



Salmon & Trout Association

Fighting for the future of game angling

Patron: HRH The Prince of Wales

President: The Duke of Northumberland

Sheep Dip

Information Sheet

Sheep dips are powerful toxic insecticides designed to kill parasites. The synthetic pyrethroid sheep dip is up to 1000 times more toxic to invertebrates than its predecessor chemicals; it, along with the organophosphate sheep dip are the commonest cause for failure of Environmental Quality Standards in rivers. In concentrations as low as 1 part per billion they cause damaging effects on salmonids and their reproduction, fertilisation and egg development.

There are four main areas of concern regarding the use of sheep dips: 1. the poisoning of rivers and the wipe out of invertebrates from sheep dip pollution; 2. harmful effects of the polluting sheep dip chemicals on the breeding, development and fitness of salmonids; 3. damage to terrestrial ecosystems when sheep dips are 'disposed of'; and, 4. potentially devastating public health risk given the harmful effects minute amounts of the chemical have on salmonids.

Evidence of pollution

Data from the Environment Agency (EA) and Scottish Environment Protection Agency (SEPA) show that increased monitoring has resulted in a sharp increase in the number of recorded incidents. "Since August 2003, there have been 57 sheep dip related incidents in Wales alone, affecting 29 catchments. Most of these incidents have arisen from apparent routine use of cypermethrin"¹.

Hotspots of pollution coincide with monitoring. The EA acknowledges that wherever it looks for sheep dip pollution it finds it. Where targeted monitoring is taking place – SW Wales – we know we have a very serious problem. But, as there is little monitoring elsewhere, no one knows the magnitude of the problem.

In England and Wales, "Sheep dip chemicals cause around one third of all freshwater Environmental Quality Standard (EQS) failures with between 39 to 70 failures in the period 2000- 2003"².

The Water Framework Directive (WFD) risk assessment work of 2004 estimates that around half of Wales (49%) is at risk of failing to meet the WFD requirement of Good Ecological Status simply as a result of sheep dip EQS failures³.

¹ Croxford, A. 2005. Sheep dip: Impacts on Aquatic Life. July 2005 RFERAC report no. T/RFERAC/05.

² Croxford, 2

³ Environment Agency. 2004. Risk Assessment Characterisation for England and Wales: Pesticides and sheep dip.

Harmful effects

The synthetic pyrethroid sheep dip, as well as damaging the environment, is also driving species towards extinction. Last year, 5,000 White-clawed crayfish (an endangered species) were killed by sheep dip pollution in Cumbria's River Mint⁴; and the very rare caddisfly *Glossosoma intermedium* once found in three rivers is now only found in one, apparently due to poisoning by sheep dip⁵.

At one part per billion (that is a thousand million) cypermethrin has a harmful effect on fish. At these amounts, that are so minute they are difficult to conceptualise, the olfactory system of male fish becomes impaired, and thus significantly reduces the sperm produced by the spawning male salmon. At one part per 2 million "cypermethrin reduces the motility and life of sperm in waters suggesting a secondary sub-lethal effect on salmon reproduction. Exposure of eggs and milt to cypermethrin during fertilisation within a hatchery had a significant effect on the subsequent development of the eggs. During exposure of the surviving eggs to the pesticide there was a significant decrease in egg weight and ionic content at all concentrations"⁶

This harmful effect on fish and their fertilization and embryo survival has serious implications for the survival of the world famous salmon, sea trout and wild brown trout populations. To reach the legal requirement of Good Ecological Status under the WFD, there needs to be an abundance of invertebrates and species of invertebrates as well as self-sustaining fish populations

Use of alternatives

Sheep dips continue to be used because they effectively treat scab, the pest of greatest concern, and also provide an all-in-one solution and single treatment for a range of other sheep pests. However, in New Zealand sheep management is heavily regulated and the use of injections combined with pour-ons are widely used.

In the UK sheep farmers in certain parts of the country (e.g. Buckinghamshire) are also using this combination of methods. An agricultural vet, Ian Baker, has advised S&TA that sheep scab is completely treatable using injectables. But, injectables counter sheep scab only, and other treatments such as pour-ons are necessary for pests such as blowfly, ticks and lice⁷. The encouragement of good animal husbandry and managed flock sizes will reduce the need for chemical treatment⁸

By Carmel Jorgensen, 2005.

⁴ Environment Agency. 2005. Penrith farmers ordered to pay £38,000 for polluting beck with sheep dip. Cumbria. News release. Ref. 059-05js. 3 Aug 2005.

⁵ Wallace, I. 2005. *Glossosoma intermedium* Assessment. Biodiversity Action Plan (BAP) Priority Species Review. BAP Review – Invertebrate Group. England and Wales.

⁶ Moore, A. 2003. Sublethal effects of pollutants on salmonids. Research on migratory salmonids, eels and freshwater fish stocks and fisheries. Sci. Ser. Tech. Rep., CEFAS Lowestoft, eds. Potter, E.C.E. and Dare, P.J. 119:64 pp.

⁷ Baker, I. 2005. Veterinary Medicine Doctor. Personal communication.

⁸ Environment Agency. 1998. EA REPAC 22 April 1998.