



## A FIRST LOOK AT WHAT'S IN THE WATER:

### *What We Now Know about Mifepristone in our Drinking Water*

*Students for Life of America Executive Overview*

**Peer-Reviewed Study: July 2026**

[Anti-Progesterone in Environmental Water - Issues in Law & Medicine - A Journal of the Alliance for Hippocratic Medicine](https://issuesinlawandmedicine.com/articles/anti-progesterone-in-environmental-water/)

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#### **Executive Summary:**

The paper investigates whether **mifepristone (RU-486)**, the anti-progesterone drug used in medication abortions, can be detected in environmental and municipal tap water in the United States.

Researchers collected water samples from upstream locations, downstream locations near wastewater treatment facility discharge points, and municipal tap water in **Austin, Texas; Blacksburg, Virginia; and Carbondale, Illinois.**

Samples were analyzed using PR CALUX® bioassays (Progesterone Receptor Chemical Activated LUCiferase gene eXpression), which the article describes as a method benchmarked against mifepristone, also known as RU-486. [The manufacturer of CALUX® assays explains](#) that CALUX® cells are designed to produce light in a dose-responsive way when exposed to certain chemicals, and that the switch that turns the light on is specific to compounds or groups of compounds with the same mode of action. [In this test](#), cells “have been tailored so that they produce light in a dose-responsive way when exposed to chemicals.”

#### **Key Findings:**

- The study reported anti-progesterone activity, expressed as mifepristone equivalents , meaning mifepristone was detected in **8 of the 9 water-source categories tested**, with concentrations reaching up to 41 parts per trillion (ppt).
- To note, the EPA set [“enforceable Maximum Contaminant Levels at 4.0 parts per trillion”](#) for forever chemicals in drinking water during the Biden Administration.

- Statistical analysis found that **most environmental water samples contained significantly higher levels of anti-progesterone activity than control samples**. Researchers used two different statistical tests, a t-test and a non-parametric ranking analysis. Both tests showed that, in most comparisons, there were real differences rather than random variation. The ranking analysis, a more universally applicable statistical test, showed significant differences in **13 of 18 comparisons**, including **8 of 9 comparisons against controls**.
- Detectable anti-progesterone activity was found not only in environmental waters but also in some municipal tap water samples going into homes, particularly in Carbondale and Austin.
- The study concludes that conventional wastewater treatment did **not appear effective at removing this endocrine-disrupting compound (EDC)** from the water systems examined.

### **Why It Matters:**

The authors argue that the presence of mifepristone in water could potentially affect:

- Aquatic wildlife reproduction and development.
- Livestock, other animals, and endangered species that are exposed to contaminated water.
- Human reproductive and hormonal health, particularly because mifepristone blocks progesterone receptors.

### **Limitations Acknowledged by the Authors:**

- The study measured anti-progesterone binding of mifepristone. In the CALUX testing system, mifepristone binds to a receptor. This receptor complex is transported into the nucleus of the cell and subsequently binds to specific sequences in the DNA, called responsive elements (REs). Binding of the chemical-receptor complex to the RE triggers the expression of RE-associated genes. The switch that turns the light on is **consistent with mifepristone or closely related active compounds**. Because binding to the receptor is based on structure and activity, only mifepristone or very closely related compounds would be able to bind to the receptor and thus be measured by the test. The CALUX testing system is a very accurate screening technique, [used by the EPA](#) to test for environmental contaminants such as dioxin and steroid hormones, as was the case for this study. While other techniques could be used that does not invalidate these results.
- This method [of testing is EPA approved](#).
- The Biden Administration permitted at-home use of this drug. Mifepristone and its metabolites leave the woman's body primarily through feces, but also in urine. When the baby is prematurely expelled from the uterus, its remains are flushed down the toilet. Thus, feces, urine, blood, placental tissue, and human remains, all contaminated with these toxic chemicals, enter our waterways.

