

Environmental Concerns and Laboratory Siting: The Morris Township-Bellcore Case*

From February 1984 to May 1985, Morris Township, New Jersey, was embroiled in a controversy over the siting of a new research facility for Bell Communications Research, Inc. (Bellcore). The site plan of the proposed telecommunications research complex was debated extensively before the township planning board. At issue was the storage, use, and disposal of highly toxic and flammable gases. A group of residents formed the Concerned Citizens of Morris Township (CCMT)—an organization that spearheaded opposition to the research facility on the grounds that the work being planned there was potentially hazardous to public health and environmental quality. The Morris Township-Bellcore case draws attention to the efforts by citizens to set community standards of acceptable risk for privately financed research that requires the use of toxic materials. This brief case study summarizes the key events of the controversy, examines the legal basis of local regulation for the proposed research, reviews the justifications for and against siting the research facility, and finally, casts some preliminary comparisons to the two Cambridge, Massachusetts, cases discussed in chapter 7, in which recombinant DNA research and chemical warfare agents were regulated.

Historical Background

This case began like many land use decisions in communities throughout the United States. In the late 1970s, residents of a suburban neighborhood in Morris Township, New Jersey, raised concern over the development of a parcel of land adjacent to single-family subdivisions and a recreational area. The issues expressed during this period were predominantly those of traffic, noise, density, and aesthetics. In February 1980, after 15 public hearings over a 12-month period, the Morris Township planning board approved a plan submitted by the Southgate Corporation, developer of the site. The 58-acre parcel, called the Southgate Office Park Complex (Southgate Complex), was designated exclusively for office use.

*This case study was prepared for OTA by Sheldon Krinsky, Tufts University.

Three years later, during the summer of 1983, with three office buildings under partial completion, the Southgate Corporation leased the site to Bell Communications Research, Inc. (Bellcore), a research organization owned by seven regional telephone companies. Bellcore is a by-product of AT&T's court-ordered divestiture of the Bell System. The Bell System Plan of Reorganization stipulated that the regional telephone companies create a central services organization to provide them with research and technical services.

On behalf of its tenant, the Southgate Corporation submitted an amended site plan on December 1983, which included the construction of an additional building devoted to research, and the use, as a laboratory, of two floors of a building previously approved as office space. Bellcore had planned to locate its Morris Research and Engineering Center at the Southgate location. A number of AT&T employees at Bell Labs facilities in Murray Hill, New Jersey, and Whippany, New Jersey, were expected to be transferred to the new center.

The proposed facility was devoted to advanced research in semi-conductors and fiber optics. This type of research commonly employs toxic gases such as arsine, phosphine, and diborane as well as liquified hydrogen.

Residential abutters to the site had attended a planning board meeting in February 1984 to discuss traffic patterns when they learned that toxic and flammable gases would be used under the amended site plan. Within a month, a core group of residents organized themselves into CCMT.

The citizens framed their opposition to the research facility on two principal grounds: 1) the health effects of an accidental release of toxic gases into their neighborhoods, and 2) a potential release of untreated or partially treated toxic effluent from the research facility into Loantaka Brook—a major tributary of the Great Swamp National Wildlife Refuge.

CCMT's main effort to prevent construction of the research facility was directed at the Morris Township Planning Board, a body consisting of nine appointed members legally responsible for land use decisions. Over two dozen public hearings were held by the plan-

ning board on the Bellcore case between December 1983 and May 1985. CCMT brought in paid consultants, some from outside the State, to testify in its behalf on the potential hazards to the community of the proposed facility. Eventually, CCMT drew support from a broad range of constituencies covering Morris Township and neighboring communities. Included among these were: Harding Township Environmental Commission; over 50 Harding residents; the Great Swamp Watershed Association; 14 civic associations with a putative representation of 2,000 households in Morris Township and neighboring communities; and an official of the U.S. Fish and Wildlife Service.

