

# State's TMI study clouded by survey method doubts

By Frank Lynch  
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The state's recently released study of health effects of the 1979 Three Mile Island accident may have been flawed by expanding the survey areas beyond the prescribed five- and 10-mile zones.

According to 1980 census figures, the state Department of Health included 28,610 people who live farther than five miles from the Londonderry Twp. plant in the population listed for those who live within five miles.

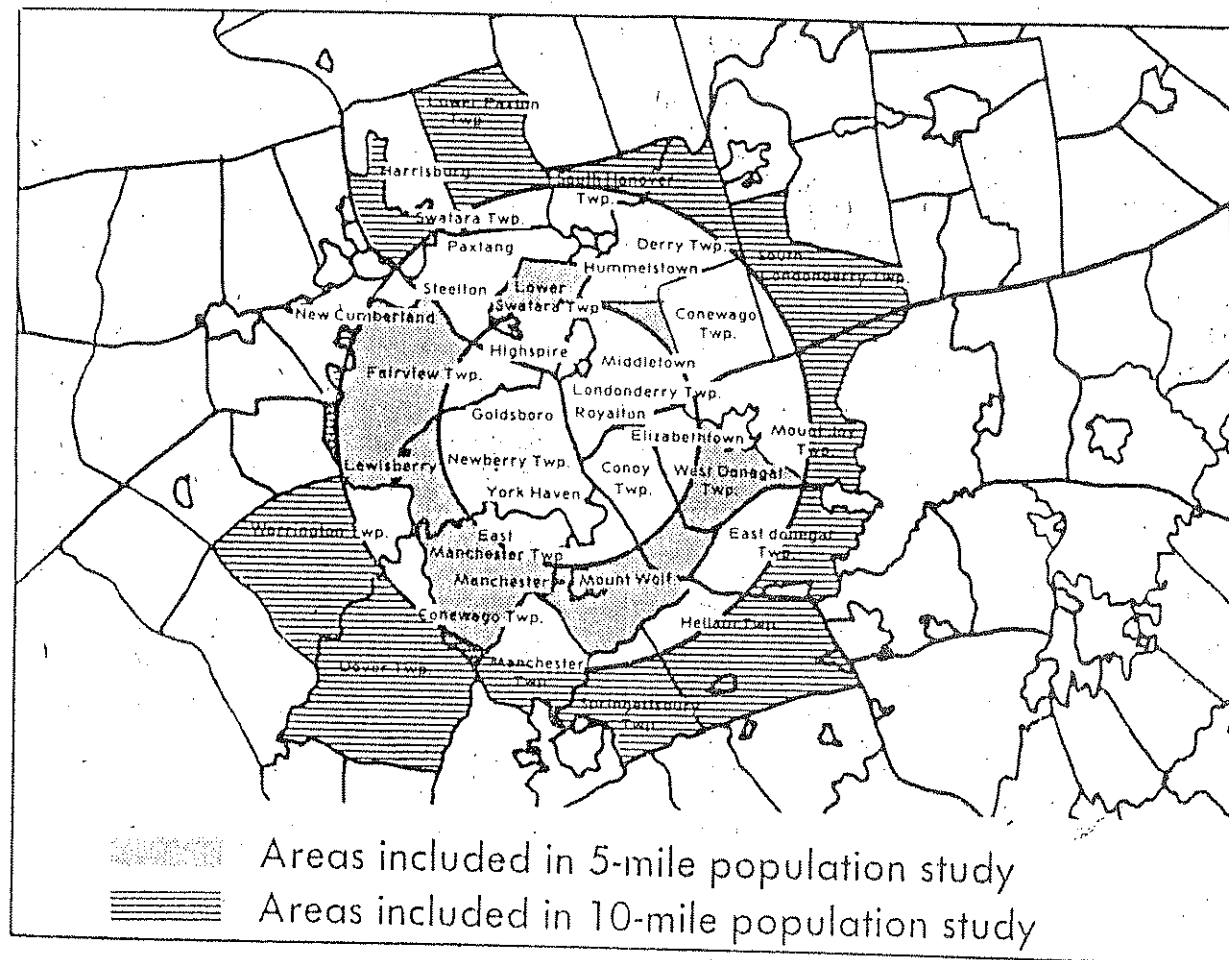
Another 122,000 people who live farther than 10 miles from the plant were included in the population of those living "within" 10 miles.

