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Evaluation of Siting Strategies: The Case of Two UK Waste Tire Incinerators*

Ragnar E. Löfstedt**

Introduction

This paper evaluates a firm's siting strategy for tire incinerators in two UK towns. Such incinerators, when fitted with state-of-the-art cleaning technology, do not pose any public health hazards according to the manufacturers. They are for various reasons becoming increasingly difficult to site.¹ However, as waste is continuously being created and landfill space is running out, incineration must be seen as important for waste disposal. This is especially true for tires that do not decompose in landfills and can produce both heat and electricity.

Risk Communication and Evaluation

Evaluations of siting strategies are important as siting is becoming increasingly difficult. For example, in California, 28 of 34 proposed solid waste incinerators were either postponed or cancelled in the late 1980's.² There is little understanding of the exact reasons why siting has been unsuccessful, and evaluative studies may offer ways to improve strategies.

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¹ Douglas Easterling & Howard Kunreuther, *The Dilemma of Siting a High-Level Nuclear Waste Repository* (1995); Howard Kunreuther, *A Conceptual Framework for Managing Low-probability Events*, *Social Theories of Risk* (Sheldon Krimsky & Dominic Golding eds. 1992).

² Bradley Whitehead, *Who Gave You the Right? Property Rights and the Potential for Locally Binding Referenda in the Siting of Hazardous Waste Facilities* (1991) (unpublished manuscript).

As problems surrounding siting strategies are intimately linked to risk communication, I begin by briefly describing risk communication studies and discuss the evaluation of risk communication programs.³

The History of Risk Communication

The field of risk communication evolved from psychometric risk perception studies, associated most notably with the American researcher Paul Slovic and his co-workers. At first, risk communication research was seen as a government tool to develop information programs to increase “the public’s” knowledge of environmental health and technological hazards to which they were exposed.⁴ This was referred to as top-down risk communication. After researchers pointed out that experts too are fallible and biased, the field moved toward reciprocal risk communication to promote dialogue between the public and experts to derive solutions acceptable to everyone.⁵

Most risk communication programs in the UK have been based on the top-down model. An example is the Government’s handling of the bovine spongiform encephalopathy (BSE) scare in which it stated that risks were minimal without consulting the public regarding their fears and concerns. The Government has on both national and local level also employed dialogue techniques such as town meetings and public inquiries on proposed road and incineration schemes.⁶ These efforts are often regarded as “quasi democratic,” but meetings are held at times when most members of the public are working, and many cannot participate. Also, the proposers of projects usually have more resources at hand than individuals and organizations objecting to them.⁷

³ See also, Howard Kunreuther et al., *Risk Perception and Trust: Challenges for Facility Siting*, 7 Risk 109 (1996).

⁴ National Research Council, *Improving Risk Communication* (1989); Harry Otway & Brian Wynne, *Risk Communication: Paradigm and Paradox*, 9 Risk Anal. 141 (1989); Nick Pidgeon et al., *Risk Perception, Risk Analysis, Perception, and Management* (1992).

⁵ William Freudenberg, *Perceived Risk, Real Risk: Social Science and the Art of Probabilistic Risk Assessment*, 242 Science 44 (1988); Leroy Gould et al., *Perceptions of Technological Risks and Benefits*, (1988); Christopher Hohenemser et al., *The Nature of Technological Hazard*, 220 Science 378 (1983); and *Improving Risk Communication*, *supra*.

⁶ For an excellent discussion regarding public inquiries consult: Timothy O’Riordan et al., *Sizewell B: An Anatomy of the Inquiry* (1988).

⁷ Kate Burningham, *The Social Construction of Social Impacts: An Analysis of Local Responses to New Roads*, (1996) (unpub. Dept. of Sociology thesis, University of Surrey).

