



Environmental equity: Does it play a role in WTE siting?

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Abstract

The waste-to-energy industry, as part of the waste management industry, has been in the forefront of the environmental equity issue for the past few years. Environmental equity is an important issue to all sectors of the waste management industry because those in the industry are constantly challenged to defend their facility locations and face the possibility of restrictions on where new facilities can be located. This paper examines the history of the issue, reviews the major studies that both opponents and proponents cite, and takes a look at how the waste-to-energy industry fares with regard to it¹.

Keywords: Environmental equity; Environmental justice; Environmental racism; Waste-to-energy

1. Introduction

Environmental equity is one of the hottest environmental issues of the 1990s and, as such, it is instructive to understand the background of the issue. Environmental equity – also known as environmental racism or environmental justice – deals with the claim that low-income persons and minorities are regularly exposed to disproportionate environmental risks as compared to white or middle-class people. The explanation proponents most often provide for this phenomenon is that ‘polluting’ industries selectively locate their facilities near areas with predominantly minority or low-income populations.

Environmental equity proponents often point at the chemical industry, the hazardous waste treatment and disposal industry, the waste management industry, and other types of heavy industry as practitioners of environmental racism. After

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¹ Consistent with the focus of this special edition, waste-to-energy includes the combustion of municipal solid waste, the production of steam and electrical energy, and the safe land-disposal of the residual.

reviewing several of the leading studies on environmental equity, this paper will address the relationship, if any, between the historical siting of waste-to-energy (WTE) facilities and environmental equity.

2. Who are the proponents?

The major proponents of environmental equity are environmental and civil rights groups. Although nationally recognized groups such as the National Association for the Advancement of Colored People (NAACP) and environmental organizations such as Greenpeace have become involved with this issue within the last few years, the real impetus for the equity movement has come from local grassroots organizations. These groups have risen up to protest what they perceive as unfair facility sitings in their neighborhoods [1].

Since 1987, the movement has grown tremendously and has caught the attention of the Environmental Protection Agency (EPA), Congress, and the White House. To address it, President Clinton issued an executive order on 11 February 1994, which requires all federal agencies to 'make achieving environmental justice part of [their] mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of [their] programs, policies, and activities on minority populations and low-income populations' [2]. The EPA has also made environmental equity one of its priorities and has been encouraging more minorities to take positions at the agency [3]. Congress too held hearings on the issue in its 103rd session, although no legislation passed.

3. What do environmental equity advocates hope to accomplish?

Grassroots environmental equity advocates are primarily concerned with the environmental and socioeconomic issues that affect their communities [4]. They claim as their goal having 'no community impacted by hazardous pollution' [5]. Some mainstream environmental groups, however, accuse environmental equity advocates of not really caring about the environment, and seeking only a 'fairer distribution of environmental dangers' [5].

4. Environmental equity and the WTE industry

In 1993, in an effort to understand where the waste-to-energy industry stood with regard to environmental equity, Ogden Projects, Inc. (OPI), conducted a study of the demographics and median household incomes of the 19 communities where it operates waste-to-energy plants [6]. Consistent with the methodology of the seminal studies on the subject, the Ogden study used 1990 census data broken down by zip codes. The results of the study show that modern, waste-to-energy facilities are predominantly located in white, middle-class neighborhoods [6]. The average community served by an Ogden facility, for example, has a greater percentage of whites

than the national average – by more than 6% – and has a median household income that is 14% above the national average [7]. The specific numbers are listed below.

Demographics of average OPI community	National demographics
86.3% white	80.3% white
8.7% black	12.1% black
5% others	7.6% others
Median household income of an average OPI community	National median household income average
\$32 888	\$29 199

A noteworthy fact about the waste-to-energy industry is that very often it is the community, not the builder or operator, that chooses the location of a WTE plant. Once a host community decides where it wants a facility built, a contractor who can best meet its criteria for that site is selected. With one exception, the numbers above reflect sites chosen by host communities². These statistics support the conclusion that the community leaders who made these siting decisions have not discriminated against minorities or low-income people.

