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Interpretation of Water Analysis for Livestock Suitability

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Sample No._____

General Guide to the Use of Saline Waters for Livestock and Poultry[1]

Total soluble salts (TDS) content of waters, mg/L or ppm[2]	Comments
___Less than 1,000	Relatively low level of salinity. Excellent for all classes of livestock and poultry.
___1,000-2,999	Very satisfactory for all classes of livestock and poultry. May cause temporary and mild diarrhea in livestock not accustomed to the water or watery droppings in poultry.
___3,000-4,999	Satisfactory for livestock, but may cause temporary diarrhea or be refused at first by animals not accustomed to the water. Poor water for poultry, often causing watery feces, increased mortality, and decreased growth, especially in turkeys.
___5,000-6,999	Can be used with reasonable safety for dairy and beef cattle, for sheep, swine, and horses. Avoid use for pregnant or lactating animals. Not acceptable for poultry.
___7,000-10,000	Unfit for poultry and probably for swine. Considerable risk in using for pregnant or lactating cows, cattle in confinement, horses, or sheep or for the young of these species. In general, use should be avoided although older ruminants, horses, poultry, and swine may subsist on them under certain conditions.
___Over 10,000	Risks with these highly saline waters are so great that they cannot be recommended for use under any conditions.

[1] Water Quality Criteria 1972, EPA, Washington, D.C.
[2] "Milligrams per liter" (mg/L) is the same as "parts per million" (ppm).

Guide to the Use of Waters Containing Alkalinity for Livestock

___ Water with an alkalinity over 1000 mg/L (ppm)[3] is considered unsatisfactory for livestock.

[3] "Milligrams per liter" (mg/L) is the same as "parts per million" (ppm).

Guide to the Use of Waters Containing Nitrates for Livestock and Poultry[4]

Nitrate-nitrogen (NO_3N) content, mg/L or ppm[5]	Comments
___Less than 100	Experimental evidence indicates that this water should not harm livestock or poultry.
___100 to 300	This water should not by itself harm livestock or poultry. If hays, forages, or silages contain high levels of nitrate, this water may contribute significantly to a nitrate problem in cattle, sheep, or horses.
___Over 300	This water could cause typical nitrate poisoning in cattle, sheep, or horses, and its use for these animals is not recommended. Because this level of nitrate contributes to the salt content in a significant amount, the use of this water for swine or poultry should be avoided.

[4] Olson, O.E., R.J. Emerick, L. Lubinus. Nitrates in livestock waters. PS603, Cooperative Extension Service, SDSU, Brookings.
[5] "Milligrams per liter" (mg/L) is the same as "parts per million" (ppm).

Guide to the Use of Waters Containing Sulfates for Livestock and Poultry

Sulfate (SO_4) content mg/L or ppm[6]	Comments
___Less than 1500	No harmful effects except some temporary very mild diarrhea near upper limit.
___1500-2500	No harmful effects except some temporary diarrhea. In cattle, this water may contribute significantly to the total dietary sulfur intake.[7,8]
___2500-3500	Poor water for poultry, especially turkeys. Very laxative, causing diarrhea in livestock that usually disappears after a few weeks. In cattle, this water may contribute significantly to total dietary sulfur intake.[7,8]
___3500-4500	Very laxative. Not recommended for use for pregnant or lactating cows, cattle in confinement, horses, or sheep. Unacceptable for poultry. In cattle, this water may contribute significantly to the total dietary sulfur intake.[7,8]
___Over 4500	Not recommended for use under any conditions.

[6] "Milligrams per liter" (mg/L) is the same as "parts per million" (ppm).
[7] Note: The suggested maximum concentration of sulfur in the diet of cattle to prevent polioencephalomalacia is 0.4% (4000 mg/kg or 4000 ppm) on a dry matter basis. Divide sulfate content by 3 to convert to sulfur content, e.g., 3000 mg/L S04 = 1000 mg/L S.
[8] Loneragan, G.H., D.H. Gould, R.J. Callan, C.J. Sigurdson, D.W. Hamar. 12-1-98. Association of excess sulfur intake and an increase in hydrogen sulfide concentrations in the ruminal gas cap of recently weaned beef calves with polioencephalomalacia. JAVMA 213(11).

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