Reviewer's report

Title: Thyroid function in Danish greenhouse workers

Version: 1 Date: 4 September 2006

Reviewer: Larissa Takser

Reviewer's report:

General
The research subject is topical and well defined. The paper addresses the risk of thyroid disruption in pesticides exposed greenhouse workers. However, statistical analysis and results presentation should be improved. Also, the interpretation of data is significantly limited by lack of true control group.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Background: The brief information about chemical structure, the existing groups of pesticides, and the mechanism of thyroid disruption by these chemicals should be introduced. What are the most potent thyroid disruptors among these substances?

Method: It is not clear if thyroid or other endocrine disease were included in the study. The information about these disorders in recruited workers should be given. The free version of the reference [7] is not always available. I would like to have more details about the recruitment: the response rate, the method of recruitment.

The criteria of exposure, current and chronic, as well as variables used in statistical analysis should be more detailed. For example, “spraying load” should be defined in the method section before its use in tables.

Table 1: Why the population characteristics are compared between “spraying load” groups? If no true reference group is recruited, the characteristics of all recruited workers can be given in the Table with comparisons given in the text. What are the drugs consumed by this population? Do the characteristics vary between summer and autumn?

Table 2: The third column should be removed. The Table should provide the available information about individual exposures, not only greenhouse use. How many pesticides are currently used by workers? Does this exposure vary between seasons?

Statistical analysis and Results: What are the dependent variables and the independent variables in the final models? Does the studied association change if adjusted for gloves use? Can the use of any protection be potential confounding factor (i.e. the highly exposed workers use the gloved more frequently than moderately exposed workers)?

Why the results are expressed as means and 95%CI? If regression models are used, the parameters of these models are more appropriate. To avoid the confusion, the data should be presented separately for cross-sectional and longitudinal analyses.

For longitudinal analysis, I suggest to use the multivariate statistic.

Discussion:
It is not always clear which results were significant. The statistical power of the study should be addressed.

Page 11, third paragraph, second sentence: It is evident that an epidemiological study can not determine the exact mechanism of thyroid disruption. I suggest removing this sentence.

I agree with the authors about the need of an external control group. This is the major limitation of the study. If this limitation can not be corrected, the authors can give the information about the laboratory values of thyroid hormones in population similar the study group measured by the same laboratory.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Background:
first paragraph, 7th line: The sentence “Except for the decrease…” is not clear.

Discussion:
first paragraph, first sentence: the level of FT4 was decreased, not elevated, from Table 4.
Discretionary Revisions (which the author can choose to ignore)

**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.