyond atrazine. Of the hundreds of pesticides listed under FIFRA, only a handful have recommended criteria.

CWA. 40 C.F.R. § 131.2. The CWA put states in the driver's seat by requiring them to set and regularly update water quality standards, which articulate the goals necessary to protect the uses of waterbodies and serve as a backstop against deterioration.

Water quality standards also serve as a target for CWA restoration activities such as total maximum daily loads (TMDLs). CWA section 303 requires states to identify waterbodies that fail to attain water quality standards and TMDLs must be developed and implemented for these waters. A TMDL represents the maximum amount of pollutant loading that a waterbody can receive from all combined sources without exceeding applicable water quality standards, sometimes described as the "pollution budget." From this information, opportunities for reducing excessive loads can be identified and implemented, individual contributions can be capped, and additional loading prevented. TMDL-derived effluent limitations on pollutants of concern must be included in NPDES permits. TMDLs are also a primary mechanism for development and implementation of controls on nonpoint source pollution (unregulated by NPDES permits).

Water quality standards form a key legal basis for controlling pollutants entering the waters of the United States. Because ensuring that waterbodies are of sufficient quality to support designated aquatic life uses (e.g., fish and shellfish spawning and rearing) is crucial to the protection of threatened and endangered aquatic species, water quality standards have far reaching impacts, serving a critical role in the state and federal obligations under other statutes such as the Endangered Species Act.³¹

b. EPA plays a crucial role in how states develop these standards.

While states ultimately set the water quality standards, Congress required EPA to set baseline criteria to inform state decision-making. Under section 304(a), EPA "shall publish[,] and from time-to-time revise, criteria for water quality that must reflect the latest scientific knowledge. 33 U.S.C. § 1314(a). EPA's section 304(a) national criteria recommendations ("304(a) criteria") provide quantitative concentrations of levels and/or qualitative measures of pollutants that, if not exceeded, will generally ensure adequate water quality for protection of a designated use. 40 C.F.R. § 131.11(b). 304(a) criteria for a particular pollutant are typically established based on 1) human health protection, 2) recreational use standards, and 3) protection of aquatic life, as well as other common designated waterbody uses.

States rely on 304(a) criteria. They must adopt numeric criteria for all toxic pollutants listed under section 307(a)(1) for which EPA has published 304(a) criteria. 33 U.S.C. § 1313(c)(2)(B). They must review, establish, and revise water quality standards in light of these criteria, 40 C.F.R. §§ 131.11(b)(1), 131.4(a), and consider any new or revised criteria promulgated by EPA every three years. 40 C.F.R. § 131.20. States must either "adopt new or revised criteria for parameters for which EPA has published new or updated Section 304(a) criteria recommendations," or provide an explanation to EPA that meets statutory and regulatory criteria for declining to adopt the recommended criteria. *Id.*; 33 U.S.C. § 1313(c).

³¹ 304(a) criteria are also used for other regulatory purposes. For example, EPA uses these recommendations to establish cleanup requirements for contaminated sites under the Comprehensive Environmental Response, Compensation and Liability Act. *See* 42 U.S.C. § 9621(d)(2)(A); 40 C.F.R. § 300.430(e)(2)(i)(E).

EPA has procedures for developing and publishing 304(a) criteria. EPA uses its *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985) (“Aquatic Life Guidelines”) to derive 304(a) criteria to protect aquatic life from the effects of toxic pollutants. EPA Office of Water, *Water Quality Standards Handbook Chapter 3: Water Quality Criteria*, Pub. EPA 823 B 17 001, at 14 (2017).³² The Aquatic Life Guidelines provide suggestions for the development, selection, and consideration of scientific data to inform the derivation of aquatic life water quality criteria, as well as options and factors for consideration in the expression of such criteria. Expression of criteria comprises magnitude (e.g., pollutant concentration limitation in water, usually a maximum concentration), frequency (e.g., how often the magnitude limit may be exceeded), and duration (how often the magnitude limit may be exceeded). EPA also has established procedures for how to derive these criteria for human health. *See* 65 Fed. Reg. 66444 (Nov. 3, 2000).