Evaluation

Many risk communication guidelines have been proposed and implemented in a relatively short time.⁸ However, evaluative studies on siting strategies and risk communication programs are lacking. Past studies indicate that, compared with setting-up and carrying out risk communication programs, few if any resources are used to determine success or failure because by the end of a program virtually all the resources have been used up.⁹

This needs to be redressed because "evaluation of risk communication programs provides a central means for assuring appropriate goals, content and outcomes of such programs."¹⁰ Evaluations will, in the long-term, not only save time and money but should also improve program success rates.¹¹ They are also important because the risk communication field has such a short history and much advice provided by practitioners lacks empirical support.¹²

Background

In the UK, cars and lorries generate 450,000 tons of waste tires per annum. Until the Elm Energy tire incinerator in Wolverhampton was operating, 67% of this went to the landfill, 9% was incinerated, and 24% was retreaded or used for other purposes.¹³ The composition of

⁸ Vincent T. Covello & F. Allen, *Seven Cardinal Rules of Risk Communication* (1988); Vincent T. Covello, Peter Sandman, & Paul Slovic, *Risk Communication, Risk Statistics and Risk Comparisons: A Manual for Plant Managers* (1988); Billie Jo Hance et al., *Improving Dialogue with Communities: A Risk Communication Manual for Government* (1988).

⁹ Roger E. Kasperson & Ingar Palmlund, *Evaluating Risk Communication, Effective Risk Communication: The Role and Responsibility of Government and Non-government Organizations*, 143 (Vincent T. Covello et al. eds. 1987).

¹⁰ *Id.* at 157.

¹¹ Caron Chess et al., *Results of a National Symposium on Risk Communication: Next Steps for Government Agencies*, 15 *Risk Anal.* 115 (1995); Caron Chess, Kandice L. Salomone & Billie Jo Hance. *Improving Risk Communication in Government: Research Priorities*, 15 *Risk Anal.* 127 (1995); Themes and Tasks of Risk Communication (Helmuth Jungermann et al. eds., 1989); Kasperson & Palmlund, *supra* note 9; M. Granger Morgan et al., *Communicating Risk to the Public*, 26 *Env'l Sci. & Tech.* 2048 (1992); Ortwin Renn, *Risk Communication: Towards a Rational Discourse with the Public*, 29 *J. Hazardous Materials* 465 (1992); Bernt Rohrmann, *Analyzing and Evaluating the Effectiveness of Risk Communication Programs* (1990).

¹² Morgan et al., *supra* note 11.

¹³ Allison Doig, *Disposal of Waste Tyres: A Working Paper* (1994).

tires make them particularly unsuitable for landfill. They do not degrade easily or compact. Additionally, the UK has limited landfill capacity. In many cases, tires have to be transported long distances to be dumped. At the same time, tires have a higher calorific value than coal largely due to a petrochemical content equivalent to 32.6 MJ/kg, making them suitable for energy production.¹⁴ There have been several attempts to set up incineration plants to deal with the growing waste problem. These efforts have been actively encouraged by the Government. It has expressed willingness to subsidize electricity production at some of these plants if they prove cost effective in the long-term through the so called Non-Fossil Fuel Obligation.¹⁵ To the present, Elm Energy, a subsidiary of a large US based utility, has made three attempts to site, build and operate a tire incinerator in the UK. Two have been unsuccessful (Guildford and East Kilbride — due to public opposition) and one successful.

This study reviews two in more detail: one in Wolverhampton which was successful and one in Guildford which was not. We are specifically interested in identifying the reasons. The cities are virtual opposites. Guildford is seen as part of London's stockbroker belt where the average household income is considerably higher and unemployment is considerably lower than nationally. The area has little heavy industry. Wolverhampton is a town with a great deal of heavy industry where wages are below average and unemployment is above average.

Methodology

To understand the policy making climate and how the public perceived waste tire incinerators, three research methods were used:

(1) In-depth interviews with local policy makers, Elm Energy officials and environmental non-governmental organization (NGO) representatives were carried out. Interviews focused on why individuals

¹⁴ *Id.* In comparison, coal's energy equivalent varies from 18.6 to 27.9 MJ/kg.

