Reviewer's report

**Title:** Statewide Assessment of Disparities in the Geographic Distribution of Toxic Release Inventory (TRI) Facilities in Maryland: An Ecological Study

**Version:** 1  **Date:** 22 July 2013

**Reviewer:** Gebre-Egziabher Kiros

**Reviewer's report:**

The authors provide a detailed analysis of the spatial distribution of Toxic Release Inventory (TRI) facilities in the state of Maryland at the census tract level using data obtained from the 2010 US Census, US Environmental Protection Agency (EPA), and Health Professional Shortage Area (HPSA). They used both statistical and geographic information systems (GIS) to investigate the distribution of TRI facilities in relation to sociodemographic factors, economic deprivation, and racial segregation. The study found significant variations in the distribution of TRI facilities by socioeconomic factors.

The manuscript addresses an important issue about the disproportionate exposure of the population to environmental hazards by race, income, education, and other factors. The manuscript is well-written, the analysis is thorough and the interpretations of the results are valid. The authors acknowledged some of the limitations of their study. They also have articulated the strengths of the study.

I have the following comments and questions:

(a) Major Compulsory Revisions

1. The manuscript lacks a conceptual or theoretical framework that guides the analysis. For example, the manuscript may benefit if the authors use an environmental justice approach or any other similar conceptual framework to situate the study in a wider context.

2. Given that race, poverty, education, employment, home-ownership, and income are interrelated, the authors need to attempt to disentangle the factors contributing to the observed disparities using statistical tools developed to handle the problem of multicollinearity.

(b) Discretionary Revisions

1. In Table 4, all estimated coefficients from simple linear regression models are highly significant ($p < 0.0001$). The authors should be more tentative and careful with their findings. Also they may want to check if the fact that having a large sample size even if the estimates are very small plays a role here.

2. What was the total number of census tracts in Maryland in 2010? If we add the number of census tracts by distance from TRI facility given in Table 1, there were
2,672. The number should be given in the methods section.

3. In the Results section, second paragraph, referring to Table 1, the authors wrote “(p-value > 0.05)”. However, all the significant values indicated in Table 1 have double asterisks (p < 0.01). Does that mean there is no single estimate with p-value between 0.05 and 0.01? The authors should be consistent in presenting the p-values. For instance, in Table 3, ** is used to indicate p < 0.01 and in Table 5 * is used to indicate p < 0.01. There is also “a” on the bottom of Tables 2, 3 and 5 with no explanation that needs to be removed.

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.