

acute toxicity studies by Littlelyke and Horst. The consistency of the data between herds and comparing the composite data to the acute toxicity is evidence for chronic toxicity. The lack of soft tissue calcification may be explained by the presence of  $2.4 \times 10^6$  IU of Vitamin A and the deficient supplementation of minerals and protein. The severe anemia may be due to either Vitamin D or Vitamin A toxicity or protein and/or phosphorus deficiency. Iron deficiency was determined not to be a problem because of adequate iron content in bone marrow specimens.

The immediate and obvious question because of widespread Vitamin D<sub>3</sub> supplementation is "how much is too much." Continuing studies in field problem herds have revealed that when 80,000 IU of Vitamin D<sub>3</sub> are fed daily and injections of Vitamin D<sub>3</sub> are administered, variable hypercalcemia, hyperphosphatemia and anemia have been observed along with feet and leg problems and above average mortality rates. The problems have as a clinical observation been relieved when vitamin supplementation was reduced to recommended levels.

## Salt Deficiency, Iodine Toxicity and When You Say "It Must Be The Feed" You May Have To Say It In Court

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Salt deficiency is a problem that should not occur because it is the cheapest ingredient in the ration, costing about 1 cent/cow/day. We have encountered several herd complaints which have had salt deficiency as the primary cause of production decline or loss. The reasons given include:

- 1) Salt will corrode the mixer grinder.
- 2) The water supply contains enough salt.
- 3) I thought a tablespoon of salt was adequate if I fed salt free choice.
- 4) To avoid udder edema.
- 5) I was told there is adequate salt and mineral in the protein supplement.
- 6) Errors in mixing or deletion of a portion of the amount recommended.

The major problem in these instances is to convince the individual that salt deficiency will affect milk production. The NRC requirement for salt for lactation is .46% of total dry matter. The thumb rules that have been used for decades are: 1) 1% of the concentrate (a bit less in high producers, over 50% concentrate); 2) 3-4 oz./head/day in total mixed rations; and 3) 4 oz. is  $\frac{1}{2}$  cup of salt (1 tablespoon is 0.5 oz.).

In several herd investigations we have measured both serum using the metabolic profile test and urinalysis including sodium determinations and creatinine for estimation of fractional excretion. Serum sodium concentration be up to 8 times more than the human requirement in 1 quart of milk. Most fluid milk markets have a self-imposed restriction on iodine content, however, it is not readily known to what extent it is monitored. Cases of iodism in man due to high dietary iodine have not been identified in the United States.

### **When You Say It Must Be in the Feed, You May Have to Say It in Court**

Litigation is one way for farmers to recover losses from disease or nutritional imbalance. There are many ways to approach the issue, but one way is to avoid quick statements about problems unless the situation is absolutely unequivocal. This means that you *must* rule out all of the other possible causes of the problem encountered or the logic must be absolute. The approach I have generally taken is to contact the feed companies or farmer's nutritionist as soon as there is a hint of a problem involving them. If there is a specific recommendation made by an individual a frank but courteous discussion confrontation should be made immediately to discuss or correct any erroneous advice. We are all capable of making mistakes! Since production loss is usually the bottom line, immediate correction should be made to minimize continuing losses. Mostly the legal profession comes out ahead in these cases, however, there is a great deal of preparation time in lawsuits that no one sees unless you have been involved directly. It would certainly be better if the parties involved could somehow solve their own disagreement, however, phoney or unfounded claims must be sorted out too. This is when you as the farmer's advisor are the most vulnerable (want to be overly helpful). Sometimes there is no answer or the problem has too many plausible etiologies. Poor management, mud, defective equipment or cows, and oversold or overpromoted products or concepts are a few of the sources of misunderstandings that lead to litigation.