



Organophosphate insecticides

Organophosphate (OP) pesticides were introduced to the wool industry in the 1950s. One of the disadvantages of OPs is their non-selectivity i.e. OPs affect both insects and mammals. Being old compounds, OPs in general are being replaced by more modern insecticides but diazinon, chlorfenvinphos and propetamphos are still available as flystrike dressings and in 2008, temephos (Assassin[®]) was relaunched as a sheep dip for lice control.

OPs may be absorbed through human skin, inhaled in vapours or absorbed by ingestion. Absorption is enhanced by moisture on the skin surface. This can occur with sweating or by wearing contaminated clothes. OP pesticides are also readily absorbed through breaks in the skin, such as cuts, cracked skin and sores. Compared to most modern insecticides OPs are quite toxic to humans. As a result OP pesticides pose occupational health and safety risks that necessitate great care during storage, use and disposal.

OPs exert their effects on the nervous system of organisms. As such, they are relatively fast-acting insecticides. Susceptible insects will be killed within 4-8 hours of exposure.

Although still very effective against lice, the development of resistance in sheep blowfly (*Lucilia cuprina*) larvae during the 1960s significantly reduced the effectiveness of OP products for blowfly control. After resistance became widespread OP products provided only a few weeks flystrike protection. Ironically, residues left as a consequence of jetting persisted for many months longer than the flystrike protection provided. OPs are no longer registered as jetting fluids for use on sheep. OP resistance conferred a 'cross-resistance' to diflubenzuron that contributed to the eventual ineffectiveness of diflubenzuron-based jetting products and subsequent withdrawal of their claim for flystrike prevention.

There are flystrike dressing products containing the organophosphates diazinon, chlorfenvinphos or propetamphos registered for the treatment of struck sheep. Some OP dressing products contain several active constituents in addition to the OP. Since

the development of resistance, OP flystrike dressings that were once highly effective now only give a variable to poor kill of maggots on struck sheep. Despite this, when combined with wool removal, they generally provide adequate restrike protection of wounds for sufficient time to allow healing.

Currently there are no residue concerns regarding the use of OP flystrike dressings. However, the veterinary label code states that unless there is data to support a shorter wool withholding period (WHP) a one month default WHP applies for dressing products used to treat individually struck sheep.