- As noted [in numerous letters to the EPA](#), including this one from more than 40 concerned organizations seeking testing: “Active metabolites including monodemethylated, didmethylated, and hydroxylated metabolites of mifepristone, all retain considerable affinity toward human progesterone and glucocorticoid receptors.” **The only source of active metabolites from mifepristone is mifepristone that has passed through a human body.**
- Mifepristone was designed by Dr. Étienne-Émile Baulieu for the sole purpose of disrupting a pregnancy by manipulating hormones, [as well documented by the New York Times](#).
- Baulieu intended RU-486 to be “an antiprogestosterone” and called the concept ‘[contragestion](#)’ because it counteracted the gestation process.
- “More simply, he wrote, ‘RU-486’s action is like jamming a radio signal,’” reports the [New York Times](#).
- Its only other approved use is for treatment of a rare disease, Cushing’s Syndrome. According to [reporting from Kaiser](#), Corcept Therapeutics, a Silicon Valley-based drug company, markets the orphan drug mifepristone for Cushing’s Syndrome under the brand name Korlym. “Korlym is the company’s only product and treats about 1,000 patients in the U.S.”
- Through off-label use, which is rarely directed, mifepristone may be used during miscarriage and [has been reported in single digits](#).

## **Conclusions:**

The authors conclude that:

1. Mifepristone anti-progesterone activity was detected in multiple environmental and municipal water samples.
2. Existing water-treatment approaches do not fully remove such compounds.
3. Additional research is needed to determine environmental concentrations, sources, persistence, biological effects, and the effectiveness of treatment technologies for removing mifepristone and related endocrine-disrupting compounds from water supplies.

## **One-Sentence Summary:**

This study reports detectable levels of mifepristone anti-progesterone activity in environmental and some tap water samples from three U.S. cities and calls for further investigation into the environmental, public health, and water-treatment implications of these findings.

## Explaining the Research:

- This research tested for unmetabolized mifepristone, and it was found in the water to varying degrees in each city. It is in the water.
- Mifepristone is an anti-progesterone. It acts by blocking progesterone from its binding sites. Progesterone is an essential hormone needed by all of us. Our study tested for the presence of unmetabolized mifepristone, which was not broken down in the body.
- The body metabolizes the drug, and its fate is controlled by what is known as the “first pass effect,” as reported in [Mifepristone: bioavailability, pharmacokinetics and use-effectiveness](#). The “[first pass effect](#)” means that when a drug is first taken and passes through the liver or other body systems, those natural processes decrease the active drug's concentration, so that drugs taken by mouth might be given in much higher dosages. “It is an orally active compound with nearly 70% absorption rate, but its bioavailability is reduced to around 40% because of the first-pass effect.” That still leaves 40% of intact mifepristone in the body – at a “[relatively high level up to 48 hours or 72 hours](#)” after taking it. The remainder of intact mifepristone, along with several active metabolites, is excreted in the feces and urine.
- This study focused specifically on determining the concentrations of unmetabolized mifepristone, which may indicate that some women are being overdosed with mifepristone. But what’s also significant is that the **unmetabolized mifepristone is in the water supply and could affect the next person or animal who drinks that water.**
- We have a lot to learn about danger levels, but what we know is that **mifepristone IS in the water where we tested.**
- Unmetabolized mifepristone could be present in the waters tested for several reasons. We cannot know for sure the sources of mifepristone in the water. Still, given the high number of chemical abortions (642,700 medication abortions in the US in 2023), and the low number who take mifepristone for other reasons, the most probable source is fecal and urinary excretion by women ingesting mifepristone for chemical abortion, or mifepristone in the blood, placental tissue, or fetal remains flushed after the abortion.
- This volume of unmetabolized mifepristone could be due to a few factors:
  1. The standard dose of 200 mg for an abortion may represent excessive dosing for some individual women.
  2. Mifepristone could enter the water from feces or urine of patients taking the medication for reasons other than abortion.
    - . One of the other conditions for which mifepristone is prescribed is [Cushing Syndrome](#). There are estimated to be fewer than 20,000 Americans with a diagnosis of Cushing’s, of which [only about 1,000](#) are reportedly given a dose of the drug, so this is a far less likely contributor. We have a white paper on Cushing’s that goes into more detail.

□ . Mifepristone is also sometimes prescribed for endometriosis, meningioma, and mental illness, but these are also far less common uses.