EPA has discretion on the methods used to develop 304(a) criteria. Because it is not feasible for EPA to conduct its own field tests, the Aquatic Life Guidelines set forth suggestions for collection, review, and analysis of “appropriate” data and exclusion of “questionable” data. Aquatic Life Guidelines at 11–14. For instance, the Aquatic Life Guidelines indicate that the development of aquatic life criteria be based on EPA’s discretionary selections of data concerning toxicity tests conducted on sets of various categories of test species. *Id.* at 12–13. Such criteria should be numeric unless numeric criteria cannot be developed. 40 C.F.R. § 131.11(b). Once EPA promulgates draft section 304(a) criteria, the public and other government entities have an opportunity to comment.

However, EPA’s discretion is not unfettered. While EPA has leeway on the *form* the recommended criteria take, and *when* they should be revised, it must promulgate them in the first place. 33 U.S.C. § 1314(a)(1) (“shall publish”). As EPA acknowledged, section 304(a) “requires EPA to develop and publish, and from time to time revise, criteria for water accurately reflecting the latest scientific knowledge.” 2003 Draft Criteria at 63094 (emphasis added). Courts have long understood the task of promulgating 304(a) criteria to be mandatory. *See Mississippi Commission on Natural Resources v. Costle*, 625 F.2d 1269, 1273 (5th Cir. 1980) (“[O]ne of EPA’s duties under the amendments is to develop and publish ‘criteria for water quality accurately reflecting the latest scientific knowledge.’”); *American Paper Institute, Inc. v. EPA*, 996 F.2d 346, 349 (D.C. Cir. 1993) (noting promulgation is “required by the CWA”).

Ultimately, Congress required EPA to promulgate 304(a) criteria because of their informational value to states and potential application as binding regulation on those states if they fail to perform their own duties to create adequate standards.³³

³² The Guidelines themselves set forth antiquated and obsolete methods for assessing impacts to aquatic organisms from water pollutants, do not account for real world exposure scenarios, set under-protective water quality criteria, and should be updated.

³³ Other similarly worded provisions in section 304 have also been understood to be mandatory. *See Our Children’s Earth Foundation v. EPA*, 527 F.3d 842, 848–50 (9th Cir. 2008) (discussion of “shall” provisions in sections 304(b) and 304(m)); *Maier v. EPA*, 114 F.3d 1032, 1041 (10th Cir. 1997) (comparing mandatory language in section 304(b) with discretionary language in 304(d)).

c. If EPA does not perform this mandatory duty, the Public Interest Groups will sue.

While the Public Interest Groups urge EPA to address this lapse of its own volition and issue recommended aquatic life and human health criteria for atrazine, the Public Interest Groups are prepared to sue to force EPA to do so.

Section 505 of the CWA authorizes citizen suits “against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this chapter which is not discretionary[.]” 33 U.S.C. § 1365(a)(2). District courts have jurisdiction to “order the Administrator to perform such act or duty[.]” *Id.* EPA’s failure to promulgate criteria for atrazine violates the nondiscretionary command of section 304(a)(1). 33 U.S.C. § 1314(a)(1) (“shall publish”).

Alternatively, were EPA to claim that its two-decade silence on developing criteria for atrazine constitutes a delay rather than a failure to perform a nondiscretionary duty within the meaning of CWA section 505(b)(2), the Public Interest Groups will sue under the Administrative Procedure Act (“APA”). Pursuant to the APA, a reviewing court “shall compel agency action unlawfully withheld or unreasonably delayed.” 5 U.S.C. § 706(1). “Agency action” includes “actions directly or indirectly causing modifications to the land, water, or air.” 50 C.F.R. § 402.02(d). The APA requires that all federal agencies address matters “within a reasonable time,” and “[w]ith due regard for the convenience and necessity of the parties or their representatives.” 5 U.S.C. § 555(b). Where an agency action is unreasonably delayed the court shall compel the agency to act in a reasonable time. 5 U.S.C. § 706(1). More than two decades is an unreasonable, unlawful delay, and one that has come at great cost to humans and aquatic life across the country.

