



Department of Pesticide Regulation



Gray Davis
Governor

Winston H. Hickox
Secretary, California
Environmental
Protection Agency

Paul E. Helliker
Director

MEMORANDUM

TO: Kean S. Goh, Ph.D.
Agricultural Program Supervisor IV
Environmental Monitoring Branch

FROM: Frank Spurlock, Ph.D.
Senior Environmental Research Scientist
(916) 324-4124

DATE: August 30, 2001

SUBJECT: DETERMINATION IF THE CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE'S ALACHLOR, METOLACHLOR AND SELECTED METABOLITES LC/MS/MS METHOD (EM 37.6, REVISION DATE 4/13/01) MEETS THE "UNEQUIVOCAL DETECTION" CRITERIA

BACKGROUND

The Pesticide Contamination Prevention Act (Food and Agricultural Code [FAC] sections 13141 et seq.) was passed in 1985 to prevent further pesticide pollution of ground water which may be used for drinking water supplies. FAC section 13149 specifies the conditions under which a pesticide is considered "found" in ground water or soil, and thus subject to formal review as specified. As originally adopted, FAC subsection 13149(d) specified that a finding of a pesticide shall be verified by a second analytical method or a second analytical laboratory approved by the (now) Department of Pesticide Regulation (DPR). However, the law was amended by Senate Bill 810 in 1995 to allow a finding of a pesticide in ground water or soil to be based on a single analytical method conducted by a single analytical laboratory, if the analytical method provides unequivocal identification of a chemical. Following this change, criteria were established to identify methods providing unequivocal identification of a chemical in a February 13, 1996, DPR memo entitled "Definition of unequivocal detection method for the purposes of SB 810."

ISSUE

Does the analytical method for alachlor, metolachlor and four degradates used by the California Department of Food and Agriculture (CDFA) meet the definition of an unequivocal detection method?

DISCUSSION AND RECOMMENDATION

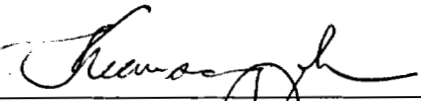
The CDFA Center for Analytical Chemistry, Environmental Monitoring Section (method EM 37.6, revision date 4/13/01) uses an LC/MS/MS system for the detection of the two pesticides alachlor and metolachlor, and their respective oxo-acetic acid and oxo-ethanesulfonic acid degradates. For each of the six chemicals analyzed, the first mass spectrometer is set to



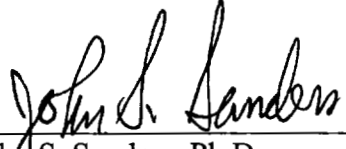
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reject all species with mass/charge values that do not correspond to the analyte's molecular ion eluting at that analyte's particular retention time. Each molecular ion is then fragmented in the next stage, and the final mass spectrometer quantifies the herbicide or degradate based on either one or two characteristic fragments. Three stepwise factors are used to eliminate possible interferences for each analyte: chromatographic retention time, analyte molecular ion mass, and either one or two specific daughter ion masses depending on the analyte. Consequently analysis of the six analytes by this method is highly specific and qualifies for the designation as unequivocal. Therefore, analysis by a second laboratory or a second method is not necessary for well water samples analyzed for alachlor, metolachlor, or their respective oxo-acetic acid or oxo-ethanesulfonic acid degradates.

If you have any questions, please feel free to contact me.

APPROVED: 
Kean S. Goh, Ph.D.
Agricultural Program Supervisor IV

Date: 8-29-01

APPROVED: 
John S. Sanders, Ph.D.
Branch Chief

Date: 8/30/01