



The controversy

Unfortunately, the idea of using soil amendments or fertilizers that contain or are primarily derived from human waste is repulsive to many people. Not surprising since from the time childhood memories start forming we have been told that human wastes are anything but useful. Reinforcement of this idea continues from peers, the media and our own intuition for the rest of our lives. As our culture has changed from agrarian to industrial and to consumerism, nearly all need for and knowledge of the fertilizer value of manures, especially human manure has faded. The risk and benefit of recycling human waste is better understood by science than at any time in the past but feared more by the general public.

For many decades the scientific storehouse of knowledge has grown, each study adding to that understanding. Risk from pollutants and pathogens have received most of the scientific study (The EPA guide to Biosolids Risk Assessment). The results have led to industrial pretreatment programs and pathogen treatment methods that have made the use of treated human waste from most sewage treatment plants and septic tanks safe for the individuals that do the work and the general public. If it is used according to regulations that are based on its composition and stabilization level. In other words, if biosolids pose any pathogen risk, however small, its use must be regulated. If it poses no risk of pathogens or from pollutants of concern, then it can be used by the general public just like most other manure derived products. Over application of plant nutrients, nitrogen and phosphorus in particular, contained in any manure derived material always poses a risk to surface and ground water. We must all be careful to use soil amendments or fertilizers properly, whether from organic or inorganic sources.

A common concern expressed by some about our practices is the repeated application of our "lime stabilized biosolids which are derived primarily from septage" (septage biosolids) to the same land year after year. It may be helpful to understand that prior to the development of chemical fertilizers; animal manures were used on the same ground for generations. Treated septage biosolids are very similar but much safer than other animal manures. Septage biosolids contain the same plant food and soil building organic matter but the septage biosolids do not pose a risk from pathogens such as e-coli and other bacteria that are common to animal manures. The lime stabilization treatment method that we use kills all bacteria, viruses and parasites.

Another concern relates to heavy metals, whether they are present and at what concentrations. Heavy metals in



domestic septage are very low because they are not typically washed down drains or toilets of households. The Environmental Protection Agency has standards for "Exceptional Quality Biosolids" which assures that yearly applications of these biosolids at fertilizer rates will not degrade the soil for any crops. Our septage testing for over twenty years has always found the metals of concern well below EPA limits.

Another common concern is the appearance of large volumes applied to the land. Septage biosolids contain all essential plant nutrients but at very low concentrations because most of it is water. Much of the septage biosolids that are land applied by Biorecycling are even more dilute because most of the solids are removed by thickening and dewatering. The solids are then diverted to other uses and locations. From a hydraulic loading perspective, we usually apply less than the equivalent of 3 inches of precipitation spread out over several months. The rainfall at each of our sites averages over 40 inches per year so the additional liquid can be easily accommodated.

At Biorecycling we control the quality of septage coming to us. We have contracts with the suppliers that limit deliveries to domestic septage i.e. septage that is produced by households or commercial sources that do not introduce other substances that would degrade the septage quality. A sample is collected from each treated batch of septage. It is then mixed with samples from prior batches. Twice each month a sample of the mixed samples is sent to the lab for analysis of nitrogen which is the most limiting element. Twice each year mixed samples are sent to the lab for analysis of regulated metals that determine if the limits of exceptional quality biosolids have been exceeded.

Late each summer or early fall we monitor the land we fertilize for all major plant nutrients and metals. The soil nitrate levels determine if our application rates are too high or low for the crops grown and the soil types. The ground and surface water at our sites is also monitored for changes that would likely occur if application rates were too high.