5. Environmental equity studies

The methodology used in the Ogden study is confirmed by numerous other studies examining the issue of environmental equity from various perspectives. To better understand these different perspectives, this paper will review some of the major environmental equity studies, arranged chronologically, with an eye to: (1) which industry was targeted, (2) what the basic argument was, and (3) how the study was conducted. The studies under review will be the UCC original study and revision, the EPA Environmental Equity Workgroup report, the National Law Journal (NLJ) study, the University of Michigan study and revision, the New York University (NYU) Law School study, the University of Massachusetts study, and the Resources for the Future (RFF) study.

It is important to keep in mind that the process for studying environmental equity has evolved over the last decade to become more scientific and less anecdotal. The first forays into this field involved primarily observational data [8]. Investigators conducted studies using census data on demographics and income – first divided into zip code areas and later broken down into census tracts – with some going so far as to compare present-day figures to historical data. With the RFF study, environmental

²The exception is the Ogden facility in Haverhill, Massachusetts, which does not have a public sector partner.

equity researchers have tried to combine risk assessments with geographic data to examine the actual risk to minorities and others living near industrial facilities [9].

Refinement in study techniques shows that environmental equity is not as 'cut and dry' an issue as portrayed by earlier studies. Many legitimate questions have been raised by investigators. There are questions about who or what came first, the facility or its neighbors, and whether those living near it have been drawn there because of lower housing and living costs [10]. There are questions about how dangerous these sites actually are and who is the most exposed to hazards, those living near the fence of the facility or those living further away but at the point of the greatest concentration of pollution [11].

6. United Church of Christ study – 1987, 1994

The United Church of Christ Commission for Racial Justice conducted the pioneering, national study on environmental equity in 1987. This study looked at the commercial hazardous waste incineration industry and surveyed the demographics of the areas where hazardous waste incinerators are located. The report concluded that 'race has been the determining factor in the location of commercial hazardous waste facilities in the United States' [12]. The report recommended that EPA give high priority to the clean-up of hazardous waste sites in minority communities and called for the President to issue an executive order requiring environmental equity and create within EPA an Office of Environmental Equity [12].

The methodology used in the 1987 study – comparing census data arranged by zip codes – became the standard for future equity studies. The authors targeted specific hazardous waste treatment sites and collected demographic and income data from the most recent census for the zip code areas where those sites were located. They then compared those data to data from areas where there were no hazardous waste sites [13]. The report assumes that those most exposed to hazards are those living closest to the plant site.

The 1994 revision of the study reports that the situation for minorities has become even worse over the past 7 years. The percentage of minorities sharing zip codes with hazardous waste facilities rose from 25% in 1987 to 31% in 1993 [14]. One interesting finding in this revision is that until very recently, the average percentage of minorities living in areas where new hazardous waste facilities have been sited has declined from a high in the 1950s of 52% to a low in the 1980s of 33% [15]. Thus, the percentage of minorities living near older facilities is higher than the percentage of minorities living near newer facilities. The 1990s saw the first increase in that percentage in 40 years with 37% of minorities living near such sites [15]. The authors of the study speculate that new siting initiatives are the cause of the upturn [15].

7. The EPA Workgroup report – 1990

In July 1990, EPA Administrator Reilly established an Environmental Equity Workgroup to study the equity issue as a response to a letter from the Michigan

Coalition – an informal group of social scientists and civil rights activists who had assembled at the Conference on Race and the Incidence of Environmental Hazards at the University of Michigan in January 1990 [16]. Administrator Reilly charged the group with four tasks: (1) evaluating the evidence that minorities and low-income people bear disproportionate risks; (2) reviewing EPA programs to determine how they might have promoted disproportionate risk and suggesting ways to correct those program deficiencies; (3) reviewing EPA's risk assessment guidelines with regard to race and income; and (4) reviewing EPA's relationships with minority and low-income organizations [17].

After reviewing the existing literature on environmental equity and EPA's own policies, the workgroup released its findings in June 1992. The group found that although there were 'clear differences' in disease and death rates among racial groups, there was not sufficient data to assess how environmental factors have contributed to these differences [18]. In addition, the group reported that low-income and minority communities were exposed to higher than average levels of air pollutants, hazardous waste, contaminated fish, and agricultural pesticides in the workplace [19]. The report used as an illustration the high incidence of lead poisoning in black children. In families earning less than \$6000 per year, for example, the percentage of black children with high blood lead levels was 68% versus 36% for white children [20]. Outside of this one case, however, the workgroup acknowledged that there was little data on environmental health effects broken down by race and income [20].

