An Investigation of Environmental Racism Claims: Testing Environmental Management Approaches with a Geographic Information System

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ABSTRACT / The purpose of this research was to explore the concept of an environmental racism claim through the use of several environmental management tools. The EPA's Toxics Release Inventory, Cumulative Exposure Project, and the Los Angeles County Department of Health Services' Hot Zone Census Tract Assessment were combined with racial and socioeconomic data to test claims that minorities in South Central Los Angeles are disproportionately exposed to environmental lead. Multivariate analysis indicated that race is strongly associated with the number of cases of elevated blood lead levels in South Central, irrespective of poverty status. Proximity to point sources, a common focal point for studies of environmental racism, was not a contributing factor to health outcomes. Proximity to transportation corridors was consistently the strongest indicator of environmental lead exposure, while median home values were significantly and positively related to elevated blood lead levels. Implications for environmental justice advocates and social and environmental scientists are discussed.

Young children are particularly vulnerable to the effects of environmental lead poisoning, defined as a blood lead level (BLL) of 10 μg/dl or higher. Elevated blood lead levels in children have been associated with slower cognitive development (Tong 1998, Winneke and Kreamer 1997), decreases in somatic growth (Frisancho and Ryan 1991), increased social and behavioral problems (Wasserman and others 1998), permanent nervous system damage, and even increased mortality (Brown and others 1999). Tong's (1998) examination of longitudinal prospective studies supports the notion that the effects of early lead exposure persist into later childhood.

Common exposure pathways include in utero (Rothenberg and others 1999, Farias and others 1998), postnatally inhaling or consuming lead dust from housing painted before 1978 (National Academy of Sciences 1993), inhaling or consuming lead-contaminated soil, common in industrial and urban areas (Mielke and Reagan, 1998), or drinking water either contaminated by lead particles or drawn from older piping systems containing lead solder. Although the elimination of lead in gasoline has contributed to observed decreases in blood lead levels nationwide (Needleman 1998), an estimated four to five million metric tons of lead remain in soil near heavily traveled highways (Xintaras 1992). Soils constitute a particularly significant exposure pathway, as they reflect the historic deposition of metal dust from gasoline, lead-based paint, and industrial activities (Mielke and others 1999).

Evidence of disproportionate exposure to environmental lead within urban areas such as South Central Los Angeles and West Dallas abounds within the literature (Rothenberg and others 1996, Lanphear, and others 1996, Jacobs and Papanek 1995, Bullard 1994). The effects of environmental exposure to lead on the predominantly minority inhabitants of urban areas as well as smaller towns adjacent to industrial corridors was noted by the Agency for Toxic Substances and Disease Registry (1988). Lead poisoning affects nearly one million children nationally, the majority of whom are black or Latino children residing in urban centers (Centers for Disease Control and Prevention 2000). Among urban children 5 years old and younger, the disproportionate impact of lead on minority groups has also been disaggregated from the effects of income. For families with incomes less than $6000, 68% of black children have elevated blood lead levels, compared to

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36% of white children (US EPA 1992). The effect remains for families earning more than $15,000 (38% compared to 12%). Increasingly, such data are utilized for the advancement of claims of environmental racism. These claims maintain that people of color, broadly defined, are exposed to greater quantities of toxins due to racial discrimination in policy-making, the unequal enforcement of environmental regulations and laws, and the deliberate targeting of communities of color for toxic waste facilities. The term “environmental racism” emerged following an incident in Warren County, North Carolina, where in 1982, the governor agreed to bury 6000 truckloads of polychlorinated biphenyl (PCB) within the community of Afton. At the time, Afton had the highest percentage of African-Americans in the state, and later the township was determined geologically unsuitable for the burial of hazardous waste (Bullard 1984, Geiser and Wanock 1994). The civil disobedience that followed formed the impetus for various studies administered by the US General Accounting Office (1983) (within EPA Region IV, communities surrounding hazardous waste sites were 69–92% black), the National Law Journal (Lavelle and Coyle 1992) (a national data set of civil penalty cases between 1985 and 1991 revealed that violations of the Resource Conservation and Recovery Act (RCRA) within minority communities were assessed for significantly lower fines), and the United Church of Christ Commission for Racial Justice (1987) (a study of all 415 commercial hazardous waste sites in the contiguous United States which found that race, not income, was the predominant factor in site placement).

Environmental management provides a useful approach for siting through this complex set of claims. At the very foundation of environmental management are obligations undertaken by a community or set of communities to attain, protect, enhance, and allocate natural resources. The intersection of environmental management and the environmental justice movement occurs when a governing body fails to manage resources effectively, resulting in all or part of a community unable to attain a minimum environmental quality. Moreover, an environmental racism claim suggests a pattern of environmental management that must be evaluated for its perceived discriminatory intent, actions, and effects. The inability of national uniform regulations such as the Clean Air Act to address localized concentrations of toxins, known as hotspots, further suggests that any solution to environmental racism claims must involve the resources and coordination of multiple levels of governance whose jurisdictions intersect within a specific geographic area.

The search for an environmental management solution to environmental racism claims has proceeded along two primary trajectories. One path incorporates efforts at different levels of government to include analyses of disparate impacts in future siting, monitoring, and cleanup efforts. In 1994, the Clinton Administration issued Executive Order 12,898, instructing federal agencies to identify any disproportionate effects of agency programs and policies on minority and low-income communities. Further legislative attempts to incorporate demographic analyses in environmental management decisions have appeared at both the national and state levels. The Environmental Equal Rights Act of 1993 (H. R. 1924, 103rd Congress, 1993) would have required that specific criteria be met for a siting approval to avoid challenge. Proposed facilities within two miles of an existing waste facility, within communities with a higher than average percentage of minority residents, and shown to adversely affect human health or environmental quality would have been vulnerable to challenge (Kevin 1997). California Assembly Bill 2212 (1993) would have prohibited California agency approval of hazardous waste and nonhazardous solid waste facilities should a permit application fail to include census tract data such as race, ethnicity, poverty rates, and the percentage of the population below age 5 and above age 65. Although these initiatives have proven unsuccessful to date, the EPA has committed regional and state agencies to conducting environmental justice pilot projects within high-priority permitting areas (Forrest and Mays 1997). Through evaluation of population demographics at RCRA facilities and by conducting public health assessments, the EPA intends to gain a better understanding of permit conditions that lead to claims of discriminatory intent.

A second, complementary approach to more responsible environmental management of toxic substances involves the use of social science research, which is often helpful in the adjudication of legal claims. Advocates of environmental justice have focused on the act of siting locally undesirable land uses (LULUs, such as hazardous waste facilities) in order to prove discriminatory intent. There is a burgeoning literature that analyzes the correlation between the placement of LULUs and the demographics of a given area, using a number of environmental management tools as data sources. For example, in 1996, Congress passed the Emergency Planning and Community Right-to-Know Act (EPCRA), or Title III of the Superfund Amendments and Reauthorization Act (SARA). Section 313 of SARA required the EPA to develop an inventory of routine toxic chemical emissions, now known as the Toxics Release Inventory (TRI). Owners and operators