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Labeling Requirement and Additional Information Regarding Biosolids Containing Molybdenum

1. Labeling

According to 310 CMR 32.40 (4):

"Sludge containing molybdenum shall be accompanied by a written label or bill of lading that states the following: "This product contains molybdenum. While the regulatory standard is generally protective, under certain site conditions, if used on soils growing crops that will be used to feed ruminant animals (e.g., cattle, sheep and goats) there is a small risk that molybdenosis could occur. This risk is greater for alkaline stabilized biosolids. Animal managers are advised to refer to additional information on the site conditions of concern and management options at https://www.mass.gov/doc/labeling-requirement-and-additional-information-regarding-biosolids-containing-molybdenum." A statement indicating whether the biosolids have been alkaline stabilized shall also be included."

This requirement is for Type I sludge per 310 CMR 32.51 (d) and for Type II and III sludge per 310 CMR 32.52 (8).

2. Additional Information

Ruminants (e.g. cattle, sheep and goats) are the animals most sensitive to molybdenum (Mo) toxicity, molybdenosis. Mo toxicity in ruminants is largely attributable to Mo induced copper (Cu) deficiency and can cause a range of health effects including changes in coloration and other coat characteristics, loss of weight, decreased milk production, decreased fertility and potential effects on the immune system. Use of biosolids containing Mo up to 40 mg/kg is unlikely to result in toxic Mo levels in ruminant forage in most circumstances. However, in certain situations, added Mo could lead to a small risk of Mo reaching levels in forage that could cause molybdenosis in ruminants following bulk biosolids applications. These situations are where the receiving site exhibits one or more of the following characteristics: habitually wet soils; a soil pH > 6; low bio-available copper; and/or high preexisting concentrations of Mo. In such situations, forages, in particular those predominated by legumes, may accumulate

sufficient Mo and insufficient copper following applications of biosolids to cause Mo related health effects in ruminants. Mo toxicity can be prevented by monitoring these animals for early signs of Mo toxicity and/or assessing forage copper:Mo ratios. In situations where the forage copper:Mo ratio is low (below a ratio of 3-4) or where signs of Mo toxicity or copper deficiency are noted, consideration should be given to supplementing the ruminant diet with copper. Copper supplementation is an effective treatment and can prevent or reverse adverse health effects in ruminants attributable to excess forage Mo. However, copper supplementation should be conducted only when needed as excess dietary copper can also cause adverse health effects in cattle.