Memorandum

July 14, 1986

To: Dave Coppage
Ad Hoc Peer Review Coordinator

From: Ad Hoc Peer Review Committee

Subject: Les Touart's Review of Trifluralin Aquatic Field Study

The Ad Hoc Peer Review Team reviewed Les's DER for the Trifluralin Aquatic Field Monitoring Study, 1985, EPA Acc. No. 260213 and 260214. The study was conducted to fufill the requirement imposed under the 3(c)(2)(B) data call-in. The study was primarily designed as a runoff monitoring study to: 1) assess the amount of trifluralin that was transported to aquatic systems via surface runoff; 2) determine if trifluralin was bioavailable to aquatic organisms; and 3) if trifluralin caused vertebral anomalies in fish.

Tank mixes of Treflan/Lexone were applied to a soybean field in 1983, 1984 and 1985. A control soybean field was treated with tank mixes of Lasso/Lexone in 1983 and 1984.

The data indicated that trifluralin residues were below the 0.3 ppb limit of detection throughout the study. The chemical was detected in pond sediments in 1984 and 1985. The fact that it was detected in the sediments and not the water is not surprising since trifluralin strongly adsorbs to soil. It also has an octanol-water partition coefficient (log P) of 5.07 which indicates it readily accumulates in tissue. The fish data showed that trifluralin whole-body residues ranged from non-detectable to 9 ppb in 1983, from non-detactable to 43 ppb in 1984 and up to 290 ppb in 1985. Vertebral abnormalities at the treated site ranged from 0% to 25%, and at the control site they ranged from 0% ton 10.8% from 5/10/84 to 7/2/85.

The study authors concluded that: 1) trifluralin can be transported to aquatic systems via runoff; 2) trifluralin can accumulate to detectable levels in fish; 3) vertebral lesion frequencies were significantly correlated to the concentrations in the pond sediment but not the residues in the fish; 4) the data did not indicate that residues were higher in fish with the abnormalities as compared to normal fish from the treated pond and 5) trifluralin did not adversely affect the fish.

Les concluded that the study adequately demonstrated that trifluralin applied to soybeans will be transported to aquatic systems and become bioavailable to aquatic organisms. However, he did not agree with the conclusion that trifluralin did not have an adverse effect on fish since the presence of the chemical in natural waters

was associated with increased incidences of vertebral anomalies. However, the significance is not clear since fish in the reference pond also displayed these abnormalities, and the effects of the anomalies on survivability of the affected fish is unknown.

Conclusion of the Review Team

We agree with Les's conclusions. We believe another study to clarify trifluralin's role in the appearance of the vertebral abnormalities and the significance of these anomalies to fish populations is warranted. Our only comment with regard to the DER is a change in Item 7. Conclusions. The phrase "at non-detectable residues ...chemical influences" should be deleted so the sentence would read "Trifluralin may also contribute to increased incidences of vertebral anomalies in fish."

Ann Stavola, Chair

Tom Armitage

John Noles

John Noles