

What are some potential human health issues for communities near dairies?

Citizens have expressed some health concerns about living near dairies, especially regarding water quality, air quality, and odor problems.

What kinds of things can contaminate water near dairies?

Nitrate:

Nitrate is a naturally occurring chemical ion made up of nitrogen and oxygen. Nitrogen sources that could potentially contaminate water include fertilizers, human/animal waste, landfills, decaying plants, or explosives. Drinking water with high nitrate levels may interfere with blood's ability to carry oxygen from lungs throughout the body and can be life threatening, especially to infants, causing a health problem called "Blue Baby Syndrome". There have been no reported deaths due to Blue Baby Syndrome in New Mexico since at least 1979. [For additional information on nitrate toxicity see: *Nitrate in Drinking Water* fact sheet.]

Potential dairy-related microorganisms in drinking water:

There are several diseases that may result from drinking water contaminated with bacteria and other microorganisms. The organisms that cause waterborne illness (bacteria, viruses, and parasites) are also spread by food or from person to person, so it is often difficult to determine the cause of illness. Symptoms may include nausea or vomiting, abdominal cramping, diarrhea, muscle ache, or fever. With diarrhea of any cause, the most important treatment is to increase fluid intake to prevent dehydration. Please contact your health care provider if you become ill. The Department of Health, Office of Epidemiology can answer questions about common waterborne diseases during normal business hours at 505-476-3572. For after-hours emergencies call 505-827-0006. For more information on waterborne diseases see: <http://www.cdc.gov/ncidod/diseases/water/drinking.htm>

Note: Shallow wells and surface water have the highest chance of becoming contaminated by nitrate or microorganisms from animal manure.

How can I be sure my drinking water is protected if I live near a dairy?

Public water system

The New Mexico Environment Department (NMED) Drinking Water Quality Bureau provides oversight to all public water systems in the state. Microbiological testing is done monthly on each system. The Drinking Water Quality Bureau also tests for heavy metals, synthetic contaminants such as herbicides and pesticides, volatile organic contaminants such as benzene or xylene, and radiological indicators to assure that these potential contaminants are below federal and state standards and guidelines. Public water systems are also monitored to ensure treatment methods, such as chlorination, are adequate to protect the public's health.

Private wells: Private well water is not monitored by NMED. The chance of having health problems depends on how good the well is – how well it was built and where it is located, and how well it is maintained. Generally, the deeper the well, the better the ground water, but this can vary due to local geological conditions.

Water from private wells should be tested annually for total coliform bacteria, nitrates, total dissolved solids, and pH levels. Testing for total coliform bacteria will give an indication of whether the water contains also other types of disease-causing microorganisms. For a list of certified testing laboratories, see: www.nmenv.state.nm.us/dwb/Certified_labs.html or call 1-877-654-8720 (toll free).

What are my chances of getting sick if I live near a dairy?

Dairy workers have a greater chance to become ill from contact with dairy-related microorganisms than do community members. At farms and dairies, most cases of infectious disease are spread by direct contact with a sick animal or animal manure. The chance of becoming ill from pivot irrigation with dairy wastewater is unknown. Although some bacteria and viruses can remain viable after aerosolization, there are other factors, such as drying and ultraviolet radiation from the sun, which reduce the viability of the organisms. One could imagine a human who had direct contact with the

wastewater could be exposed to a disease-causing organism. Some design features that can reduce the chance of disease spread are creating buffer zones (setbacks) and windbreaks around irrigated areas to reduce the chance of human contact. If wastewater somehow made its way into an untreated drinking water source, there could be potential for contamination with microorganisms (e.g., a shallow private well that is not treated before use).

What types of pollutants may be found in the air surrounding dairies?

Air quality data for dairies is quite limited because there are very few monitoring programs for this type of industry. Some states use local controls such as siting, set backs, and zoning to deal with air quality issues in communities living near dairies.



Dairy operations can increase dust generation, thereby degrading air quality. Dairy dust is typically comprised of large particulate matter. There may be from 15 - 70 pounds of dust produced per head per year. Breathing this dust may cause asthma exacerbation and worsening of other existing respiratory diseases.

Another potentially harmful component of dairy dust is bioaerosol matter. Bioaerosols are particles of biological origin suspended in air. These particles can include pollen, microorganisms, or products of bacteria or fungi. Dairy confinement buildings may have high concentrations of bioaerosols and may cause health problems for dairy workers. There has been little study of the effects of inhaled bioaerosols in community settings. Although bioaerosols are known allergens that cause problems in people with asthma, allergies, and other existing respiratory problems the amount of microorganisms suspended in air is seldom high enough to cause disease in a healthy person.

Dairies smell bad. Are there any health problems associated with the smell?

Most odors associated with animal manure are from the breakdown of organic matter. Ammonia and hydrogen sulfide are two important sources of dairy odors. Eye, nose, and throat irritation, congestion, headache, nausea and diarrhea, cough, shortness of breath, chest tightness, mood

alteration, and psychological stress are the most common health complaints in communities with dairy odors. Researchers are unsure whether the symptoms are caused by chemical or biological components of the odor or whether psychological stress or “environmental worry” contributes to physiological reactions, which then produces health problems.

What are some steps I can take to protect my health?

- Test well water annually
- If you have allergies, run a HEPA filter in your home
- Work with local officials on zoning ordinances

How are dairies regulated? Information from NMED

- NMED permitting & regs.
- Manure management