Neurobehavioral Effects of Pesticides: State of the Art

C Colosio1, ,

M Tiramani1,

M Maroni1,2

International Centre for Pesticides and Health Risk Prevention, Via Magenta 25, 20020 Busto Garolfo, Milan, Italy

Department of Occupational Health, University of Milan, Milan, Italy


Abstract

The authors have reviewed the literature on neurobehavioral toxicity of pesticides to assess the status of knowledge on this matter. Some data suggest that exposure to DDT and fumigants may be associated with permanent decline in neurobehavioral functioning and increase in psychiatric symptoms, but, due to the limited number of studies available and the scarce knowledge on exposure levels, no firm conclusion can be drawn. Data on subjects acutely poisoned with organophosphorous compounds suggest that an impairment in neurobehavioral performance and, in some cases, emotional status may be observed as a long-term sequela, but the possibility still remains that these effects were only an aspecific expression of damage and not of direct neurotoxicity. Studies carried out on subjects chronically exposed to organophosphates, but never acutely poisoned, do not provide univocal results but the slight
changes consistently observed in sheep dippers suggest the need of focusing on activities characterized by relatively higher exposure levels. In general, the main limits of existing knowledge are the variability of the testing methods used, which makes it difficult to compare the results of single studies, and the scarce knowledge on exposure levels. A promising approach may be the conduction of prospective longitudinal or cohort studies, where exposure and dose assessment can be more easily controlled, or the evaluation of cohorts of workers a priori selected for the availability of environmental and biological monitoring data. The follow up of the populations under study may give an answer at the problem of the prognostic significance of the observed changes. Also the protocols used to assess neurobehavioral functioning need to be standardized.