¹⁵ The Non-Fossil Fuel Obligation is a consumer tax on non-fossil fuel electricity. A surcharge of approximately 11% is placed on all consumer electricity bills. Most of the money subsidizes the nuclear industry, but a small part subsidizes renewable energy sources. In the latter case, initiators stand for capital costs, but the government funds differences between their cost of electricity and the average pool price.

supported or opposed the incinerators, their reasons, and whether they had made any attempts to influence the public.

(2) Person-to-person interviews with the general public were conducted in each town. Five areas were selected in both Guildford and Wolverhampton. These included residential areas around the incinerator (or proposed) site, the city centers and residential sites close to, but not adjoining. Some locations were also chosen to allow for consideration of the effects of the wind on plume dispersion and subsequent odors. Ten to fifteen people were questioned in each area. They were approached in their homes in the early evening for a maximum response rate. The sample was not random, but every attempt was taken to ensure that the demographic characteristics were similar to the population in the region as a whole. Seventy-one people were interviewed in Guildford and 65 in Wolverhampton.

(3) A content analysis of local newspapers was also carried out for the period when the respective incinerators were of public concern. In Wolverhampton, analysis was done on *The Express* and *The Star* between June 1990 and March 1995; in Guildford, the *Surrey Advertiser* and the *Guildford Times* were reviewed from November 1994 to April 1995. Analysis focused on energy, environmental and health issues related to the two respective incinerators. Also, searches were conducted in all major UK broadsheet newspapers, going back five years; key words included incineration, landfill, waste and tyres.

Results

The Wolverhampton Site

The £48 million incinerator at Wolverhampton was the first purpose-built tire incinerator of its kind in Europe. It began operation in November 1993 and presently burns 100,000 tons of tires — equivalent to 20% of the UK total—each year.¹⁶ The plant has suffered some technical problems but was not subject to serious siting controversy.¹⁷ When it received planning permission in the autumn of 1990, a group of local people raised concerns about it, specifically regarding pollution and the increased heavy traffic that the plant would bring.

¹⁶ H. Simonian, *Tough for Tyres*, *Financial Times*, April 5, 1995 at 20.

¹⁷ M. Winney, *Tarmac JV Issues Writ in Tyre Power Dispute*, *New Civil Engineer*, Sept. 21, 1995, at 3.

Elm Energy's siting strategy in Wolverhampton

To facilitate siting in Wolverhampton, Elm Energy developed a fairly comprehensive risk communication program. It wrote to approximately 600 people in the vicinity, detailing the pollution control and safety measures to be installed. An information caravan was also set up, and monthly public meetings were also arranged to discuss problems and concerns. Additionally, a permanent pollution monitoring scheme was set up at the local council by Elm Energy which allowed local government officials and the general public access to the information on pollution levels in the area. Elm Energy also employed a local resident to undertake public relations work and deal with complaints. Finally, it sought an endorsement that their activities were "environmentally friendly" from Friends of the Earth, but this was unsuccessful because the environmental NGO had the view that using fewer tires and recycling is better than incineration. Overall, the staff at Elm Energy which were interviewed felt that the company had carried out extensive risk communication work in Wolverhampton which enabled the incinerator to be sited.

We have regular meetings in the community to get feedback on their concerns and we have tried to understand public concern as much as possible. [Senior consultant, Elm Energy, Feb. 1995.]

Elm Energy's risk communication program in Wolverhampton used both top-down and dialogue approaches. Public meetings with direct contact between the public and Elm Energy officials allowed for dialogue risk communication while the information caravan and information letters were examples of a top-down risk communication.

The siting strategy could have been better. Elm Energy specifically focused on providing public information to expedite planning. By giving the public information, Elm Energy's spokespeople hoped that the public would be "less ignorant" and more in favor of the plant. With a better thought-out risk communication program, it could have committed resources to uncover the public's perceptions of risks associated with the plant and frame their risk communication program based on these findings.

