

Water Quality Guide for Livestock and Poultry

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Good quality water, in adequate supply, is essential to the health and proper growth of animals. The amount of water consumed by animals varies with the species, growth stages of the animals, and during pregnancy and while nursing.

Some of the most common water contaminants affecting livestock production include:

- high concentrations of minerals (excess salinity),
- nitrogen (nitrates and nitrites),
- bacterial contamination,
- algal growth (blue-green algae), and
- accidental spills of toxic materials (fertilizer, petroleum and pesticides, etc.).

To evaluate water quality, begin by testing water from private wells, ponds and other private sources. This should be done annually.

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In animals, blood and tissue tests may be needed to determine if animal health problems are caused by the consumption of contaminated water. For information or assistance regarding tests, contact your veterinarian, county Extension agent or the Texas Veterinary Diagnostic Laboratories in College Station or Amarillo.

See the table on the next page for the maximum contamination level of harmful substances in water.

References

- Faries Jr., Floron C., J.M. Sweeten and J.C. Reagor. (1998) *Water Quality: Its Relationship to Livestock*. Texas Agricultural Extension Service, L-2374.
- National Academy of Sciences. (1974) *Nutrient and Toxic Substances in Water for Livestock and Poultry*. Washington, D.C.
- Runyan, C. and J. Bader. (1995) *Water Quality for Livestock and Poultry*. New Mexico State University, Guide M-112.

Maximum Contaminant Level¹ of harmful substances in water for livestock and poultry

Substance	MCL (mg/l) ²	Comments
Arsenic	0.20	Increased levels can reach chronic toxicity.
Boron	5.00	Slows growth and causes weight loss in cattle. Edema and inflammation in legs occur at high levels.
Cadmium	0.05	Causes anemia and reproductive problems.
Chromium	1.00	Causes skin and soft tissue problems.
Copper	0.50	Ruminants are susceptible to copper toxicity.
Flouride	2.00	No MCL exists, levels under 2.0 mg/l recommended.
Lead	0.10	Affects pregnant goats and poultry egg production.
Mercury	0.01	Causes severe poisoning at elevated levels.
Nitrate-N	100	No MCL exists, levels under 100 mg/l recommended for nursery piglets.
Nitrite-N	10	No MCL exists, levels under 10 mg/l recommended for nursery piglets.
Salinity	Less than 1,000 1,000-2,999 3,000-4,999 5,000-6,900 7,000-10,000 10,000 or more	Low levels cause no serious harm. Causes mild diarrhea in animals not accustomed to this level. Poor water for poultry. Satisfactory for livestock but temporary refusal to drink and diarrhea may be a concern. Unsatisfactory for pregnant or lactating animals or poultry. Avoid if at all possible, especially during hot temperatures. Older animals may tolerate under less stressful conditions. Avoid under all conditions.
Zinc	25	Dietary supplement. Levels higher than 25 mg/l are common in diet.

¹MCL, the upper limit of contamination at which water is considered safe

²mg/l = milligrams per liter, may also be reported as ppm (parts per million)

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