A letter signed by 14 representatives of civic associations expresses the intensity of public opposition:

We question the need for Bellcore to impose the laboratory on a community that does not want it . . . We emphatically state that the Bellcore laboratory is not welcome and that we will pursue every means available to expose and publicize the fact that, in this instance, Bellcore has failed to fulfill its role as a responsible corporate citizen . . .¹

What started out as a controversy involving abutters to an industrial site, soon evolved into a regional conflict over a proposed research and engineering center. As community pressure grew, so did Bellcore's impatience with the uncertainty of locating its new research home. The company made serious attempts to communicate its position that "the small quantities of chemicals that [the company] plans to use and the 'state-of-the-art' safety systems and procedures that it plans to employ will make the Southgate facility safe beyond any reasonable question whatsoever."

In May 1984, Bellcore submitted an environmental information document to the planning board, describing its prospective laboratory operations, providing a representative chemical inventory for the new complex, and outlining safety procedures for the storage and handling of toxic materials. The company also hired risk assessment consultants to present its case before the planning board. Bellcore scientists provided an additional source of technical assistance to the company during the protracted debate.

In the 18-month period during which the planning board held public hearings on Bellcore's proposed research complex, proponents and opponents of the amended site plan were assigned scheduled sessions at which to present their respective arguments. On May 3, 1985, the planning board prepared for a final vote on the site plan. However, at the outset of the session prior to the vote, Bellcore made an unexpected an-

nouncement that it was withdrawing several controversial elements of its site plan including the new laboratory building, and the use of certain toxic and flammable gases. The planning board hastily accepted the modified proposal by a vote of 9-0. Realizing that even a vote in its favor would not end the controversy, or the delay in construction, the company appears to have capitulated to the concerns of the citizen protesters. In response, the citizen's group chose not to appeal the final decision of the planning board—despite some uneasiness among CCMT members that they had not seen a completed version of the adopted site plan. This decision brought to a close an 18-month controversy over potentially hazardous research in telecommunications.

The Legal Dimension

Local planning boards derive their authority to exercise land use controls from State statutes. In New Jersey, Chapter 57 of the State Land Development Ordinance sets forth principles of municipal land use controls that include the promotion of public health and safety and protection against man-made and natural disasters. In the written opinion of the Morris Township counsel, "both municipal land use law as well as the Morris Township ordinances provide sufficient legal basis to deny the [Bellcore] application if the Board feels it would present an unacceptable risk." The key, to the planning board's authority to proscribe research is in the interpretation of "unacceptable risk"—a vague and elusive term that was the centerpoint of much of the public debate.

The Southgate Complex is on land zoned for office and laboratory use, a point emphasized by Bellcore in its repeated contention that the amended site plan was in conformity with zoning requirements for the parcel. CCMT claimed that it was within the purview of the planning board to restrict research activities that pose a threat to human health, public safety, or environmental quality, even though the parcel is zoned for laboratory use. It argued that the zoning classification "research" is only a guide. Each activity must be carefully examined under this broad category (which includes everything from pencil and paper operations to the storage and use of hazardous chemicals) to determine whether it conforms to community standards of acceptable risk.

Acting in a quasi-legal manner but without strict rules of evidence, the planning board heard testimony from both sides, cross-examined witnesses, and permitted adversaries to question one another. A decision by the planning board is subject to an appeal in the State courts if the petitioner files the appeal in accordance with accepted guidelines.

¹Thomas Fuschetto Jr., "Bellcore Protest Continues to Build," *Observer-Tribune*, Mar. 28, 1985.

²N. Michael Grove, Vice President and General Counsel, Bellcore, letter to James Stenger, Concerned Citizens of Morris Township, Mar. 11, 1985.

Citizen opposition to the facility was not directed at a particular research program per se, but rather at the chemical substances that were a critical part of the research activities.

Arguments For and Against a Research Ban

In its presentation before the planning board, Bellcore maintained that the site plan was in conformity to the zoning requirements of the parcel. Moreover, the proposed laboratory facility was designed to meet or exceed all Federal, State, and local laws on handling toxic materials. Company officials argued that "their plans are a logical extension of work done safely since 1941 at Bell Labs in Murray Hill where Bellcore scientists are working now until their company opens a home for them."