The local policy makers and media in Wolverhampton

The media and the local business council had a favorable view of the plant. The local press generally portrayed the incinerator as positive for the area because it would create jobs and alleviate environmental problems. Local politicians also supported the plant. In fact, the local council went against some public opposition and voted unanimously to build it. The council supported the plant because they felt, first, that it would benefit the area economically and, second, that they had some responsibility considering that most of the tires manufactured in the UK originate in the Wolverhampton region. These views were expressed by a local planning officer:

Elm was seen as open, honest, and upfront and we felt that the waste tire incinerator would lead to more job opportunities in the community.... Additionally, we produce many tires here so it only fair that we remove some from circulation as well. [Local planning officer in Wolverhampton, Feb. 1995].

The role of the environmental NGOs in Wolverhampton

During siting and construction, there was little activity by environmental NGOs. Friends of the Earth did not have an office in Wolverhampton until after the incinerator was completed. NGO spokespeople in Wolverhampton had limited awareness of the incinerator and said they could not comment on it. However, they did state that they favored reusing and recycling tire waste rather than incineration or landfill.

The general public in Wolverhampton

Content analysis of local papers shows that during the construction of the incinerator in Wolverhampton, journalists' found the public mood largely hostile. Newspaper articles, based on interviews with the public in the vicinity of the proposed incinerator, suggested that the public did not trust Elm Energy with their primary motive being financial gain. Although some debate in the newspapers could be the result of "frame alignment," where local media was setting the agenda for public debate, a closer examination of articles indicated genuine public concern.¹⁸ Some members of the public, for example, felt that there was a conspiracy in which Elm Energy and the local council were

¹⁸ D. A. Snow et al., *Frame Alignment Processes, Micromobilization, and Movement Participation*, 51 *Am. Sociol. Rev.* 464 (1986).

working together. However, as has been found in other siting studies, once the plant was operating, the media reported that residents were less hostile.¹⁹ In Wolverhampton, of 52 asked: "Do you feel that the waste tire incinerator was a good idea?" Fourteen responded "yes," twelve "no," and 26 were indifferent.

Additionally, Wolverhampton respondents felt that the incinerator had almost the same number of benefits as drawbacks.²⁰

Table 1

Wolverhampton perceived benefits

None	25
Employment	15
Tire disposal/less landfill	7
Electricity	8
Other	0

Table 2

Wolverhampton perceived drawbacks

Pollution	12
Smoke	15
Toxic emissions/smells	7
Health risks	6
Increased traffic	0
Other	4

Overall, one could conclude that Elm Energy's strategy in Wolverhampton was successful mainly due to a well planned risk communication program using both top-down and dialogue strategies which could have swayed public opinion as well as the local policy makers . However, upon closer examination, it is unclear whether Elm Energy's emphasis on dialogue was the main reason for success. The local media as well as the local politicians were extremely supportive, there was a lack of opposition from environmental NGOs, and little organized public protest. Hence, Elm Energy's siting strategy was largely unchallenged. The potential risks posed by the running of the waste tire incinerator were not amplified by the media as we will see occurred in Guildford. Additionally, no environmental groups questioned the data provided by Elm Energy.

¹⁹ Burningham, *supra* note 7 and Ragnar E. Löfstedt, *The Use of Biomass in a Regional Context: The Case of Växjö Energi, Sweden*, 11 *Biomass & Bioenergy* 33 (1996).

²⁰ Based on open-ended questions where a person can give more than one answer.

The Guildford Site

Unlike Wolverhampton, the public, policy makers and environmental NGOs in Guildford were strongly opposed to a waste tire incinerator from the outset.

