

# Ethoxyquin: Is there something fishy about your pet food?

## Introduction

Ethoxyquin is a synthetic antioxidant that is included in some pet foods as a preservative to protect fats and fat-soluble vitamins from turning rancid.<sup>1</sup> Ethoxyquin acts as an antioxidant, and without it, foods could turn offensive in odor, flavor, and worse with some chemical compounds having the potential to turn toxic. Sounds important, doesn't it? However, as with many issues in the pet food space, there is a darker side to Ethoxyquin's story.

## The History of Ethoxyquin

According to an archived Environmental Protection Agency Pesticide Registration document,<sup>2</sup> Ethoxyquin was developed by Monsanto in the 1950s. Monsanto is the same organization behind Glyphosate, the number one selling pesticide in North America classified by the World Health Organization as "probably carcinogenic to humans."<sup>3</sup> According to Fortune<sup>4</sup>, Monsanto, now owned by Bayer Corporation, has reached a verbal agreement to resolve a substantial portion of an estimated 125,000 US Cancer lawsuits over the use of its Roundup<sup>®</sup> weed killer, according to people familiar with the negotiations. The settlements are designed to resolve claims that Roundup<sup>®</sup> caused Non-Hodgkins Lymphoma in some users.

Ethoxyquin was initially registered as a pesticide in 1965 as a deterrent of scald in pears through post-harvest indoor application. The Environmental Protection Agency's own toxicity documentation<sup>2</sup> states that "The primary target organs affected

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In 1992, Gloria Dodd, DVM, graduate from the University of California Veterinary Medical School, Davis, California, and 30-year veterinary veteran sent a letter<sup>5</sup> to the Federal Food and Drug Administration, Division of Animal Feed, on the subject of Ethoxyquin. Her letter highlighted the epidemic of "chronic degenerative diseases such as generalized allergies, arthritis, dermatitis, congestive heart failure, kidney failure, liver pathologies, diabetes, tumors and cancer" she observed during her tenure as a veterinarian. Her letter went on to highlight the use of Ethoxyquin and the marked difference in domestic dog bones, muscles, and overall health compared to Australian pets, who at the time, were still largely being fed fresh meat as opposed to the American pet diet that had largely transitioned to commercial kibble and canned food. Dr. Dodd highlighted case



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studies in addition to her opinion of various outdated Monsanto studies and “erroneous conclusions.”

It’s important to note that Ethoxyquin cannot be used in any food for human consumption (except spices, e.g., chili). Still, it can pass from feed to farmed fish, poultry, and eggs so that human beings can be exposed. As early as the 1980s, harmful effects were observed in animals and people occupationally exposed to Ethoxyquin. In vivo and in vitro studies<sup>6</sup> were subsequently undertaken and found toxicity and mutagenicity effects of Ethoxyquin.

## Ethoxyquin in Pet Food Today

A recent study<sup>1</sup> showed that feeding high levels of Ethoxyquin might result in pigment accumulation in the liver, and an increase in serum levels of certain liver enzymes in laboratory animals. A series of in vitro studies also reported that Ethoxyquin had toxic effects on both living cells and genetic material. But, Ethoxyquin doesn’t just have the potential to cause harm in animals. It has also been shown to cause harm in humans. A search for new types of antioxidants or improved forms of Ethoxyquin has been undertaken in recent years because of the potential to cause harm to workers in pet food manufacturing facilities.

The scientific observations about Ethoxyquin’s potentially toxic effects on the liver from several decades earlier are still being observed today. However, it is still permitted for use in pet foods in the US. In Europe? Well... that’s a different story.

“...when considering the presence of p-phenetidine in ethoxyquin, no conclusion on any safe level of the additive for target animals can be drawn.” - European Food Safety Authority

In November of 2015, the European Food Safety Authority (EFSA) published a study<sup>7</sup> indicating that no conclusion on potential safe levels for poultry, pigs, ruminants, fish, and cats is possible. The EFSA concluded that when considering the presence of p-phenetidine in the additive, no conclusion on any safe level of the additive for target animals can be drawn.

As a follow-up to that study, in June of 2017, the European Union<sup>8</sup> formally suspended the authorization of Ethoxyquin in animal feed. The European Union concluded that there was a lack of data to fully assess the safety of the substance, including its metabolites, and the presence of an impurity, p-phenetidine, which is a possible mutagen (substances causing mutations in the genetic materials in both animals and humans.)

Have you heard enough?

## What Should A Concerned Brand Do?

1. Recognize that Ethoxyquin has been and continues to be a highly controversial chemical of concern in pet food. While Ethoxyquin may technically be permitted under current FDA food safety regulations, many in the court of public opinion feel differently.

