

SUMMARY

The cotton industry remains heavily dependent on endosulfan for early season insect control. Endosulfan is particularly effective in Integrated Pest Management programs but it is regularly detected in river water above ANZECC guidelines in greater than 50% of samples during the cotton growing season. The cotton industry has recently agreed to meet reduction targets for endosulfan residues of 25% in three years and 50% in six years in the river systems in cotton-growing areas. The issue of sediment-bound endosulfan and possible adverse effects on macroinvertebrates, particularly benthic organisms, has regularly been raised by regulatory authorities.

This project was designed to:

- Review all available sources of analytical and research data regarding the binding and potential for remobilisation of endosulfan on bottom sediments
- Based on the results of the review and data analysis, make recommendations regarding future research requirements

Based on the survey the following conclusions can be made:

- Contamination of sediments by endosulfan is a normal occurrence where significant residues are transported from sites of application to rivers in runoff. However, there is no compelling evidence available of widespread ecological hazards from storage of endosulfan at high concentrations in sediments. No such cases of long-term storage have been reported.
- Contamination of sediments does occur at a moderate level near application points, with transient ecotoxicological effects, but there are no reports in the literature of major contamination of water resulting from subsequent mobilisation of endosulfan stored in sediments.
- The current concern regarding possible storage of endosulfan in sediments would most effectively be countered if carefully targeted research were conducted.
- It is recommended that research should be conducted to determine the probable size of the pool of residues present in sediments and to measure the rate and extent of partitioning of endosulfan residues in sediments into the water column. This study would best be achieved in farm reservoirs because of the uncertainty of riverine systems.

From this on-farm research to provide quantitative data, convincing modelling of the degree of contamination of the water column possible in river systems could be performed, with targeted field validation. A study of the possibility of reducing river sediment contamination from engineering works on farms designed to reduce flow rates of run-off leading to sedimentation would also be of practical remediation value.