

# LIVESTOCK MANURE STINKS FOR INFANT HEALTH

## MEGAFARM PRODUCTION ASSOCIATED WITH INFANT ILLNESS, DEATH RATES

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The manure generated by thousands of cows or pigs doesn't just stink — it may seriously affect human health.

New research examining two decades' worth of livestock production data finds a positive relationship between increased production at industrial farms and infant death rates in the counties where the farms reside. The study reported in the February American Journal of Agricultural Economics implicates air pollution and suggests that Clean Air Act regulations need to be revamped to address livestock production of noxious gases.

The new work is in line with several studies documenting the ill effects of megafarms, which typically have thousands of animals packed into small areas, comments Peter Thorne, director of the Environmental Health Sciences Research Center at the University of Iowa in Iowa City. Higher rates of lung disease have been found in workers at large poultry and swine operations and respiratory problems increase in communities when these large-scale farms move in, Thorne notes.

"This study is a very important contribution," says Thorne. "This is an industry we really need — it provides food and a lot of jobs — the answer isn't for everyone to become vegetarians." But, he says, "I think we need a fundamental change in the way this industry is going. There's a very strong case that under the Clean Air Act the EPA should be looking seriously at the livestock industry."

The study, by economist Stacy Sneeringer of Wellesley College in Massachusetts, examined birth and death records from the National Center for Health Statistics and the increase in "animal units" per county across the United States from 1982 to 1997. (Animal units are a normalizing unit used by the U.S. Department of Agriculture. One animal unit equals roughly 1,000 pounds of average live weight; or 250 layer chickens (for eggs); or 1.14 fattened cattle; or 2.67 breeding hogs.) An increase of 100,000 animal units in a county corresponded to 123 more infant deaths per year per 100,000 births. Doubling livestock numbers was linked to a 7.4 percent increase in infant mortality.

Several potentially confounding variables were taken into account, such as per capita income, the availability of health care, climate, land and housing use, possible effects of other industries and whether large farms move to areas that already have poor infant health.

"I was surprised to see this association — I kept expecting it to go away but it didn't," Sneeringer says. Farm pollution is typically associated with groundwater contamination. Leaks in manure lagoons or runoff from fertilizers or pesticides get into streams and other waterways. But increased livestock production had greater effects in areas with low well-water usage, implicating air pollution.

Ammonia, hydrogen sulfide and airborne particulate matter are all associated with livestock production, Sneeringer says. Exposure to the gases has been linked to respiratory distress in infants, while exposure in the womb has been linked to disorders that occur late in pregnancy or shortly after birth, and has also been linked to spontaneous abortions. Sneeringer found that about 80 percent of the infant deaths associated with increased livestock production occurred in the first 28 days of life.

"Livestock are the number one source of volatilized ammonia in the nation," Sneeringer says. Increasingly, farms that generate manure don't use it as fertilizer, Sneeringer points out. Many large livestock operations have no crops to fertilize. The manure may be shipped out to become pelleted fertilizer elsewhere, or sit in a big, sealed lagoon.

Several steps might be taken to assuage the problem, says Thorne. Aerobic digesters can oxygenate manure as it breaks down, eliminating some of the noxious gases that anaerobic bacteria produce. Fertilizer could be injected into the ground instead of sprayed onto fields. And large livestock facilities could be required to buy additional surrounding land, increasing the distance between people and pollution.