



HAL
open science

Household exposure to pesticides and risk of childhood hematopoietic malignancies: The ESCALE study (SFCE).

Jérémy Rudant, Florence Menegaux, Guy Leverger, André Baruchel, Brigitte Nelken, Yves Bertrand, Catherine Patte, Hélène Pacquement, Cécile Vérité, Alain Robert, et al.

► To cite this version:

Jérémy Rudant, Florence Menegaux, Guy Leverger, André Baruchel, Brigitte Nelken, et al.. Household exposure to pesticides and risk of childhood hematopoietic malignancies: The ESCALE study (SFCE).. *Environmental Health Perspectives*, 2007, 115 (12), pp.1787-93. 10.1289/ehp.10596 . inserm-00250367

HAL Id: inserm-00250367

<https://inserm.hal.science/inserm-00250367>

Submitted on 11 Feb 2008

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

ehp

**ENVIRONMENTAL
HEALTH
PERSPECTIVES**

ehponline.org

**Household Exposure to Pesticides and
Risk of Childhood Haematopoietic
Malignancies: the ESCALE Study (SFCE)**

**Jérémie Rudant, Florence Menegaux, Guy Leverger,
André Baruchel, Brigitte Nelken,
Yves Bertrand, Catherine Patte, Hélène Pacquement,
Cécile Vérité, Alain Robert, Gérard Michel,
Geneviève Margueritte, Virginie Gandemer,
Denis Hémon, Jacqueline Clavel**

**doi:10.1289/ehp.10596 (available at <http://dx.doi.org/>)
Online 25 September 2007**



NIEHS

National Institute of
Environmental Health Sciences

National Institutes of Health
U.S. Department of Health and Human Services

Household Exposure to Pesticides and Risk of Childhood Haematopoietic Malignancies: the ESCALE Study (SFCE)

Jérémy Rudant^{1,2}, Florence Menegaux^{1,2}, Guy Leverger³, André Baruchel⁴, Brigitte Nelken⁵, Yves Bertrand⁶, Catherine Patte⁷, Hélène Pacquement⁸, Cécile Vérité⁹, Alain Robert¹⁰, Gérard Michel¹¹, Geneviève Margueritte¹², Virginie Gandemer¹³, Denis Hémon^{1,2}, Jacqueline Clavel^{1,2,14}

¹INSERM, U754, IFR69, Villejuif, France.

²Univ Paris-Sud, UMR-S754, IFR69, Villejuif, France.

³AP HP, Hôpital Armand Trousseau, Paris, France.

⁴AP HP, Hôpital Saint-Louis and Hôpital Robert-Debré, Paris, France.

⁵Hôpital Jeanne de Flandre, Lille, France.

⁶Hôpital Debrousse, Lyon, France.

⁷Institut Gustave Roussy, Villejuif, France.

⁸Institut Curie, Paris, France.

⁹Hôpital Pellegrin Tripode, Bordeaux, France.

¹⁰Hôpital des Enfants, Toulouse, France.

¹¹Hôpital La Timone, Marseille, France.

¹²Hôpital Arnaud de Villeneuve, Montpellier, France.

¹³CHU-hôpital Sud, Rennes, France.

¹⁴French National Registry of Childhood Blood malignancies (RNHE), Villejuif, France

SFCE : Société Française de lutte contre les Cancers de l'Enfant et de l'Adolescent

Correspondence to Jérémy Rudant, INSERM U754, 16, AV. Paul Vaillant Couturier, F-94807 Villejuif Cedex, France

Tel: +33 1 45 59 50 37 ; fax : +33 1 45 59 51 51 ;

e-mail: rudant@vjf.inserm.fr

Acknowledgements and Grants

We are grateful to Marie-Hélène Da Silva, Christophe Steffen, Aurélie Goubin and the staff of the French National Registry of Childhood Blood Malignancies, Catherine Tricoche and the team of interviewers (Callson), Sabine Méléze and Marie-Anne Noel (Institut CSA).

Grant sponsors: INSERM, Fondation de France, ARC, AFSSAPS, AFSSET and Cent pour sang la vie.

This work, presented at the Grell Meeting 2007 in Montreal, was awarded the "Enrico Anglesio" Prize, offered by the "Anglesio Moroni Foundation", Turin, Italy.

The authors declare they have no competing financial interests.

Running title: Pesticides and Childhood leukaemia and lymphoma

Type of article: Research article in epidemiology

Key words: acute leukaemia, children, Hodgkin's lymphoma, non-Hodgkin's lymphoma, pesticide, pregnancy

Abbreviations used:

AL	Acute leukaemia
ALL	Acute lymphoblastic leukaemia
AML	Acute myeloblastic leukaemia
HL	Hodgkin's lymphoma
NHL	Non-Hodgkin's lymphoma
CI	Confidence interval
OR	Odds ratio

Outline of section headers

Abstract

Introduction

Patients and methods

 Cases and controls ascertainment

 Cases

 Controls

 Data collection

 Statistical analysis

Results

 Cases and controls comparability

 Exposure to pesticides

Discussion

Conclusion

References

Appendix

Tables

Abstract

Objectives

Investigating the role of household exposure to pesticides in the aetiology of childhood haematopoietic malignancies.

Methods

The national registry-based case-control study ESCALE was carried out in France over the period 2003-2004. Population controls were frequency matched with the cases on age and gender. Maternal household use of pesticides during pregnancy and paternal use during pregnancy or childhood were reported by the mothers in a structured telephone questionnaire. Insecticides, used at home, on pets, or for garden crops, herbicides and fungicides were distinguished. We estimated odds ratios (OR) using unconditional regression models closely adjusting for age, gender, degree of urbanization and type of housing (flat or house).

Results

We included a total of 764 cases of acute leukaemia (AL), 130 of Hodgkin's lymphoma (HL), 166 of non-Hodgkin's lymphoma (NHL) and 1681 controls. Insecticide use during pregnancy was significantly associated with childhood AL (OR=2.1 [1.7-2.5]), both lymphoblastic and myeloblastic, NHL (OR=1.8 [1.3-2.6]), mainly for Burkitt's lymphoma (OR=2.7 [1.6-4.5]), and mixed-cell HL (OR=4.1 [1.4-11.8]), but not nodular sclerosis HL (OR=1.1 [0.6-1.9]). Paternal household use of pesticides was also related to AL (OR=1.5 [1.2-1.8]) and NHL (OR=1.7 [1.2-2.6]), but, for AL, the relationships did not remain after adjustment for maternal pesticide use during pregnancy.

Conclusion

The study findings strengthen the hypothesis that domestic use of pesticides may play a role in the aetiology of childhood haematopoietic malignancies. The consistency of the findings with those of previous studies on AL raises the question of the advisability of preventing pesticide use by pregnant women.