approved by the end of January 1995. If the program is approved, Scripps would immediately begin installing the speakers, and transmissions could begin that spring, Rogers said.

A Move for the Better

A change in where they live may change the outcome of a second pregnancy for women whose first child was born with a birth defect, according to a recent study published in the July 7 *New England Journal of Medicine.*

The odds of having a second child with a birth defect are small to begin with—about 2.2% in the Norwegian sample. However, the study, conducted by epidemiologists Rolv Terje and Rolv Skjaerven in Norway and Allen Wilcox at the NIEHS, revealed that among women who had given birth to one baby with a defect, those who continued to live in the same town had almost 12 times the risk of giving birth to a second baby with the same defect. However, if these women moved to a new town, the risk dropped to five times the normal risk. The study also showed a slightly increased risk of delivering a second child with a different defect from the first for women who remained in the same town.

The study examined birth records of first and second infants born to almost 400,000 women in Norway between 1967 and 1989. Twenty-three categories of isolated defects and a category of multiple defects including, for example, cleft lip and palate, limb defects, genital defects, anencephaly, respiratory system defects, and central nervous system defects were studied. One surprising finding of the study is that moving to a new town correlated with a decreased risk of birth defects more than the second child being fathered by a different man. With a different father the risk of defects in the second child fell to 7.3.

The authors say the study does not cast light on any causes for decreased risk, but when you move, said Wilcox, "you've changed some things: where you work, the house you live in. . . ." Wilcox said that the study is more promising for guiding future research rather than for suggesting preventive measures. The researchers concluded that there is strong indirect evidence that environmental factors contribute to the familial risk of birth defects and that "important environmental teratogens have yet to be discovered."

Risk of similar and dissimilar birth defects in second infants of mothers with an affected first infant

Defect in first infant	No. at risk	Second infant: Similar defect, Observed	Similar defect, Expected	Similar defect, Relative risk	Dissimilar defect, Observed	Dissimilar defect, Expected	Dissimilar defect, Relative risk
Clubfoot	2784	100	14.7	7.3	59	42.0	1.4
Genital defect	1447	25	5.1	4.9	35	24.2	1.5
Limb defect	957	25	2.2	11.3	41	17.1	2.4
Cardiac defect	567	6	1.0	6.0	11	10.5	1.1
Total cleft lip	436	18	0.6	31.4	10	8.2	1.2
Isolated cleft palate	144	3	0.1	44.5	2	2.9	0.7
All combined	9192	201	26.4	7.6	249	164.6	1.5

Effect of a change in municipality or partner on the risk of a birth defect in the second infant similar to the defect in the first infant

Partner	Municipality	Similar birth defect in second infant: Mothers with affected first infants, Cases	Mothers with affected first infants, Total	Mothers with normal first infants, Cases	Mothers with normal first infants, Total	Relative Risk
Same	Same	115	4200	454	192,990	11.6
Same	Different	41	2332	310	89,588	5.1
Different	Same	16	985	99	44,196	7.3
Different	Different	10	749	78	28,861	4.9

Source: Lie et al., *New England Journal of Medicine* (vol. 331, p. 3).

A Gray Area of Environmental Justice

The issue of environmental justice is hardly black and white, especially in the realm of research. Several studies surfaced in the late 1970s and 1980s providing evidence that polluting and waste facilities are more likely to be located in low-income and minority neighborhoods. This information has prompted widespread political action, but the methodologies used in these studies are now being challenged.

President Clinton issued an executive order on environmental justice, and Congress is also focusing on this issue, debating several bills that would guarantee environmental equity. But some researchers are questioning whether such political attention to the issue is warranted. Two recent studies cast doubt on the empirical evidence supporting the arguments of environmental justice advocates.

One of the studies, conducted at the Center for the Study of American Business at Washington University, examined environmental justice policy. "Our study is an overview of the issue from a policy perspective," said Christopher Boerner, who worked with Thomas Lambert on the study. Their findings indicate that further research should be conducted on the issue.

Boerner and Lambert, research interns at the center, analyzed the studies that provide evidence of environmental racism and detected several flaws in the research. These included inadequacies in how minority communities were defined and in population densities. The researchers said that defining minority communities as areas where the percentage of nonwhite residents exceeds the percentage of minorities in the entire population means that a community could be considered minority even if the majority of its residents are white. They also pointed out that most of the studies are based on ZIP-code data, which are not necessarily accurate when examined on a smaller geographic unit.

Boerner and Lambert also argued that environmental justice studies imply rather than state actual risks posed by polluting and waste facilities since there is a lack of significant scientific data linking negative health effects with proximity to polluting and waste facilities. And finally, the study says that the research on environmental justice fails to establish that discriminatory siting and permitting practices caused current environmental inequities. The studies identify current economic and race characteristics of communities located around industrial and waste facilities, but they do not consider community conditions when the facilities were sited.