Elm Energy in Guildford

The media analysis in Guildford indicated that Elm Energy mounted a very weak siting strategy. Plans for the incinerator appeared in the local press prior to any communication to local residents about the plant. This caused public opposition immediately, and Elm made only limited efforts to convince the local public, policy makers, and NGOs that the plant was necessary in the area or safe. In contrast to Wolverhampton, there was no information caravan, nor did Elm Energy communicate directly with residents about the pros and cons of incinerating tires. Elm Energy's unwillingness to convince the public that the waste tire incinerator was needed was further demonstrated at the first public meeting about the proposed plant where the managing director of Elm Energy scoffed at comments that tires should be recycled or reused, "The answer to waste tires is don't drive."²¹

In sum, Elm Energy did not have any form of siting strategy in place in Guildford. Its staff did participate in one open meeting which one may consider to be a form of dialogue risk communication, but the company did not attempt to engage the public or the environmental NGOs in any prolonged discussions.

The local policy makers and the media in Guildford

The Guildford media were generally hostile to the plant. The media discussions, however, focused more on actors in the risk debate which is the conflict between industry, NGOs and experts on certain risk issues such as dioxin, rather than on the risks themselves. The hostile stance of the media was shared by the local policy makers.

Local politicians in Guildford stressed that there is no heavy industry in the town and hence, a waste tire incinerator would not be welcomed. If the waste tire incinerator received planning permission, the councilors argued, than it would attract further heavy industry. The long-term effect of this would be the conversion of the Slyfield site in

²¹ J. Williams, *Tyre-Burning Plant Boss Faces Critics*, Surrey Advertiser, Nov. 18, 1994.

Guildford from an industrial park composed of light industry and office buildings to a heavy industry park with large traffic problems and pollution.²² At a council planning meeting, it was recommended that the plant would be opposed because:

The proposed building and ancillary structures would be out of scale and character with their surroundings and would have a prominent detrimental impact on the visual amenities of the locality....

This perception was shared by individual council officials; one individual felt that the plant should be opposed as: "Guildford is the healthiest borough in the country and I want it to remain so." [County councillor, Dec. 1994.]

Another councillor described the plant as: "An abhorrence, a danger, a blot on the landscape." [County councillor, Dec. 1994.]

However, some policy makers pointed out that they were in fact in favor of the waste tire incinerator off the record, but as public opposition was so strong and as local elections were then only a couple of months away, they felt that they had to oppose it.²³ In other words, being opposed to the proposed incinerator was a way to win votes and therefore, the policy makers were against it, no matter whether they believed the incinerator to be a good or a bad project for the Guildford Borough. This is not unique. For example, case-results from Copenhagen show that many policy makers oppose the Swedish Barsebäck nuclear power plant only twenty kilometers away because a majority of the public oppose it — not because they themselves think that the reactor should be closed down.²⁴

Environmental NGOs in Guildford

Environmental NGOs were concerned that dioxins would be produced from burning tires leading to numerous health problems. A major environmental controversy that the NGOs fuelled was whether tires contain dioxins or not. Several NGO-sponsored spokespeople advocated that the tire incinerator should be opposed on the grounds that tires contained chlorine which when burnt produces dioxins. These

²² Guildford Committee Report 1994.

²³ A spokesperson interviewed at the Wolverhampton site in 1995 who wished to remain anonymous.

²⁴ Ragnar E. Löfstedt, *Risk Communication: The Barsebäck Nuclear Plant Case*, 24 *Energy Policy* 689 (1996).

people emphasized the risk by citing recent studies in the U.S. that had shown dioxins to be more damaging to human health than previously thought. These arguments were countered by a local academic Professor Roland Clift of the University of Surrey, who stated that tires do not contain chlorine and therefore, do not produce dioxins. Furthermore, it can be argued, that by displacing coal-fired generating capacity (which does emit dioxins) the tire incinerator would in fact reduce total national dioxin emissions.

Environmental NGOs were very active in Guildford. Both Greenpeace and Friends of the Earth canvassed households near the proposed site with information on the possible environmental problems of tire incineration and they sponsored one well-attended public meeting to discuss the pros and cons of waste tire incineration.

