Toxicological data to perform a hazard analysis are still lacking for the majority of nanoparticles. It is of most concern that nanoparticles make, due to their minute scale, their way deeper into the human body, in ways we do not understand, and producing impacts we have not yet realized and are perhaps currently unable to detect. There are major gaps in knowledge with regard to the behavior, fate and effects of nano-sized material via the gastro-intestinal route. Most concern exist over insoluble, indigestible and biopersistent nano-particles. It is not known to what extend nano-sized materials bind to other food components, agglomerate, or remain as free particles in the gastro-intestinal tract. As with other food components interaction of nano-sized materials is very likely to change during passage through the gastro-intestinal tract. Nano-sized material may also affect gut function or gut microflora. An important issue is whether the nano-sized material is differently digested, absorbed and metabolized compared to its macro-scale equivalent. If absorption and bioavailability of the nano-sized form is improved, there might be a need to establish new accepted daily intakes for these materials in the nano-form. Furthermore, nano-sized materials might facilitate uptake of other substances from the intestine. Last but not least only little information on migration of nanoparticles from food packaging or surfaces used in food storage and processing into food products or beverages is currently available. Since the toxicological properties of nano-particles are dependent from many factors such as chemical composition, shape, surface chemistry, surface charge, aggregation, it is at least a challenge to generalize about health risks associated with exposure to nanomaterials. Therefore, each nanomaterial must be assessed individually and all material properties must be taken into account in safety assessment. Applications of engineered nanomaterials in food and beverages however, are very likely to involve the use of relatively small amounts of the nanomaterials and only food-grade materials will be applied in foods and beverages.