**THE RESULT**, according to epidemiologists and statisticians contacted by the Sunday Patriot-News, is that if there actually were adverse health effects such as increased cancer cases among those living close to the plant, the figures would be diluted by expanding the base population.

"It seems like a strange thing to do," said Dr. Robert A. Hultquist, Pennsylvania State University professor of statistics. "I think you would substantially dilute [assumed cancer rates] to get even a few miles away."

Dr. George Hutchison, Harvard professor of epidemiology, concurred.

"Let's suppose there is an ex-



cess cancer rate [in the five-mile zone], and not excess rate beyond the five-mile zone," he said. "The larger population would dilute the overall cancer rate."

**THE STUDY**, released a month

ago, concluded that no adverse health effects had been found so far in people who live around TMI, site of the nation's worst commercial nuclear accident on March 28, 1979.

Comparing census figures with

the totals listed by the Health Department, 44 percent of the population figured in the five-mile statistics live outside that zone, while 42 percent of those said to be

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"within" the 10-mile zone actually live farther away.

For example, all of Lower Paxton Twp.'s 34,830 residents were included in the 10-mile figures, although only 2,000 of them live in the sliver of the township inside the 10-mile radius. Some Lower Paxton Twp. residents live as far as 16 miles from the plant.

Health Department officials defend the way they gathered their data. They say the data were not diluted by the excess population included, and that the study could not have been conducted had they attempted to stay close to the imaginary 5- and 10-mile zones.

"IT WOULD be a tremendous job, almost humanly impossible" to conduct such a study, said Edward Digon, principal author of the report and chief of the department's special studies section, division of epidemiology research.

Digon said the report should have noted that some of the people included in the study live outside the zones. Such a notation had been included in an early draft that he wrote, but was deleted during the editing process. Leaving the explanation out, he said, was an "error."

But Digon stressed that there was not an increase in cancer. He said the four communities entirely

within the five-mile zone had about the same number of cancer deaths as would have been expected.

Health Department spokesman Bill Lindeberg said, "We think we have a pretty solid report, and we stand on it."

TMI'S UNIT 2 reactor overheated and released some radioactivity into the environment in March 1979. Government experts and scientists have said not enough radiation escaped to trigger any significant health problems.

But doubts have persisted over the last six years.

Norman and Marjorie Aamodt, formerly of Chester County, and now of Lake Placid, N.Y., conducted a study last year that concluded the number of local people dying from cancer increased sevenfold since the accident.

Meanwhile, the Columbia (N.Y.) University Department of Epidemiology is conducting a two-year, \$420,000 study of pregnancy outcomes and cancer rates since the accident.

And the Health Department will continue to monitor cancer cases in the area for future studies.

THE MOST recent study was made to find out what, if any, health effects were suffered by residents living certain distances from the plant. Five- and 10-mile zones were selected for comparison purposes.

Digon noted that death certificates and cancer incidence information from the state's Cancer Registry are available according to "minor civil division" — or by township and borough.

Since the minor civil divisions do not align with the five- and 10-mile circles, officials included all of a division in the study even if only part of it is within the described zone.

Digon said it was decided to use the divisions — even though their use inflates the population numbers — because it will be easier to conduct follow-up studies.

"YOU COULD do it [try to divide the divisions to stay close to the zone circles]. But you can't do that for too many years because the reference books [needed to keep track of residents] would fill up a room," he said.

Therefore, he said future comparison studies also will include those living outside the zones.

Harvard's Hutchison said that to do a study expeditiously, "there is a good argument for using townships and boroughs rather than using areas defining a circle around Three Mile Island."

But he said that that study method should have been described in the report. "If there is not any footnote [explaining that some areas are actually not within the described zones], then you have a problem."