Bellcore cited results of its commissioned risk assessment studies that examined the case of a worst-credible arsine leak. The conditions defining the worst-credible case are a failure in the mechanical scrubber (a device that filters out unwanted gases) resulting in a slow leak of arsine, or an accidental release of arsine as a result of a tube fracture. According to those studies, the maximum exposure of any citizen in the community would be about one fortieth of the safe arsine levels permissible for workers.

The risk assessment consultant to CCMT developed a worst-case scenario that differed considerably from cases cited by Bellcore. The storage of 1,500 gallons of liquid hydrogen on the roof of the laboratory building was the basis of one potential worst-case accident. A CCMT consultant cited as a plausible event a large hydrogen leak that could cause an explosion that would rupture the arsine tank and send toxic gases out toward the neighborhood.

CCMT was uncompromising on the matter of storing toxic gases on the roof of the proposed facility. The citizens group was not persuaded by company statistics on the low probability of hydrogen explosions, or the gas detection and monitoring systems planned for the new facility. Opponents of the facility fixed their attention on the worst-case explosive release of toxic gases. That became the standard against which they would judge acceptable risk.

An article in *Technology Review* which was distributed widely among members of CCMT fueled the citizens' resolve against accepting a compromise on the storage of toxic gases. Passages of the article read:⁴

⁴Timothy Mullaney, "Neighbors, Firm Struggle Over Chemical Risk," *Daily Record*, Apr. 22, 1985.

⁵Joseph La Dou, "The Not-So-Clean Business of Making Chips," *Technology Review*, May June 1984, pp. 23-25, 32, 36

Acute inhalation [of arsine gas] can cause rapid destruction of red blood cells, followed by severe kidney damage, and if the patient is not immediately treated—death. Given sufficient low-level exposure over time, arsine also may be carcinogenic. The accidental release of the contents of a 20-pound cylinder of 100 percent phosphine would have to be spread over 1,792 acres—or 276 city blocks—before being diluted to the permissible exposure level of 0.3 ppm.

A second argument, which evolved somewhat later in the controversy, centered around the environmental protection of the Great Swamp National Wildlife Refuge. The proposed laboratory facility borders on Loantaka Brook, which flows into the Great Swamp. In response to the prospect of having pretreated emissions from the research facility flush into Loantaka Brook, a spokesperson for the Great Swamp Watershed Association said:

[A]ny accidental discharge of hazardous materials from the Bellcore facility could impair the Woodland Treatment plant operation and seriously degrade water quality in the brook and further downstream in the Great Swamp.'

Environmentalists also expressed concerns about seepage of toxic materials into the groundwater from accidental spillage or a gas cylinder rupture. It was stressed that two streams running through Southgate feed a major drinking water source for 600,000 people. By dramatizing the potential environmental impacts, CCMT was able to build a broad coalition of supporters, consisting of civic associations and environmental protection groups, to oppose the Southgate site of the research facility.

A key difference between Bellcore and CCMT on the conceptualization of risk is exemplified by the terms "worst-credible case" and "worst-possible case" as applied to an accidental release of hazardous substances. In emphasizing the former phrase, Bellcore urged the community, in evaluating the risks, to consider plausible accidents and not extremely remote or unrealistic events. However, CCMT fixed on the worst event that was conceivable, without considerations of probability. Neither side introduced a quantitative assessment of the likelihood that any accident could take place. Each party argued its case within a preferred model of risk assessment, the choice of which is more a question of culture than of science. This difference made a negotiated settlement between adversary groups extremely difficult.

The Morris Township case is thus not one of a community regulating a form of objectionable research. Barely any interest was expressed by citizens about the nature of the semi-conductor and fiber optic research

⁶Sally Dudley, letter to the editor, *Observer-Tribune*, Mar. 21, 1985

planned for the site. The entire focus of the debate was on the types of chemicals on site and the possibilities of their release into the environment. Had the planning board ruled against Bellcore, the decision would also not have established a legal precedent for similar cases that might arise elsewhere in the township. Planning board decisions are rendered for specific circumstances and do not accumulate as in case law. However, had such a decision been made, it is likely to have created for the township an informal regulatory precedent against similar proposals involving research with highly toxic gases. Although the company withdrew the proposal before a planning board vote was taken, a mood has been created in Morris Township that, while not codified into law, may be no less effective in proscribing such activities should they arise in a future site plan.