The Public Interest Groups would prefer to resolve this dispute short of litigation and is willing to discuss a settlement framework that would resolve the claims alleged herein to the mutual benefit of all parties. If EPA is interested in discussing settlement, the Public Interest Groups encourages EPA to contact the undersigned counsel.

IV. Persons Giving Notice and Representing Attorneys

Pursuant to 40 C.F.R. § 135.3(b), the names, addresses, and telephone numbers of the parties giving notice are:

Center for Biological Diversity
P.O. Box 710
Tucson, AZ 85702-0710
Tel: (520) 623-5252

The Center for Biological Diversity is a non-profit organization that utilizes science, the law, and creative media to protect the lands, waters and climate that species need to survive a future for all species, great and small, that are hovering on the brink of extinction.

Center for Environmental Health
2201 Broadway, Suite 508
Oakland, CA 94612
Tel: (510) 655-3900

The Center for Environmental Health is a national non-profit organization headquartered in Oakland, California, dedicated to protecting the public from environmental and public health hazards, including harmful chemicals in air, food, water, and in everyday products.

Pesticide Action & Agroecology Network
1585 62nd Street # 8130
Emeryville, CA 94608
Tel: (510) 788-9020

Pesticide Action & Agroecology Network's (PAN) mission is to end reliance on hazardous pesticides and achieve health, resilience and justice in food and farming.

You are requested to contact the Public Interest Groups through its undersigned attorneys as follows:

Allison LaPlante
Senior Attorney, Environmental Health Program
Center for Biological Diversity
P.O. Box 11374
Portland, OR 97211-0374
(503) 980-3408
alaplante@biologicaldiversity.org

Jonathan Evans
Environmental Health Legal Director and Senior Attorney
Center for Biological Diversity
2100 Franklin St., Suite 375
Oakland, CA 94612
(213) 598-1466
jevans@biologicaldiversity.org

V. Conclusion

Despite EPA's initial steps two decades ago, there are currently no water quality criteria for atrazine. In the absence of this information, states are left in the dark, unable to set standards that reflect the scientific knowledge from EPA. In the two decades since EPA abandoned this duty, the science has only become clearer, the harm to communities has continued unabated, and the need for EPA's guidance remains urgent. EPA must act immediately.

///
///

Sincerely,

A handwritten signature in black ink, appearing to read "Allison LaPlante". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Allison LaPlante, Senior Attorney
Jonathan Evans, Environmental Health Legal Director
& Senior Attorney
Center for Biological Diversity

cc:

Todd Blanche, Acting Attorney General
United States Department of Justice
950 Pennsylvania Avenue N.W.
Washington, DC 20530

REFERENCES

(enclosed on a flash drive)³⁴

Albuquerque, F. et al. 2020. “An overview of the potential impacts of atrazine in aquatic environments: Perspectives for tailored solutions based on nanotechnology,” *Science of the Total Environment* 700: 134868, <https://doi.org/10.1016/j.scitotenv.2019.134868>.

Agopian, A. et al. 2013. “Maternal Residential Atrazine Exposure and Gastroschisis by Maternal Age,” *Maternal and Child Health Journal* 17: 1768–1775, <https://doi.org/10.1007/s10995-012-1196-3>.

Andreotti, G. et al. 2020. “Occupational pesticide use and risk of renal cell carcinoma in the agricultural health study,” *Environmental Health Perspectives* 128 no. 6: 67011, <https://pubmed.ncbi.nlm.nih.gov/32692250/>.

Bachetti, R. et al. 2021. “Monitoring of Atrazine Pollution and its Spatial-Seasonal Variation on Surface Water Sources of an Agricultural River Basin,” *Bulletin of Environmental Contamination and Toxicology* 106, no. 6: 929-935, <https://doi.org/10.1007/s00128-021-03264-x>.

Bai, X. et al. 2015. “Effects of atrazine on photosynthesis and defense response and the underlying mechanisms in *Phaeodactylum tricornutum*,” *Environmental Science and Pollution Research* 22: 17499-17507, DOI 10.1007/s11356-015-4923-7.