- Water samples were collected from sites upstream and downstream of water treatment facilities, and from municipal tap water, from each of 3 American cities: Carbondale, IL; Blacksburg, VA; and Austin, TX.
- The water samples were tested for mifepristone using PR CALUX®. **There were significant levels of mifepristone up to 41 parts per trillion (up to 0.041 µgram/l) in the water of all but one of the nine sampling classes.**
- **The endocrine disrupting effects of an anti-progesterone/progesterone blocker can affect aquatic animals and human health, including fertility, pregnancy, and fetal development.**
- Studies show progestins, including specifically the anti-progesterone synthetic steroid hormone mifepristone, have been found to have disruptive effects on the fertility and reproduction of fish, as detailed [in SFLA's citizen petitions to the FDA](#).
- When the FDA [accepted the 1996 environmental assessment from the Population Council, set to make a profit](#) from the sale and distribution of mifepristone, they did so in a report that indicated strict environmental safety standards would be followed.
- In that report, [the Population Council wrote](#), "Disposition of rejected, expired, returned or waste drug products are expected to be disposed of ... In accordance with the Center for Disease Control (sic) Guidelines for handling of hazardous waste in the clinic or healthcare provider's office. The applicant will use a licensed incineration or grinding and landfill facility to dispose of this type of material."
- That was then, this is now. Mifepristone is mailed throughout the U.S., unmonitored and barely regulated, and then feces, urine, blood, and placenta tissue, along with human remains, are flushed into America's waterways. Given the volume of mifepristone detected in the study, it's clear that more testing is needed to determine the scope of the risk to human life, along with aquatic, plant, and animal life, including endangered species.

### **Mifepristone is in the Water:**

- We found mifepristone. **This is a synthetic drug, not naturally occurring, and not ever found in nature unless from an artificial source.** Given the potential harms of mifepristone, all potential sources should be evaluated.
- There are active metabolites of mifepristone which are created in the body after someone takes the drug. If, in the unlikely case, the tests were triggered by the metabolites of mifepristone, as well as mifepristone itself, that is still a serious problem, as the metabolites are active and would cause the same toxic effects as mifepristone. **The only source of these metabolites is mifepristone that has passed through a human body.** In future testing, we could look for other metabolites.

- Mifepristone came onto the U.S. Market [with a “black box” warning label](#). Health and Human Services (HHS) [along with the FDA notes](#) that such a label indicates the extreme danger of a substance to those exposed. [Johns Hopkins Bloomberg School of Public Health](#) notes, “Black box warnings are added only when substantial clinical data shows the drug can cause severe harm, hospitalization, or death.”
- The EPA views [pharmaceuticals as potential hazardous waste](#) to be handled with the utmost care and not flushed away, and that is determined in part by looking at “[whether it poses a threat to public health or the environment](#).” The FDA maintains “Don’t Flush” lists in particular, noting that flushing drugs is not advisable.
- Further, the EPA – [in looking at potential “hazardous waste pharmaceuticals”](#) – notes: “(A) number of studies have documented the presence of various pharmaceutical active ingredients and metabolic by-products in surface waters and groundwater in the United States. The pharmaceuticals entering the environment, through flushing or other means, are having a negative effect on aquatic ecosystems and on fish and animal populations. These findings highlight the increasing importance of pharmaceutical use and management and have led EPA to finalize a prohibition on disposing hazardous waste pharmaceuticals down the drain by those entities subject to this rule.”
- The study itself suggests that there is more work to do and that finding mifepristone is only the beginning. We should look at other locations; use other techniques; test for metabolites; study how to remove such contaminants, etc.
- EPA national testing would provide a foundation to determine what are dangerous concentrations, impacting the health and fertility of human, aquatic, animal, and plant life, with implications not only for women who wish to get and stay pregnant, but for men as well.
- Given what the study reported, we also have grave concerns about the impact on endangered species as well as on agri-business – livestock, poultry, and other kinds of industrial operations.
- An article [published at Harvard University’s digital scholarship](#) site on the early history of mifepristone in the U.S. reported that birth defects after exposure were a concern, reporting, “Animal toxicology on both mifepristone and misoprostol show teratologic effects in animals, and usually such teratologic effects in animals will translate or have a high possibility of translating to teratologic effects in humans.” “A teratogen is a substance that interferes with normal fetal development and causes congenital disabilities,” [notes the Cleveland Clinic](#).