Comparisons With Two Cambridge, Massachusetts Cases

Table C-1 illustrates some comparisons and contrasts between the Morris Township case and the two Cambridge controversies. Notably, both the Arthur D. Little (ADL) and Bellcore cases involve private sector research for which highly toxic chemicals are required. Citizens of both communities cast their opposition to the respective research activities on public health grounds emphasizing worst-case scenarios. Opponents of the research in both cases were not persuaded by comparative risk analysis and arguments that they consider the probability of a worst-case accident. Environmental factors became important in the

Morris Township debate, but were of little significance in the issue of chemical warfare research. However, the morality of research was discussed, to some degree, in both the debate over rDNA molecules and chemical warfare agents. Moral discourse about the nature of the research program did not arise among Morris Township citizens.

Bellcore's research program is a mixture of basic and applied science/engineering. The character of its research is a blend of what we would find at a university and what might be carried out at ADL. In Morris Township, the restraints on research came prior to the construction of a laboratory; that compares favorably with the rDNA case. In contrast, ADL had initiated its research before local restraints were imposed.

The social instruments for regulating research are markedly different between the Cambridge and Morris Township cases. The Cambridge city council and the health commissioner played key roles in the control of rDNA molecules and chemical nerve agents. In contrast, the township planning board acted as the exclusive social instrument for regulating Bellcore's research program. The public health officials of the township did not have a visible role in the controversy.

Whereas codification of research restrictions emerged in both the Cambridge cases, no formal restrictions on research were imposed in the Morris Township situation. In the latter case, withdrawal by Bellcore of its proposed solid state laboratory, revealed the importance of a local cultural barrier to specific types of research. The barrier, although informal and unmodified, may have the persistence and efficacy of a law.

Table C-1.—Comparison of Three Cases Involving Local Control of Research

| Category of comparison | rDNA—Cambridge | Arthur D. Little (ADL)—Cambridge | Bellcore—Morris Township |
|---|--|--|--|
| Type of research | Basic science | Applied chemical and engineering | Basic and applied science and engineering |
| Nature of institutions | Academic/nonprofit | Consultant/for profit | Private sector/for profit |
| Stage of the research at outset of local intervention | Not yet begun | 7 months ongoing | Not yet begun |
| Source of research funding | NIH and NSF primarily | DOD | Private sector: regional telephone companies |
| Origins of controversy | National and within scientific community | Local and centered on a city and two towns | Local and centered on a township |
| Stimulus of local involvement | Newspaper story on Harvard's plan to build P-3 genetics lab | Newspaper story on ADL's new lab for testing chemical warfare agents | Planning board hearing on site plan for commercial development |
| Primary regulatory agent | City council | Public health commissioner | Township planning board |
| Time period of controversy | Stage 1: 7 months Stage 2: 5 months | 20 months as of July 1985 | 18 months |
| Codification of ruling | Municipal ordinance regulating rDNA activities | Public health order banning uses of certain chemical warfare agents | None; withdrawal of planned research by firm |
| Institutional response to community reaction | Universities accept temporary moratorium | ADL rejects moratorium; litigates public health order | Followed process through planning board; finally withdrew proposal, no litigation |
| Actual interference with research. | No appreciable delay | Not prevented or appreciably delayed to date | Research was delayed and finally prevented at site |
| Judicial action | No legal test of moratorium or rDNA ordinance | Litigation taken on research ban | No litigation |
| Nature of community involvement. | Primarily from academic sector; no grass roots organizations | No organized opposition at the early stages; intense community organizing after release of SAC ^a report | Organized opposition at the outset; coalition-building with other townships and regional groups |
| Perceived community risk | Unspecified speculative scenario of creation and release of disease-carrying organisms | Explosive release of nerve agents exposing residents | Explosion of hydrogen tank and release of arsine gas; also release of toxic chemicals into fragile preservation area and groundwater |

^aScientific Advisory Committee