Battaglin, W. et al. 2009. “The occurrence of glyphosate, atrazine, and other pesticides in vernal pools and adjacent streams in Washington, DC, Maryland, Iowa, and Wyoming, 2005-2006,” *Environmental Monitoring Access* 155: 281-307, DOI 10.1007/s10661-008-0435-y.

Beaulieu, M. et al. 2020. “Predicting atrazine concentrations in waterbodies across the contiguous United States: The importance of land use, hydrology, and water physicochemistry,” *Limnology and Oceanography* 65, no. 12: 2966-2983, <https://doi.org/10.1002/lno.11568>.

Bringolf, R. et al. 2007. “Acute and chronic toxicity of technical-grade pesticides to freshwater mussels,” *Environmental Toxicology and Chemistry* 26, no. 10: 2086-2093 <https://pubmed.ncbi.nlm.nih.gov/17867872/>.

California Regional Water Quality Control Board. February 3, 2004. “Draft Aquatic Life Criteria Document for Atrazine,” Docket No. OW–2001–0010.

Cattley, R. et al. 2026. “Carcinogenicity of atrazine, alachlor, and vinclozolin,” *The Lancet Oncology* 27 no. 1: 11-12, [https://doi.org/10.1016/S1470-2045\(25\)00702-8](https://doi.org/10.1016/S1470-2045(25)00702-8).

Center for Biological Diversity. February 14, 2023. “Comments on EPA’s ESA Work Plan Update,” Docket No. EPA-HQ-OPP-2022-0908

³⁴ Also made available at <https://diversity.box.com/s/dn8dcamva711o1ezy6n60qq8jfswwd7e>

- Center for Food Safety. “Atrazine,” <https://www.centerforfoodsafety.org/issues/311/pesticides/atrazine>.
- Cleary, J. et al. 2019. “Atrazine induced transgenerational reproductive effects in medaka (*Oryzias latipes*),” *Environmental Pollution* 251: 639-650, <https://doi.org/10.1016/j.envpol.2019.05.013>.
- Conley, M. 2025. “Atrazine, an endocrine-disrupting herbicide banned in Europe, is widely used in the U.S.,” *U.S. Right to Know*, <https://usrtk.org/pesticides/atrazine/>.
- Deng, S. et al. 2024. “Advances in understanding and mitigating atrazine's environmental and health impact: A comprehensive review,” *Journal of Environmental Management* 365: 121530, <https://doi.org/10.1016/j.jenvman.2024.121530>.
- Destro, A. et al. 2021. “Effects of subchronic exposure to environmentally relevant concentrations of the herbicide atrazine in the Neotropical fish *Astyanax altiparanae*,” *Ecotoxicology and Environmental Safety* 208: 111601, <https://doi.org/10.1016/j.ecoenv.2020.111601>.
- Donna, A. et al. 1989. “Triazine herbicides and ovarian epithelial neoplasms.” *Scandinavian Journal of Work, Environment & Health* 15 no. 1: 47-53, https://www.sjweh.fi/download.php?abstract_id=1882&file_nro=1.
- Environmental Working Group. 2023. “EWG Tap Water Database: Atrazine,” <https://www.ewg.org/tapwater/reviewed-atrazine.php>.
- Environmental Working Group. “EWG Tap Water Database: Contaminant, Atrazine,” <https://www.ewg.org/tapwater/contaminant.php?contamcode=2050>
- Forson, D. and Storfer, A. 2006. “Atrazine increases ranavirus susceptibility in the Tiger Salamander, *Ambystoma Tigrinum*,” *Ecological Applications* 16, no. 6: 2325-2332, <https://pubmed.ncbi.nlm.nih.gov/17205907/>.
- Friedmann, A. 2002. “Atrazine inhibition of testosterone production in rat males following peripubertal exposure,” *Reproductive Toxicology* 16 Issue 3: 275-279, [https://doi.org/10.1016/S0890-6238\(02\)00019-9](https://doi.org/10.1016/S0890-6238(02)00019-9).
- Gilliom, R. et al. 2007. “Pesticides in the Nation's Streams and Ground Water, 1992-2001,” *USGS Circular* 1291, <https://pubs.usgs.gov/circ/1291/>.
- Graymore, M., et al. 2001. “Impacts of atrazine in aquatic ecosystems,” *Environment International* 26 nos. 7–8: 483-495, [https://doi.org/10.1016/S0160-4120\(01\)00031-9](https://doi.org/10.1016/S0160-4120(01)00031-9).
- Gutierrez, J. et al. 2026. “Agricultural intensification and pesticide pollution on water: cross-scale insights from a subtropical watershed,” *Science of the Total Environment* 1018: 181487, <https://doi.org/10.1016/j.scitotenv.2026.181487>.

