Adverse effects on sexual development in rat offspring after low dose exposure to a mixture of endocrine disrupting pesticides

The present study investigated whether a mixture of low doses of five environmentally relevant endocrine disrupting pesticides, epoxiconazole, mancozeb, prochloraz, tebuconazole and procymidone, would cause adverse developmental toxicity effects in rats. In rat dams, a significant increase in gestation length was seen, while in male offspring increased nipple retention and increased incidence and severity of genital malformations were observed. Severe mixture effects on gestation length, nipple retention and genital malformations were seen at dose levels where the individual pesticides caused no or smaller effects when given alone. Generally, the mixture effect predictions based on dose-additivity were in good agreement with the observed effects. The results indicate that there is a need for modification of risk assessment procedures for pesticides, in order to take account of the mixture effects and cumulative intake, because of the potentially serious impact of mixed exposure on development and reproduction in humans.

General information

Publication status: Published
Organisations: National Food Institute, Division of Toxicology and Risk Assessment, Division of Food Chemistry, Department of Informatics and Mathematical Modeling, DTU Data Analysis
Pages: 261-274
Publication date: 2012
Peer-reviewed: Yes

Publication information
Journal: Reproductive Toxicology
Volume: 34
Issue number: 2
ISSN (Print): 0890-6238
Ratings:
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 3.28 SJR 1.198 SNIP 1.085
Web of Science (2012): Impact factor 3.141
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
Original language: English
Keywords: Epoxiconazole, Mancozeb, Prochloraz, Tebuconazole, Procymidone, Rat, Mixture, Developmental, Endocrine disrupter, Nipple retention
DOI:
10.1016/j.reprotox.2012.05.090
Source: dtu
Source ID: n:oai:DTIC-ART:elsevier/366808464::18189
Research output: Contribution to journal › Conference article – Annual report year: 2012 › Research › peer-review