The Guildford Public

Unlike the Wolverhampton respondents, the Guildford respondents were in general opposed to the plant. Of the 55 respondents asked: "Do you feel that a waste incinerator should be built in Guildford?" Three respondents answered "yes," 33 answered "no," and nineteen were indifferent.²⁵ Moreover, the Guildford public felt that the drawbacks would far outweigh the benefits.²⁶

Table 3

The perceived benefits of the waste tire incinerator	
None	20
Employment	10
Tire disposal/less landfill	13
Electricity	9
Other	2

Table 4

The perceived drawbacks of building a waste tire incinerator	
Pollution	32
Toxic emissions/smells	18
Smoke	10
Health risks	8
Increased traffic	17
Other	32

²⁵ Note that the percentage of the public who were indifferent to the incinerator was significantly lower in Guildford than in Wolverhampton. A likely explanation is that the incinerator controversy was more recent in Guildford at the time of interviews.

²⁶ Based on open-ended questions where a person can give more than one answer.

Discussion — Guildford site

A possible explanation of why the public was so opposed to the siting of an incinerator in Guildford, but not in Wolverhampton, is the social amplification of the risk in the former. This framework was developed by Kasperson and Renn²⁷ and suggests that “The social amplification of risk is based on the thesis that events pertaining to hazards interact with psychological, social, institutional, and cultural processes in ways that can heighten or attenuate individual and social perceptions and shape risk behavior.”²⁸ The potential siting caused outrage among the Guildford public who perceived the plant to be out of place in a suburban town. This was the initial part of the amplification process. Local policy makers, sensing the fears of the public, acted on this by refusing Elm Energy’s planning permission.

The strength of the policy makers’ reaction towards siting led to a further amplification of risk through so called “secondary feedbacks” from anti-incinerator newspaper articles and further debate. An example of a secondary feedback is seen in articles of the Surrey Advertiser in the autumn of 1994 and spring of 1995, when local environmental NGOs introduced quasi-misinformation that burning tires produce dioxins.

Another possible reason why the public opposed the proposed incinerator more in Guildford than in Wolverhampton is because they saw the risks of the incinerator to be greater. If one compares Tables 1 and 2 for Wolverhampton and Tables 3 and 4 for Guildford, two interesting observations can be made. First, respondents in the two sites had very similar views on the perceived benefits of waste tire incineration (e.g. employment opportunities and tire disposal), but second, the Guildford respondents perceived the risks of waste tire incineration to be comparably greater. One could therefore hypothesize that the Guildford public was hostile because it saw the risks as much greater than in Wolverhampton.²⁹

²⁷ Roger E. Kasperson et al., *The Social Amplification of Risk: A Conceptual Framework*, 8 *Risk Analysis* 177-87 (1987).

²⁸ Ortwin Renn, *Risk Communication and the Social Amplification of Risk, Communicating Risks to the Public*, 287 (Roger E. Kasperson & Peter Stallen eds. 1991).

²⁹ This finding needs further exploration as it goes against some of the results reported in the risk research. In this case, however, there was no correlation between high perceived risk and low perceived benefit. Rather the respondents with the high

To conclude, the evaluation of Elm Energy's strategy in Guildford indicates a very limited effort. It attempted to communicate to the public solely via one meeting organized by the Guildford Environment forum. Perhaps, after a painless victory in Wolverhampton where it had mounted an impressive risk communication strategy, the company had become complacent. In any case, as it did not participate in the ensuing debate, it could not expect to win. Local opposition was entrenched because policy makers, the public, the media and particularly representatives from local environmental NGOs all opposed the plant. Part of this could be due to the social amplification of risks discussed above, but there are two other explanations. First, the plant would be sited simply in the wrong place because Guildford has no heavy industry and does not want any heavy industry. Second, there was heavy opposition from environmental NGOs. Opinion polls in the UK indicate that the public perceive environmental NGOs as more credible source than industry or government, and it would have been difficult for Elm Energy to gain public confidence when the Friends of the Earth and the other groups were so critical.³⁰

In any case, after the borough council refused to grant it planning permission for the incinerator and when the Department of Trade and Industry withdrew potential subsidies for electricity production at the site (the so called Non-Fossil Fuel Obligation), Elm Energy withdrew its plans for an incinerator in Guildford.