Boerner and Lambert's research supports one of their major concerns in regard to environmental justice: that policymakers may be acting too quickly on a subject that needs further research and evaluation.

Boerner and Lambert also examined alternative ways of approaching environmental justice as an issue, as opposed to current suggested solutions. Most of these current remedies include legislation that would prohibit or discourage construction of polluting and waste facilities in certain low-income and minority neighborhoods. Boerner and Lambert recommended that policymakers explore remedies such as compensation approaches, in which those

who share the benefits of the undesirable facility provide compensation to those who host the facility. The compensation could be in the form of direct payment to individuals in the community, or through investments to improve the community. Boerner and Lambert also detailed benefits that communities could reap by supporting the construction of polluting and waste facilities in their areas. Among these are the economic benefits a facility could bring to a disadvantaged neighborhood, such as the creation of jobs. This type of compensation approach would allow communities to be involved in the negotiating process.

Early results of an ongoing empirical study at the University of Massachusetts also cast doubt on claims that hazardous waste facilities are more likely to be located in low-income and minority neighborhoods. The researchers, Douglas Anderton and Andy Anderson, both sociology professors, released a preliminary study revealing that commercial, off-site treatment, storage, and disposal facilities (TSDFs) are actually more likely to be located in white, working-class, industrial neighborhoods. The two-year study examined census bureau tracts, groupings of 4,000 people, rather than ZIP-code data, which had been used in many of the previous studies. Tracts containing commercial hazardous waste TSDFs were compared to tracts without TSDFs.

The researchers had expected to find results similar to previous studies on environmental justice. "We were all pretty surprised, including the waste industry," Anderton said. "In retrospect we shouldn't have been, because what we found was that these facilities were not much different than any other industrial facilities." They found that the neighborhoods surrounding TSDFs were made up of white, working-class people, similar to most communities located around other types of industrial facilities.

The study has been criticized by environmental justice advocates because the pre-1990 census tract data that was analyzed excludes rural areas. They claim that if rural areas were assessed, the results could be different. However, Anderton says ongoing research involves 1990 census data that includes rural areas, and the results appear to be similar.

Anderton and Anderson do admit that there are limitations to this study. For example, only commercial, off-site TSDFs were studied; Superfund sites, closed TSDFs, and on-site storage were excluded. They also cited other sources of environmental risk not studied that could unfairly burden minority and poor populations, including lead paint, soil contamination, and air pollution.

"Some of the limitations of this research should be noted so the results of this particular study will not be used to undermine the general cause of environmental justice and equity," the authors said. They summarized the study by saying, "a great deal of work remains to be done."

Anderton said they will continue to research the issue, and future studies will include Toxic Release Inventory data, Superfund sites, comparisons of public and private facilities, and analyses of how sites change over time.

A Nice Cup of Tea

Animal studies prove it. Folklore heralds it. And now the first large human study shows that green tea may be more than just an aromatic brew loved by millions of Asians who claim it purifies the body.

A report published in the June issue of the *Journal of the National Cancer Institute* concluded that green tea is associated with a reduced rate of esophageal cancer in residents of Shanghai. Studying 1552 healthy people and 902 others who had esophageal cancer, NCI researchers found the risk of contracting this cancer was reduced by 57% for men and 60% for women who didn't smoke or drink alcohol but who consumed lots of green tea.

The researchers undertook the study because of compelling animal experiments that demonstrated green tea reduces the incidence of cancer and even the growth rate of tumors. Tea is among the most widely consumed beverages in the world, and a finding that 20% of that tea, an unfermented green, naturally protects against cancer would be good public health news.

The report comes on the heels of a smattering of studies worldwide that suggest green tea has a myriad of benefits. In Japan, scientists have found that green tea lowers rates of cancers of the lung, skin, and stomach, and even reduces cholesterol.

But no one is yet ready to say that green tea protects humans against any disease, including cancer. The NCI's lead tea investigator, epidemiologist Joseph McLaughlin, cautions that no conclusions can yet be made. "This is the first study that shows an association, but as to whether green tea does definitively protect against esophageal cancer, I can't say."

The problem is that although at least 100 studies have been published in the last two years, mostly in Asia, there are too few substantive case–control studies, says McLaughlin. The NCI survey is the largest to date, "but further investigations are definitely needed," he said.

Chung Yang, a biochemist and professor at Rutgers University, said that recent reports of the effect of tea on human health have been "mixed; innately controversial." Yang said that one-fourth of the studies argue for a protective effect, one-fourth find tea increases health risks, and one-half of the studies found no correlation between consumption and disease. And although the Shanghai study "is interesting and encouraging," Yang said that it did not present any clear conclusions.

On the other hand, animal data testing the effect of both black and green tea on cancer has shown a consistent benefit, said Yang, who has had a role in many of those

Joseph Tart

Reading tea leaves. Scientists studying green tea believe it may help ensure a healthier future.