Abstract Submission - Environmental Public Health Tracking Workshop

***Title**: "Developing A Methodology to Co-locate Pesticide Applications And Health Risks in Rural Maryland: Using Remote Sensing to Create Exposure Risk Factor Maps"*

Keyword(s): *Remote sensing, spatial analyses, pesticides, GIS, vegetation/crop identification*

***Background**:* The CDC recognizes pesticide exposures, whether by incorrect applications methods or proximity to/contact with areas in they are used, represent environmental health hazards that need more. Making localized connections between pesticides used and health outcomes is difficult when pesticide-use data is lacking, or non-existent in some cases. Data is especially difficult to secure when barriers exist in multi-agency environments where stakeholders fear data may be misused if released.

Objective(s): Develop a method to identify ground cover, specifically agricultural crops, to determine the application of specific pesticides based on those crop types. Spatial identification of crops, using remote sensing and GIS, will permit the construction of a risk-factor maps, where the assessment of a pesticide's health impact and degree of risk - i.e. its "bad actor" potential (toxicity and health impacts) is based on the chemical's area of application, the reported and projected amounts of pesticides used, and the pesticide's proximity to risk populations and/or co-location with reported health outcomes.

Method(s): Remote sensing and spatial analyses are used to process satellite imagery of farmland, identifying crop types using algorithms of their reflective "signatures". GIS statistical analyses are then used to "place" the chemicals on a map and create exposure buffers based on the chemical's toxicity, persistence, amount used etc. Contours of risk may then be drawn and health data overlaid to determine correlations and create future, targeted, intervention plans.

Result(s): Remote sensing analysis was able to identify specific crop types in the rural areas under investigation. Estimates of pesticides applied could be measured and health linkage hypotheses generated.

Conclusion(s): Remote Sensing and GIS provide unique tools to identify environmental risk "spaces", especially when data is lacking.

Evaluation: Software costs are somewhat of an impediment, but a low-moderate learning curve for analyses makes the protocol attractive for other agencies and investigations.

For the corresponding author, please provide:

Name and degrees:	*Andrew Timleck, MPH*
Title and organization:	*Research Fellow* *Dept. of Health & Mental Hygiene,* *State of Maryland*
Mailing address:	*7130 Hanover Pkwy* *Greenbelt, MD 20770* *U.S.A.*
E-mail address:	*jtimleck@mac.com*
Phone and fax numbers	*301-513-9212* *301-314-6892*
Co-Author	*Maurice Carter, BS* *maucarter@yahoo.com*