Hadeed, M. et al. 2022. “Environmentally relevant atrazine exposure leads to increases in foraging and boldness in the crayfish *Faxonius virilis*,” *Environmental Advances* 10: 100320, <https://doi.org/10.1016/j.envadv.2022.100320>.

Hayes, T. et al. 2010. “Atrazine induces complete feminization and chemical castration in male African clawed frogs (*Xenopus laevis*),” *Proceedings of the National Academy of Sciences* 107, no. 10: 4612-4617, <https://www.pnas.org/doi/10.1073/pnas.0909519107>.

Hayes, T. et al. 2002. “Hermaphroditic, demasculinized frogs after exposure to the herbicide atrazine at low ecologically relevant doses,” *Proceedings of the National Academy of Sciences* 99, no. 8: 5476-5480, <https://doi.org/10.1073/pnas.082121499>.

International Agency for Research on Cancer. 2025. “IARC Monographs evaluation of the carcinogenicity of atrazine, alachlor, and vinclozolin,” <https://www.iarc.who.int/news-events/iarc-monographs-evaluation-of-the-carcinogenicity-of-atrazine-alachlor-and-vinclozolin/>.

Iowa College of Public Health. 2025. “Atrazine & Health Fact sheet,” *Environmental Health Sciences Research Center*, <https://ehsrc.public-health.uiowa.edu/wp-content/uploads/2025/03/Atrazine.pdf>.

Jablonowski, N. et al. 2011. “Still present after all these years: persistence plus potential toxicity raise questions about the use of atrazine,” *Environmental Science and Pollution Research International* 18: 328-331, DOI 10.1007/s11356-010-0431-y.

[Kanu](#), K. et al. 2021. “Assessment of the risk of death of *Clarias gariepinus* and *Oreochromis niloticus* pulse-exposed to selected agricultural pesticides,” *Scientific Reports* 11: 14652, <https://doi.org/10.1038/s41598-021-94262-w>.

Khoshnood, Z. 2024. “A review on toxic effects of pesticides in Zebrafish, *Danio rerio* and common carp, *Cyprinus carpio*, emphasising Atrazine herbicide,” *Toxicology Reports* 13: 101694, <https://doi.org/10.1016/j.toxrep.2024.101694>.

Kolpin, D. et al. 1998. “Occurrence of Pesticides in Shallow Groundwater of the United States: Initial Results from the National Water-Quality Assessment Program,” *USGS NAWQA*, <https://water.usgs.gov/nawqa/pnsp/pubs/est32/>.

[Macêdo](#), A. et al. 2021. “Can the exposure system adopted influence the results of atrazine ecotoxicological assays?,” *Journal of Experimental Zoology* 335, no. 5: 512-521, DOI: 10.1002/jez.2471.

Malbezin, L. et al. 2024. “Effects of atrazine and S-metolachlor on stream periphyton taxonomic and fatty acid compositions,” *Ecotoxicology* 33: 190–204, <https://doi.org/10.1007/s10646-024-02738-y>.

Méndez-Tepepa, M. et al. “Cytotoxic Effects of the Atrazine Herbicide on Erythrocytes and Liver Damage in *Lithobates Spectabilis*,” *Fishes* 8: 207, <https://doi.org/10.3390/fishes8040207>.

Oliveira, W. et al. 2024. “Does the atrazine increase animal mortality: Unraveling through a meta-analytic study,” *Science of the Total Environment* 951: 175553, <https://www.sciencedirect.com/science/article/pii/S0048969724057097>.

