

Skretting document on Ethoxyquin

Antioxidants are used in a wide variety of materials, including human food and animal feeds, to protect them from the damaging effects of oxidation. Antioxidants work by reacting with oxygen before it can react with the materials that they are protecting. Typically, they are used to protect fats and oils from spoilage through oxidation. The most widely used antioxidants in animal feeds are ethoxyquin (EQ), BHT and BHA.

Because they contain high levels of polyunsaturated fat, both fishmeal and fish oil are vulnerable to oxidation and therefore require protection. Fishmeal is made even more susceptible to oxidation because of the presence of trace minerals (essential minerals that are only needed in small quantities). For many years, ethoxyquin has been the most effective antioxidant at preventing the highly unsaturated lipids in fishmeal from self-heating and combustion during storage and transport – a potential outcome from oxidation. It is because of this and other risks that the International Maritime Organisation (IMO) currently stipulates the use of an antioxidant such as ethoxyquin is a mandatory requirement for the marine transportation of fishmeal.

In the European Union (EU), ethoxyquin is currently authorised as a feed additive (antioxidant), and the upper limit for all antioxidants either alone or in combination is set at 150 mg/kg of feed (Directive 70/524/EEC). However, as a feed additive it is subject to a re-authorisation procedure and as part of this process, the European Food Safety Authority (EFSA) published a report in November 2015 saying there were two key data gaps, which meant that it could not conduct a full risk evaluation. As such EFSA gave an inconclusive safety assessment for ethoxyquin as a feed additive. Those data gaps related to undesirable by-product compounds: Firstly, para-phenitidine – created during production of ethoxyquin; and secondly, the metabolite quinone imine which can occur during the oxidation of ethoxyquin. In this scientific output, EFSA also stated that ethoxyquin itself is neither carcinogenic nor genotoxic.

Industry has been tasked by the EU Commission to fill these data gaps. At the same time, the second version of its proposed draft regulation is getting broad support from EU Member States with limited scope for extension of the proposed transition periods. As such it is widely foreseen that restrictions will be introduced regarding the amount of para-phenitidine via the introduction of a maximum limit in the EU Directive 2002/32/EC on undesirable substances and products. The EU Commission is also investigating whether sensitive enough analytical methods exist that are appropriate for different matrixes (including fishmeal). The EU Commission is expected to present a final draft for vote at the EU Standing Committee on Plants, Animals, Food and Feed (SCoPAFF) meeting in early 2017 and is confident of securing a positive vote.

While some alternatives for ethoxyquin have been found and introduced in other industry sectors, to date the aquaculture feed industry has not found any viable like-for-like replacements in the type of applications already outlined that will fulfil EU requirements. Upon evaluation, those alternatives that do exist were found not to possess the same beneficial characteristics for the treatment of fishmeal as ethoxyquin.

The IMO (International Maritime Organization) regulations require that ethoxyquin or BHT use is mandatory with transport of fishmeal. The European Commission (EC) is looking to restrict the use of ethoxyquin. This November 2016

is causing a lot of uncertainty. If no new evidence or supplementary data that supports the use of ethoxyquin is forthcoming then its use could be banned throughout the EU from March 2020, or even earlier if the information supplied has negative connotations.

In addition to ensuring the levels of ethoxyquin in our feeds are well within current mandated limits, Skretting is continuing to conduct considerable research aimed at filling the aforementioned data gaps as well as working with partners to find a viable alternative to ethoxyquin that can meet any new EU regulations while also comparing favourably in terms of quality, efficacy and safety.

Furthermore, through the groundbreaking MicroBalance® concept developed by Skretting Aquaculture Research Centre (ARC), which provides very precise knowledge of the nutritional needs of aquaculture species, we have been able to successfully replace traditional marine-based feed components, in particular fishmeal, with alternative raw materials while maintaining equal performance in terms of fish growth, health and end product quality.

As an essential link in the feed-to-food value chain, Skretting is determined to help progress the aquaculture industry. As well as conducting pioneering R&D, this commitment includes making informed decisions relating to the use of all the components in our feeds.