The report recommended that EPA: (1) increase the priority it gives environmental equity; (2) collect more data broken down by income and race; (3) consider environmental equity issues when conducting risk assessments; (4) identify high risk populations and work to reduce their risk; (5) consider the distribution of risks in its rulemakings and initiatives; (6) revise its permit and grant procedures so that they account for risks to minority and low-income populations; (7) improve its communication with minority and low-income communities; and (8) establish mechanisms to ensure that environmental equity concerns are incorporated into long-term planning decisions [21].

As a result of this report, the EPA formally established the Office of Environmental Equity in November 1992 [22].

8. The National Law Journal study – 1992

In 1992, the National Law Journal published its 'special investigation' into the enforcement of environmental laws in minority areas, namely the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund [23]. The study consisted of a review of demographic census data arranged by zip code and an investigation into EPA's civil court case docket and performance record at 1177 Superfund sites [24].

The NLJ researchers assimilated this information and concluded that: (1) penalized environmental polluters in minority communities paid about half as much in

finances as polluters in white communities; (2) 'abandoned hazardous waste sites' took 20% longer to be placed on the National Priorities List (NPL) in minority areas than similar sites in white areas; (3) EPA was 12–42% slower getting started cleaning up NPL sites in minority communities than in white areas; and (4) EPA opted for 'containment' over 'treatment' of Superfund sites 7% more often in minority areas while in white communities treatment was chosen 23% more often than containment [25]. The authors claim that this last point is a classic example of environmental racism because treatment, not containment, is the preferred method of cleaning up Superfund sites under the law [25].

9. University of Michigan study – 1992, 1994

The 1992 University of Michigan study focused on the relationship between commercial hazardous waste facilities and race in and around the Detroit metropolitan area [26]. The study found that minorities living in the Detroit area were four times more likely to live near a commercial hazardous waste facility than whites. The authors also found that 'the relationship between race and the location of commercial hazardous waste facilities in the Detroit area is independent of income.' The study concluded that race was the determining factor in their siting [27].

The methodology used for this study was considerably different from that of previous studies. The authors relied on information obtained from interviews with 793 people living within 1.5 miles of commercial hazardous waste facilities around Detroit [28].

The authors of this study conducted a similar study in 1994 which examines the relationship between hazardous waste facility sitings and race throughout Michigan. This study is still being peer-reviewed prior to publication. The preliminary results, however, confirm their earlier conclusion that race, not income, determines the quality of one's environment and that minorities are more heavily burdened by environmental pollution than whites [29].

10. New York University Law School study – 1993

Dr. Vicki Been of New York University's School of Law recently conducted a nation-wide environmental equity study that once again looked at the siting of hazardous waste facilities [30]. Her study is an extension of two previous studies, one done by the General Accounting Office (GAO) and one by Robert Bullard [31]. Both of these studies concentrate on one particular region. The 1983 GAO study examined the demographics of areas around four hazardous waste landfills in Alabama, North Carolina, and South Carolina. The 1983 Bullard study looked at existing hazardous waste landfills and incinerators in Houston. In her study, Dr. Been argues that facilities now located in minority or low income areas may not have been sited in such areas originally. She notes that in some instances the poor or minority residents living in areas hosting locally undesirable land uses (LULUs) came to that

area *after* the decision to site a LULU there had already been made. Dr. Been argues that in those particular cases, market dynamics – not racist siting procedures – have created the present condition [32].