Paetow, L. et al. 2023. “Effects of Herbicides and the Chytrid Fungus *Batrachochytrium dendrobatidis* on the growth, development and survival of Larval American Toads (*Anaxyrus americanus*),” *Ecotoxicology and Environmental Safety* 259: 115021, <https://doi.org/10.1016/j.ecoenv.2023.115021>.

Pathak, R. and Dikshit, A. 2011. “Atrazine and Human Health,” *International Journal of Ecosystem* 1 no. 1:14-23, <http://article.sapub.org/10.5923.j.ije.20110101.03.html>.

Pesticide Action Network International. 2024. “PAN International Consolidated List of Banned Pesticides,” <https://pan-international.org/pan-international-consolidated-list-of-banned-pesticides/>

Pratt, J. et al. 1988. “Effects of atrazine on freshwater microbial communities,” *Archives of Environmental Contamination and Toxicology* 17: 449-457, <https://link.springer.com/article/10.1007/BF01055510>.

Remigio, R. et al. 2024. “An Updated Evaluation of Atrazine-Cancer Incidence Associations among Pesticide Applicators in the Agricultural Health Study Cohort,” *Environmental Health Perspectives* 132 no 2: 027010-1, <https://pmc.ncbi.nlm.nih.gov/articles/PMC10880817/pdf/ehp13684.pdf>.

Rimayi, C. et al. 2018. “Effects of environmentally relevant sub-chronic atrazine concentrations on African clawed frogs (*Xenopus laevis*): A growth, gonadal and survival study,” *Aquatic Toxicology* 199: 1-11, <https://www.sciencedirect.com/science/article/abs/pii/S0166445X18300456>.

Rohr, J. et al. 2008. “Agrochemicals increase trematode infections in a declining amphibian species,” *Nature* 455: 1235-1239, <https://www.nature.com/articles/nature07281>.

Rohr, J. and McCoy, K. 2010. “A qualitative meta-analysis reveals consistent effects of atrazine on freshwater fish and amphibians,” *Environmental Health Perspectives* 118, no. 1: 20-32, <https://pubmed.ncbi.nlm.nih.gov/20056568>.

Saglio, P. and Trijasse, S. 1998. “Behavioral responses to atrazine and diuron in goldfish,” *Archives of Environmental Contamination and Toxicology* 35: 484-491, DOI:[10.1007/S002449900406](https://doi.org/10.1007/S002449900406).

- Souza, V. et al. 2023. “Ecogenotoxicity of environmentally relevant atrazine concentrations: A threat to aquatic bioindicators,” *Pesticide Biochemistry and Physiology* 189: 105297, <https://doi.org/10.1016/j.pestbp.2022.105297>.
- Stayner, L. et al. 2017. “Atrazine and Nitrate in Drinking Water and the Risk of Preterm Delivery and Low Birth Weight in Four Midwestern States,” *Environmental Research* 152: 294-303, <https://stacks.cdc.gov/view/cdc/222168>.
- Tai, J. et al. 2023. “Adverse developmental impacts in progeny of zebrafish exposed to the agricultural herbicide atrazine during embryogenesis,” *Environment International* 180: 108213, <https://doi.org/10.1016/j.envint.2023.108213>.
- Urseler, N. et al. 2022. “Atrazine pollution in groundwater and raw bovine milk: Water quality, bioaccumulation and human risk assessment,” *Chemosphere* 852: 158498, <http://dx.doi.org/10.1016/j.scitotenv.2022.158498>.
- U.S. Environmental Protection Agency. November 7, 2003. “Notice of Availability of Revised Draft Aquatic Life Criteria Document for Atrazine and Request for Scientific Views,” 68 Fed. Reg. 216: 63092-63095, <https://www.govinfo.gov/content/pkg/FR-2003-11-07/pdf/03-28102.pdf>.
- U.S. Environmental Protection Agency. 2004-2023. “Atrazine Ecological Exposure Monitoring Program Data and Results,” <https://www.epa.gov/ingredients-used-pesticide-products/atrazine-ecological-exposure-monitoring-program-data-and>.
- U.S. Environmental Protection Agency. April 29, 2016. “Refined Ecological Risk Assessment for Atrazine,” *U.S. EPA Office of Pesticide Programs*, <https://www.regulations.gov/document/EPA-HQ-OPP-2013-0266-0315>.
- U.S. Environmental Protection Agency. September 2020. “Atrazine: Interim Registration Review Decision Case Number 0062,” Docket Number EPA-HQ-OPP-2013-0266. <https://www.epa.gov/sites/default/files/2020-09/documents/atrazine-id-signed-final.pdf>.
- U. S. Environmental Protection Agency. November 2021. “Final National Level Listed Species Biological Evaluation for Atrazine, Atrazine Executive Summary for Biological Evaluation,” <https://www.epa.gov/endangered-species/final-national-level-listed-species-biological-evaluation-atrazine#executive-summary>
- U.S. Environmental Protection Agency. June 23, 2022. “EFED Support Documentation for the Proposed Revisions to the Atrazine Interim Registration Review Decision Regarding Risks to Aquatic Plant Communities,” Docket Number EPA EPA-HQ-OPP-2013-0266-1623.
- U.S. Environmental Protection Agency. August 22-24, 2023. “Peer Review of the Examination of Microcosm/Mesocosm Studies for Evaluating the Effects of Atrazine on Aquatic Plant Communities,” <https://www.epa.gov/sap/peer-review-examination-microcosmmesocosm-studies-evaluating-effects-atrazine-aquatic-plant>.

