ITMs Versus OTMs - What Does it Mean to the Animal?

There are many schools of thought on the relative value of inorganic trace minerals (ITMs) versus organic trace minerals (OTMs) in dairy production. Inorganic trace minerals consist of a metal (zinc, copper, manganese, etc.) bound to an inorganic element (sulfate, chloride, oxide or carbonate). These bonds are typically either too weak or too strong to support optimal absorption of the trace mineral by the animal. ITMs with weaker bonds (copper sulfate) easily dissociate from the mineral in GI tract conditions and can be tied up by antagonists, reducing absorption. ITMs with excessive bond strength like copper oxide have the opposite effect. The trace mineral is never released from the ligand and is missed at the site of absorption. Over-formulation is often used with ITM supplementation in an effort to compensate for these limitations. In OTMs, the trace mineral is bound to an organic ligand through covalent and coordinate covalent bonds. The strength of these bonds varies between different types of OTMs demonstrating that there are significant differences among OTMs that should be considered when supplementing.

Once the value of an OTM is understood, it is key to further understand the differences in OTM classes and the relative bioavailability of each class. Chelates are considered the most bioavailable trace mineral form on the market. The organic ligand is bound to the mineral in a ring structure that protects against early disassociation and antagonisms, but releases the trace mineral at the site of absorption. MINTREX® chelated trace minerals ensure delivery to the small intestine trace mineral receptors for optimal absorption, leading to greater overall utilization by the animal.