The NYU study used metropolitan census tract data – small geographic areas where population data are broken down into city blocks – instead of zip code data for data collection. Dr. Been's innovation was to compare 1990 census data for one particular area with 1980 or earlier data to see what the demographics of the area were when the facility was sited there. Dr. Been chose this historical comparison approach because she believed that 'the current research has ignored the possibility that the characteristics between the location of LULUs and the socioeconomic characteristics of neighborhoods may be a function of aspects of our free market system other than, or in addition to, the siting process' [33]. In other words, minority or low-income peoples may have moved into an area near a LULU because housing prices were lower there. In her study, Dr. Been set out to examine the data to see whether there were any clear cases where market dynamics rather than racial injustice were the cause of present-day disparities in income and race. What she found by expanding Bullard's Houston study, was that there was no correlation between the facility sitings and the racial make-up of their surrounding areas because minorities or low-income people moved in after the plants were sited. Market dynamics played a significant role in this case. In the GAO study expansion, however, Been found that market dynamics were not the dominant influence [34].

11. University of Massachusetts study – 1994

Researchers at the University of Massachusetts' Social and Demographic Research Institute (SADRI) conducted a comprehensive study of the demographics of areas with operating hazardous waste facilities [35]. Their study found that, contrary to other studies, 'no consistent national-level association exists between the location of commercial hazardous waste [facilities] and the percentage of either minority or disadvantaged populations' [36].

In gathering data for this study, the authors also used census tracts instead of zip codes. Their methodology was to compare the demographics and income distribution of tracts containing at least one hazardous waste facility with tracts in the same metropolitan area that did not host a facility [37]. What they found was that the difference between demographics and income level in host versus non-host communities was statistically insignificant [38]. In other words, hazardous waste facilities are no more likely to be sited in low-income or minority areas than in other areas. Instead, they found that fewer males of employable age and more blue-collar workers lived in host communities and housing tended to be more recent but less valuable [38].

12. Resources for the future study – 1994

The most recent study being conducted in the environmental equity field looks at the issue using risk assessment methodology [39]. Researchers at the Center for Risk

Management at Resources for the Future, an independent organization that researches environmental quality and natural resources issues, are attempting to measure the actual risk of living near an industrial facility. This approach is distinct from other studies in that it goes beyond merely examining the proximity of minorities and low-income people to industrial facilities. It recognizes that potential risk can extend past the immediate boundary of a facility [40].

To collect data on risk, researchers first divided industrial-type hazards into two categories: chronic, e.g. constant exposure to industrial pollution, and acute, e.g. accidents, sudden releases. They then measured the health and safety risks associated with both types to the nearby population. They then picked one site, Allegheny County, Pennsylvania, as a case study and, applying geographical information systems (GIS) software, calculated the actual acute risk to people living near industrial facilities in that county. Their results were surprising. They found that ‘those most exposed to risk are not always non-whites and the poor’ [40]. The authors explain this in part by stating that acute hazards are often not limited to a one-mile radius around a facility. Accidental releases often can extend quite far beyond that and as that pollution moves further away from the plant, more and more white and higher income people are affected. To complete the study, researchers are presently looking at how chronic hazards affect neighboring populations [41].

13. Summary

Environmental equity is a complex issue that is still in the process of being defined and quantified. This brief survey of some of the major environmental equity studies shows the challenge faced by those who study the equity issue and the diversity of their results confirms that it is difficult to quantify it. Some of the environmental equity studies claim that environmental racism is prevalent in many sectors of industry and those with follow-up studies claim that the situation is only getting worse over the years [42]. Other studies claim that environmental racism is either not a factor in their industry or caused by market dynamics [43]. Despite the wide variance in results, one can see that there has been an evolution in methodology for determining who is most at risk. Once these methodologies become standardized, the resulting data will, hopefully, allow decision-makers to institute policies based upon both science and community will.

With regard to the waste-to-energy industry, it is clear from the Ogden study that modern waste-to-energy facilities are generally located in predominantly white, middle class areas. As a young industry, waste-to-energy facilities have always been subject to strict environmental controls and are designed and constructed to be ‘state-of-the-art’ at the time they are built. Permits for their operation require environmental impact reports and often risk assessments as well as air pollution modelling to show what the impact on public health and air quality will be. These factors have required WTE operators – as well as community leaders who choose WTE as a waste management option – to give careful thought to where they locate their facilities. It is perhaps this extra consideration of the health of the neighboring

community and the close ties that a WTE operator must have to its host community that account for the resulting distribution of WTE plants around the country. Waste-to-energy can truly be called an environmentally equitable solid waste solution.

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