U.S. Environmental Protection Agency. November 20, 2024. “Updated Mitigation Proposal for the Atrazine Interim Registration Review Decision,” Case Number 0062, Docket Number EPA-HQ-OPP-2013-0266.

U.S. Environmental Protection Agency. December 5, 2024. “Updated High Resolution Map (Without Roads) of HUC 12 Watersheds that Exceed the Updated CE-LOC for Atrazine,” Docket Number EPA-HQ-OPP-2013-0266-2137.

U.S. Environmental Protection Agency. 2025. “Updated High resolution map (without roads),” Docket Number [EPA-HQ-OPP-2013-0266-2129](#).

U.S. Environmental Protection Agency. 2025. “High resolution map of HUC 12 watersheds that exceed the updated CE-LOC for atrazine,” Docket Number [EPA-HQ-OPP-2013-0266-2129](#).

U.S. Environmental Protection Agency. 2025. “Ingredients Used in Pesticide Products: Atrazine,” *Office of Pesticide Programs*, <https://www.epa.gov/ingredients-used-pesticide-products/atrazine>.

U.S. Environmental Protection Agency. 2026. “Aquatic Life Benchmarks and Ecological Risk Assessments for Registered Pesticides,” *Office of Pesticide Programs*, <https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk>.

U.S. Fish and Wildlife Service. September 30, 2025. “Draft Biological and Conference Opinion on the Registration Review of Atrazine Pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act,” *Ecological Services Program, Headquarters*.

U.S. Geological Survey. 2014. “Atrazine in Our Streams, Atrazine Concentrations Have Decreased in Streams and Rivers Across the United States,” *USGS National Water Quality Program*, <https://www.usgs.gov/news/atrazine-concentrations-have-decreased-streams-and-rivers-across-united-states>.

U.S. Geological Survey. 2024. “Estimated Annual Agricultural Pesticide Use Pesticide Use Maps – Atrazine,” https://water.usgs.gov/nawqa/pnsp/usage/maps/show_map.php?year=2019&map=ATRAZINE&hilo=L&disp=Atrazine

Wang, Z. et al. 2022. “Effects of co-exposure of the triazine herbicides atrazine, prometryn and terbutryn on *Phaeodactylum tricornutum* photosynthesis and nutritional value,” *Science of the Total Environment* 807: 150609, <https://doi.org/10.1016/j.scitotenv.2021.150609>.

Wu, M. et al. 2010. “Still Poisoning the Well: Atrazine Continues to Contaminate Surface Water and Drinking Water in the United States,” *Natural Resources Defense Council* <https://www.nrdc.org/resources/atrazine-poisoning-well>.

Zhao, H. et al. 2024. “Endocrine toxicity of atrazine and its underlying mechanisms,” *Toxicology* 505: 153846, <https://doi.org/10.1016/j.tox.2024.153846>.