

L'abstract bilingue in un saggio di argomento tecnico in lingua italiana e quello di un testo scientifico in lingua inglese

Istituto Superiore di Sanità

L'insetticida lindano: identificazione dei rischi possibili per la riproduzione umana.

Maria Elsa Traina, Elisabetta Urbani, Michele Rescia, Alberto Mantovani

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L'ipotesi che l'esposizione a sostanze inquinanti in grado di alterare l'equilibrio del sistema endocrino possa avere effetti sulla riproduzione umana e sullo sviluppo è attualmente oggetto d'interesse nella comunità scientifica. Particolare attenzione è stata indirizzata ai pesticidi organoclorurati a lunga persistenza nell'ambiente e negli organismi, per i quali esistono numerose evidenze di effetti nocivi per la riproduzione, negli studi di tossicologia sperimentale. L'insetticida lindano (l'isomero- γ dell'esaclorocicloesano), largamente utilizzato prima degli anni '80, non è stato fino ad oggi adeguatamente valutato per un possibile rischio riproduttivo a lungo termine. In questa rassegna è stata pertanto effettuata una revisione critica della letteratura scientifica sugli effetti di questo principio attivo sul sistema riproduttivo maschile e femminile, sulla gravidanza e sullo sviluppo. Attraverso un'analisi del consumo di prodotti a base di lindano e una valutazione dei livelli di questo principio attivo nell'ambiente e nei liquidi e tessuti biologici, con particolare riguardo alla situazione italiana, sono stati definiti i possibili periodi di maggiore esposizione (anni 1960-70) a quest'insetticida. Il presente rapporto intende costituire uno strumento di lavoro per chi compie studi di tossicologia sperimentale e di epidemiologia, per la prevenzione dei rischi riproduttivi negli ambienti di vita e di lavoro.

Parole chiave: Lindano, Riproduzione umana, Rischio tossicologico, Prevenzione

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The insecticide lindane: identification of possible risks for human reproduction.

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A growing international concern exists about the potential harm to human reproduction caused by pollutants able to interfere with the endocrine system. Particular interest is addressed to organochlorine pesticides persisting in the environment and organisms; such compounds are extensively studied for their adverse effects on reproductive functions and development of laboratory animals. The insecticide lindane (the γ -isomer of hexachlorocyclohexane), widely used before the 80s, has yet to be adequately evaluated as regards the possible reproductive risk. The present report contains a critical revision of the available scientific literature about lindane effects on the male and female reproductive systems, pregnancy and development. Besides, the possible higher exposure periods to this pesticide (years 60s-70s) have been determined through the analysis of the lindane products consumed and the evaluation of the active ingredient levels in the environment and in the tissues and biological fluids, with particular regard to Italy. The present review aims at supporting further toxicological and epidemiological studies to assess the possible reproductive risk posed by environmental and professional exposure to chlorinated insecticides.

Key words: Lindane, Human reproduction, Toxicological risk, Prevention

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1

Summary and Recommendations

Background

- 1.1 The widespread use of mobile phones is a recent phenomenon. Their use has escalated over the past decade and to many they are now an essential part of business, commerce and society. Over the Christmas 1999 period alone approximately 4 million phones were sold in the UK and at present (April 2000) there are about 25 million mobile phones in circulation. This is equivalent to nearly one phone for every two people (see paragraph 2.16)
- 1.2 The fact that so many people own mobile phones attests to their perceived importance to the general public. The advent of third generation systems will extend the use of most forms of communications technologies, including fax, e-mail and Internet access. The use of mobile phones and related technologies will continue to increase for the foreseeable future.
- 1.3 The extensive use of mobile phones has been accompanied by public debate about possible adverse effects on human health. The concerns relate to the emissions of radiofrequency (RF) radiation from the phones (the handsets) and from the base stations that receive and transmit the signals (paragraphs 3.3–3.7). For the general population, the levels of exposure arising from phones held near to the head or other parts of the body are substantially greater than whole-body exposures arising from base stations (paragraphs 4.28–4.36).
- 1.4 There are two direct ways by which health could be affected as a result of exposure to RF radiation. These are by thermal (heating) effects caused mainly by holding mobile phones close to the body, and as a result of possible non-thermal effects from both phones and base stations (paragraphs 5.5–5.26).
- 1.5 There can also be indirect effects. There is evidence that using a mobile phone whilst driving can increase the risk of accidents. Also some people's well-being may be adversely affected by the environmental impact of mobile phone base stations sited near their homes, schools or other buildings, as well as by their fear of perceived direct effects (paragraphs 5.264, 6.44 and 6.45).

Sources of Exposure

- 1.6 Mobile phones and base stations emit RF radiation. In both cases levels of exposure generally reduce with increasing distance from the source. For mobile phones, exposures will be principally to the side of the head for hand-held use, or to the parts of the body closest to the phone during hands-free use.
- 1.7 For base station emissions, exposures of the general population will be to the whole body but normally at levels of intensity many times less than those from handsets (paragraphs 4.28–4.36). Base stations communicate with mobile phones within a defined area or "cell". These can be of