### **Our Challenges to the doubters:**

- \* Those who contend that the water is safe, that mifepristone is not present, or that a broader panel in testing should be the focus, we say:
- \* We showed you our test; you show us yours. As the EPA notes, there has not been testing. We have broken new ground, and while some may not like it, they need to answer science with science.

\* Additional point on testing: Some of those who attack our study say we “should” have used High-Performance Liquid Chromatography (HPLC). This is the nature of that test, [according to the industry](#): “HPLC is used to separate, identify, and quantify compounds in a mixture that are dissolved in a solution.”

\* In the testing we used, an industry-standard test, cells from fireflies that light up were genetically modified to light up in the presence of mifepristone, which is a complex construction. Mifepristone is made to have a shape like progesterone. When it floods the body to cause abortion, it fits like puzzle pieces or a lock and key into the progesterone receptors, blocking actual progesterone. In our test, the cells were modified to light up when that same lock-and-key was designed for mifepristone. It’s a highly specific test, and anything causing the light to shine is having the same disastrous impacts on those exposed.

\* We are working for more testing, particularly at the EPA right now. We agree with those who say there are more questions to answer. The difference is that we want those answers.

\* When we were challenged by some who said there was no U.S. based testing (even as they claim the water is “safe”), we have both produced a test and shown the facts: It’s in the water ... in the United States ... including in tap water.

\* We have to ask ourselves whether – in the name of fairness – we are going to allow hospitals and out-patient medical facilities to start flushing pathological medical waste. If the abortion-lobby position is allowed to stand, then more than 50 tons annually of chemically tainted blood, placenta tissue, and human remains can be excused.

\* We need more testing, and we need the application of common sense. Flushing aborted remains by the hundreds of thousands can’t be ignored. That level of known contamination carries risk for us all, added to the inhumanity of that loss of innocent life.

### **General Overview:**

In a way, this study takes the issue of mifepristone pollution *out* of the discussion of abortion, for those who are stumbling over the source. It’s a serious health risk, and we need to know more.

The fact that other kinds of tests exist doesn't change the fact that our test worked well. And the fact that we found SO MUCH indicates we should keep testing.

This first-in-the-nation test is an industry standard, with results produced in time for the EPA’s consideration of the “Safe Drinking Water Act.” To those who say they want more information and more testing, so do we

You don’t have to be pro-life to want clean drinking water.

We have been advised that given the extreme difficulty of getting pharmaceuticals out of the water, reverse osmosis with double charcoal filters is a good option to look into for cleaner water. But we have not evaluated samples before and after with this kind of device.

## **Meet Dr. Rose:**

### **Elise Rose, PhD**

BS, Biology, Georgetown University, Washington, DC, 1979

MAT, Science Education, Howard University, Washington, DC, 1976

Outstanding Botany Graduate Student, Plant Biochemistry, University of Kansas, Lawrence, KS, 1980

PhD, Agronomy, Environmental Plant Physiology, Kansas State University, Manhattan, KS, 1985

### **Dr. Rose's environmental studies have included:**

- Investigating the presence of nitrate in applied liquid manure and in soil groundwater. This was done on a grant from the State of Wisconsin Department of Agriculture.
- The effects of high carbon dioxide and high temperature (the “greenhouse effect”) on agricultural species. Dr. Rose did this work commissioned by the EPA while on a contract with NASA/Goddard Institute for Space Studies.
- The effects of low-light, low temperature (“nuclear winter”) on agricultural species. Dr. Rose did this work as a postdoc at the University of Wisconsin and later while serving with the White House Committee on Science and Technology Policy.

### **Dr. Rose's botanical research has included:**

- The effects of drought on root and shoot growth and ethylene production in winter wheat. This was part of her doctoral research at Kansas State University.
- Stomatal effects of exogenous ethylene. This was part of her doctoral research at Kansas State University.
- The mechanism of uptake of potassium into oat roots and tobacco pith tissue culture. This was part of her graduate research at the University of Kansas.

Dr. Rose also works as a science tutor, especially for chemistry; and as an editor for papers and dissertations in a wide variety of disciplines, from agronomy to mechanical engineering.

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