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Veterinary Medicines in the Environment

A.B.A. Boxall, L.A. Fogg, P.A. Blackwell, P. Kay,
E.J. Pemberton, and A. Croxford

Contents

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A.B.A. Boxall (✉) · L.A. Fogg · P.A. Blackwell · P. Kay
Cranfield Centre for EcoChemistry, Shardlow Hall, Shardlow, Derby, DE72 2GN, UK.

E.J. Pemberton · A. Croxford
Environment Agency, National Centre for Ecotoxicology and Hazardous Substances, Evenlode House, Howbery Park, Wallingford, Oxon, UK OX10 8BD.

I. Introduction

Veterinary medicines are widely used to treat disease and protect the health of animals. Dietary enhancing feed additives (growth promoters) are also incorporated into the feed of animals reared for food to improve their growth rates. Release of veterinary medicines to the environment occurs both directly, for example, the use of medicines in fish farms, and indirectly, via the application of animal manure containing excreted products to land. A number of groups of veterinary medicines, primarily sheep dip chemicals (Environment Agency 1998, 2000, 2001; SEPA 2000), fish farm medicines (Davies et al. 1998; Jacobsen and Berglind 1988), and anthelmintics (McCracken 1993; McKellar 1997; Ridsdill-Smith 1988; Strong 1993; Wall and Strong 1987) have been well studied. However, as there are scant data available in the public domain on the environmental fate, behavior, and effects of other generic groups of veterinary medicines, their potential environmental impacts are less well understood (Jørgensen and Halling-Sørensen 2000). This review was therefore performed to gain a greater understanding of the potential risks to the environment arising from the use of veterinary medicinal products. The review considers publicly available data on exposure routes, environmental fate, behavior, and effects of all generic groups of veterinary medicines. It is hoped that the outputs from this review will be used to target monitoring programs effectively, to ensure that appropriate risk management is in place, and steer future research initiatives. All veterinary medicines, drugs, and pesticides referred to in this review are detailed in Appendix A, including common name, CAS number, and complete chemical name.

II. Environmental Assessment of Veterinary Medicines

A. Responsible Authorities

A pharmaceutical company is required to demonstrate the quality, safety, and efficacy of a new pharmaceutical product before it can be marketed. In the United States (U.S.), the regulatory authority is the U.S. Food and Drug Administration (FDA). The equivalent authority in the European Union (EU) is the European Medicines Evaluation Authority (EMEA) for Europe-wide authorization or the Member State's regulatory authority if individual country authorization is sought. The approaches used by the EU and the U.S. along with interna-