Discussion

There are several reasons why a waste tire incinerator was sited in Wolverhampton and not in Guildford. Elm Energy mounted a credible siting strategy in Wolverhampton based on top-down and dialogue risk communication. In Guildford, it had no real strategy. Further, in Guildford the environmental NGOs mounted their own top-down risk communication strategy by canvassing households near the proposed site and holding a public meeting.

perceived risk perceived the benefits virtually as high as the Wolverhampton residents who perceived the risks as less.

³⁰ Claire Marris et al., *Integrating Sociological and Psychological Approaches to Public Perceptions of Environmental Risks: Detailed Results from a Questionnaire Survey (1996)*; Robert M. Worcester, *Assessing the Public Opinion on the Environment: The Predictable Shock of Brent Spar (1995)*.

In retrospect, it seems that in Wolverhampton, Elm Energy was the main driver, taking the initiative to undermine public opposition and gain confidence of local policy makers. In Guildford, environmental NGOs, the media and some policy makers were the main policy drivers, not only placing Elm Energy on the defensive from the outset, but also amplifying the risks in the process.

Additionally, the site in Wolverhampton was in a depressed area and policy makers felt that the community would benefit from an incinerator. As a result, both local policy makers and the media supported Elm Energy's efforts. The Slyfield site of Guildford is located in an area where light industry and office buildings are present. The area is not depressed. An incinerator in this location would have been fully out of place. In fact, the argument that the incinerator would increase employment in the area did not carry any weight, as policy makers and special interest groups felt that light industry or office blocks would create more employment.³¹

The issue of responsibility was important in determining whether an incinerator received planning permission or not. Wolverhampton, is located in an industrial area where 90% of UK tires are made, and local policy makers felt a certain responsibility to dispose of some of them. In contrast, policy makers and interest groups in Guildford felt that the borough should not be responsible for burning such a large number of tires because most would be trucked in from outlying areas. They simply did not think it was fair, a point which Kunreuther and his colleagues see as an important part of their siting credo.³²

Finally, the issue of local elections could have been a contributing factor in Guildford. Although more research is needed, maybe, if it had not been an election year or if the councilors' seats had been safer, the Guildford Borough Council would not have opposed the incinerator.

³¹ P. Slade, *Slyfield is a Regional Issue, Not a Local One*, Surrey Advertiser, Sept. 12, 1994, at 21.

³² Howard Kunreuther et al., *Siting Noxious Facilities: A Test of the Siting Credo*, 13 Risk Anal. 30 (1993).

Conclusion

This pilot study has evaluated Elm Energy's waste tire incinerator siting strategy in two UK towns. The results indicate that it mounted a substantial effort in Wolverhampton, employing both top-down and dialogue risk communication strategies. However, in Guildford where it was unsuccessful, no form of risk communication was conducted.

Of several possible reasons why a tire incinerator was sited in one area but not another, among those to be more fully investigated are:

- The opinions of local policy makers are important particularly early on in the siting process. Where policy makers perceive a community benefit from an incinerator such as jobs in a depressed area, they may still push forward a siting process although the public may oppose it.
- The issue of responsibility can also be important. In Wolverhampton the council felt that the town made a significant contribution to the waste tire problem (as they manufactured so many of them) and therefore, believed that they should be responsible for disposing some of the tires. Guildford, on the other hand, has no local tire making industry and hence, policy makers felt little responsibility for disposing some of the waste tires.
- The existing industrial infrastructure of an area is also important in determining whether a siting of a noxious facility will face public and political opposition.
- Companies that want to site such noxious facilities need to plan a credible risk communication program and commit resources to refining this program throughout the planning process. Elm Energy did this in Wolverhampton but failed in Guildford.
- Environmental NGOs can significantly shape the policy outcome. In Guildford, environmental NGOs dominated the discussion in the media and their direct mailing to the residents closest to the plant generated a large degree of opposition.

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