PROPOSED METHOD FOR CLEAN WATER BY ADDRESSING NITROGEN CONTRBUTION TO SURFACE WATER CONTAMINATION

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Kansas has serious issues as the result of bio-waste generated by livestock feedlots. The Environmental Protection Agency (EPA) has documented the situation as early as 2004. Action on these issues has languished due to a lack of potential economical solutions. The EPA reports that antibiotics used as growth stimulants and for improved health have the potential of creating superbugs. Large numbers of livestock amassed in a single location produce an enormous amount of waste daily. The stockpiles of manure harbor nitrogen in the form of ammonia that can pollute surface and ground waters before the dried manure is spread on crop lands. The liquid waste ammonia can potentially enter the water shed and stimulate algae growth in surface water. Ammonia that seeps into ground water causes issues with nitrogen pollution of the ground water supply. The proposed solution is economical and will eliminate multiple EPA concerns of surface water and ground water pollution. Eliminating the ammonia migration would improve Kansas State Water quality (both surface and ground). This proposed solution would be to treat the waste via a two-step process. First the ammonia is isolated and then the remainder of the biosolid would be converted into crude oil via hydrothermal liquification (HTL). The HTL process would sterilize all biological components in the waste. The ammonia would provide power for the HTL process with possible excess power that would be considered carbon free electricity. The bio crude would also be considered Zero Carbon fuel since it is produced from recycled carbon.