ESTIMATING CANCER RISK AMONG RESIDENTS LIVING IN PROXIMITY TO PETROLEUM STORAGE TANKS: THE CASE OF KIRYAT HAIM, ISRAEL

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Background and Aims: Cancer is the leading cause of mortality in Israel (both in men and women) and cancer incidence rates are especially high in the Haifa district, which is the main industrial district of the country (Barchana et al 2007; ICBS 2008; IMEP 2008). Although several petroleum storage facilities located in the area may present a considerable health risk, no epidemiological studies have been carried out to date to investigate their potential health effects.
Methods: Both traditional zonal approaches and recently developed Double Kernel Density (DKD) tools were used to investigate relative risks of lung and NHL cancers attributed to residential proximity to the petroleum storage tanks in the Kiryat Hiam residential area.
Results: While traditional zonal approaches failed to detect any association between residential proximity to the petroleum storage tanks and the two types of cancer under study ($P>0.6$), the DKD approach indicates that the relative density of both lung and NHL cancers declines with distance from the storage tanks. The results are found to be especially significant among the elderly (lung: $t= -14.058$; $P <0.01$; NHL: $t= -4.638$; $P <0.01$), controlled for residential proximity to main roads, average income and smoking.
Conclusions: Living near petroleum storage tanks appears to represent a significant health risk that can be detected by sensitive analytical tools, such as the DKD approach, whereas it may remain undetected by traditional zonal approaches commonly used in epidemiological studies.
References:

Barchana M, Liptshitz I, Fishler Y, and Green M. Geographical mapping of malignant diseases in Israel 2001-2005. Jerusalem: Israel National Cancer Registry, 2007.
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