

# Rachel's Environment & Health News

## #617 - Landfills Are Dangerous

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A new study by the New York State Department of Health reports that women living near solid waste landfills where gas is escaping have a four-fold increased chance of bladder cancer or leukemia (cancer of the blood-forming cells).[1]

The new study examined the occurrence of seven kinds of cancer among men and women living near 38 landfills where naturally-occurring landfill gas is thought to be escaping into the surrounding air. Of the 14 kinds of cancer studied (7 each in men and women), 10 (or 71%) were found to be elevated but only two (bladder and leukemia in women) achieved statistical significance at the 5% level. The seven cancers studied were leukemia, non-Hodgkin's lymphoma, liver, lung, kidney, bladder, and brain cancer. In women living near landfills, the incidence of all seven kinds of cancer was elevated. In men, the study found elevated (though not statistically significant) incidence of lung cancer, bladder cancer, and leukemia.

What is most surprising about the New York study is that it only examined 38 landfills. The state Department of Health began looking at 131 landfills, but eventually studied only 38 of them (29%) on the grounds that only those 38 were likely to be releasing gases. In contrast, a 1990 study of 356 California landfills found 240 of them (or 67%) emitting one or more toxic solvents.[2] It is not clear why New York authorities assumed that gases are escaping from only 29% of New York landfills when toxic gases have been measured escaping from 67% of the landfills tested in California.

Landfill gas consists of naturally-occurring methane and carbon dioxide, which form inside the landfill as the waste decomposes. As the gases form, pressure builds up inside a landfill, forcing the gases to move. Some of the gases escape through the surrounding soil or simply move upward into the atmosphere, where they drift away.

Typically, landfill gases that escape from a landfill will carry along toxic chemicals such as paint thinner, solvents, pesticides and other hazardous volatile organic compounds (VOCs), many of them chlorinated.

The New York state health department tested for VOCs escaping from 25 landfills and reported finding dry cleaning fluid (tetrachloroethylene, or PERC), trichloroethylene (TCE), toluene, 1,1,1-trichloroethane, benzene, vinyl chloride, xylene, ethylbenzene, methylene chloride, 1,2-dichloroethene, and chloroform in the escaping gases.[1]

This is not the first study to show that people living near landfills have an increased incidence of cancer. A 1995 study of families living near a large municipal solid waste landfill (the Miron Quarry) in Montreal, Quebec reported an elevated incidence of cancers of the stomach, liver, prostate, and lung among men, and stomach and cervix/uterus among women.[3]

A 1984 study reported that men (but not women) living near the Drake Superfund site in Pennsylvania, had an excessive incidence of bladder cancers, though occupational exposures could not be ruled out as the source of those cancers.[4]

A 1990 study found an increased incidence of bladder cancers in northwestern Illinois where a landfill had contaminated a municipal water supply with trichloroethylene (TCE), tetrachloroethylene (PERC), and other chlorinated solvents.[5]

A 1989 study by the EPA [U.S. Environmental Protection Agency] examined 593 waste sites in 339 U.S. counties, revealing elevated cancers of the bladder, lung, stomach and rectum in counties with the highest concentration of waste sites.[6]

Increased incidence of leukemia has been reported in a community near a toxic waste dump in North Rhine-Westphalia, Germany.[7]

A 1986 study of children with leukemia in Woburn, Massachusetts statistically linked the disease to drinking water supplies that had been contaminated by a waste site.[8]

Thus leukemias and bladder cancer are the most commonly reported cancers among populations living near landfills, providing support for the recent findings in New York.

It should come as no surprise that living near a landfill is hazardous to your health --and it doesn't matter whether the landfill holds solid waste or hazardous waste. Hazardous waste landfills hold unwanted toxic residues from manufacturing processes. On the other hand, municipal solid waste landfills hold discarded products, many of which were manufactured from toxic materials. The wastes go out the back door of the factory while the products go out the front door, but after they have been buried in the ground both wastes and products create very similar hazards for the environment, wildlife, and humans. The leachate (liquid) produced inside the two kinds of landfills is chemically identical.[9] (See REHW #90.)

The most commonly reported effect of living near a landfill is low birth weight and small size among children. The first careful study of this subject took place at Love Canal near Niagara Falls, New York. In a blinded study published in 1989, researchers found that children who had lived at least 75% of their lives near Love Canal --the notorious toxic chemical dump --had significantly shorter stature than children who lived farther away from the dump site. These results held up even after controlling for birth weight, socio-economic status, and parental height.[10]

A previous (1984) study had shown that children who lived near Love Canal had abnormally low weight at birth.[11] The following year, another study confirmed low birth weight in children born to parents living near Love Canal.[12] There does not seem to be any remaining doubt that the children of Love Canal were put in harm's way by exposure to the 20,000 tons of chemical wastes buried in their back yards. Those wastes remain buried there, and the families that have recently moved into homes at Love Canal are likely in danger too.

Studies of children living near other landfills have confirmed these findings. A study of families living near the Lipari landfill in New Jersey reported low birth weight among babies born during 1971-1975, when the landfill was thought to have leaked the greatest quantity of toxic materials into the local environment.[13]

A study of people living near the BKK landfill in Los Angeles County, California in 1997 reported significantly reduced birth weight among children born during the period of heaviest dumping at the site.[14]

A 1995 study of families living near a large municipal solid waste dump (the Miron Quarry) near Montreal, Quebec found a 20% increased likelihood of low birth weight among those most heavily exposed to gases from the landfill.[15]

At least five studies have reported finding an increased chance of birth defects among babies whose parents live near a landfill. In Wales, the chances of birth defects were doubled among families living near the Nant-y-Gwyddon landfill.[16] A 1990 study in the San Francisco region found a 1.5-fold greater chance of birth defects of the heart and circulatory system among newborns whose parents lived near a solid or hazardous waste site.[17]

A 1990 study of 590 hazardous waste sites in New York state found a 12% increase in birth defects in families living within a mile of a site. [18] A 1997 study of women living within a quarter-mile of a Superfund site showed a two-to four-fold increased chance of having a baby with a neural tube defect, or a heart defect.[19] A preliminary report in 1997 found a statistically significant 33% increased chance of a birth defect occurring in babies born to families living within 3 kilometers (1.9 miles) of any of 21 landfills

in 10 European countries.[20]

Researchers at the London School of Hygiene and Tropical Medicine recently reviewed 46 studies of the human health effects of landfills. [21] They concluded, "[L]andfill sites may represent real risks in certain circumstances." They also pointed out that exact mechanism of the hazard remains unknown. Is the biggest hazard air or water pollution? No one knows. But the evidence seems overwhelming: living near a landfill can be dangerous. So long as we remain a society addicted to chlorine chemistry and other toxic technologies, our discards will be toxic, and the places where we bury them will be hazardous to health for a long time to come.

--Peter Montague (National Writers Union, UAW Local 1981/AFL-CIO)

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[11] N.J. Vianna and A.K. Polan, "Incidence of low birth weight among Love Canal residents," SCIENCE Vol. 226, No. 4679 (December 1984), pgs. 1217-1219.

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