2. Evaluate your supply chain. While you may not add Ethoxyquin to your formulation, have you asked your supplier? Best practice would be to trust but verify. Prohibit ethoxyquin from being used in your supplier or ingredient sourcing specifications. Better yet, use random testing to verify the absence of Ethoxyquin.

3. Look for novel preservatives or antioxidant alternatives. While Ethoxyquin may be permitted, consider evaluating new preservative or antioxidant alternatives that don’t come with the baggage and consumer trust risk that Ethoxyquin does.

4. When testing, consider levels of detection and levels of quantification. Today’s analytical chemistry instrumentation can confidently test pesticides down to single-digit parts per billion. Laboratories that test in the parts per million and report



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“non-detect” results can give brands a false sense of comfort and security with their supply chain compliance. For consumer trust and brand risk sake, evaluate alternative laboratories to make sure you are truly doing your due diligence.

## What Should A Concerned Consumer Do?

1. Hold brands accountable to ethoxyquin labeling regulations. While Ethoxyquin is still permitted in pet food, there are prescriptive labeling rules. According to the FDA,<sup>9</sup> Ethoxyquin is an approved food additive permitted for use in animal feed. However, it has specific labeling and safe use requirements.

Ethoxyquin is added to an animal feed either directly or indirectly as a component of an ingredient. In either case, one of the following statements must be included on the product label: “Ethoxyquin, a preservative,” or “Ethoxyquin added to retard the oxidative destruction of carotene, xanthophylls, and vitamins A and E.” This label is necessary to help ensure the safe use of Ethoxyquin since there are established tolerances and a maximum use rate for this food additive.

Unfortunately, there is a loophole to “required” labeling. The truth of the matter is that very few manufacturers add Ethoxyquin at the time of finished pet food manufacturing. Since the finished pet food manufacturers are responsible for the labeling, they would never want to add ethoxyquin because they would be responsible for adding it to the label and they know it looks terrible. Instead,

ethoxyquin is added to ingredients further up the ingredient supply chain- namely by the fish meal suppliers. It's actually quite rare to find ethoxyquin mentioned on any pet food label at this point, but that doesn't mean it's not found in the finished product. In other words, just because you don't see ethoxyquin on the label, it doesn't mean it isn't present in the finished product.

2. Recognize that not ALL pet foods are high-risk for Ethoxyquin. According to Dr. Karen Becker,<sup>10</sup> the most followed veterinarian in the world, “Most fish meal in commercial pet foods contains the potentially deadly preservative ethoxyquin, but chances are you won't find it on the label.”

According to a study<sup>11</sup> on the use of authorized synthetic antioxidants for use as feed additives in the European Union, Ethoxyquin and butylated hydroxytoluene are generally added to fish meal and fish oil, respectively, to limit lipid oxidation. The study was conducted to examine the concentrations of Ethoxyquin, butylated hydroxytoluene, and butylated hydroxyanisole. The highest levels of Ethoxyquin, butylated hydroxytoluene, and butylated hydroxyanisole were found in farmed Atlantic salmon fillets. The lowest concentrations of the synthetic antioxidants found were in cod.

Another study<sup>12</sup> found that humans can also be exposed to the residues of Ethoxyquin and its metabolite via the consumption of aquatic animals, resulting in potentially adverse health effects.

In other words, if you are concerned about Ethoxyquin, fish-based pet foods are the highest risk, with salmon-based being the highest and cod the lowest-risk.

3. Be a conscious consumer. The unfortunate reality is that pet food marketing departments can do an effective job of selling comfort and security. Let's be honest; we're all trying to do the best we possibly can for our families. This includes our pets. In fact, over 90% of pet owners consider their pets part of the family. However, some brands that leverage fanciful and flowery marketing terms around “natural,” “sustainable,” etc., are sometimes the same ones using this highly questionable at best, toxic, at worst, ingredient in pet food.



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Social media is a great platform to publicly ask questions and demand answers. Toxin-Free USA, Clean Label Project, and the Truth About Pet Food are great pet advocacy platforms to get more information about the true contents of America's best-selling pet foods and more!

## About Clean Label Project

Clean Label Project is a national 501(c)(3) nonprofit with the mission to bring truth and transparency to consumer product labeling. For more information, visit [CleanLabelProject.org](http://CleanLabelProject.org).

## About GMO-Free USA

GMO Free USA/Toxin Free USA is a national 501(c)(3) nonprofit advocating for a clean, healthy food system and educating consumers about the hazards of GMOs, synthetic pesticides, and other toxins. <https://gmofreeusa.org>

## References

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<sup>3</sup>IARC monograph on Glyphosate. (n.d.). Retrieved May 12, 2020, from <https://www.iarc.fr/featured-news/media-centre-iarc-news-glyphosate/>

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