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A promising future for treated biosolids on the farm

Application of municipal biosolids on farmland has traditionally presented some nuisance problems. But a new treatment process offers an array of nutrients for farm use without the risk

by MARY BAXTER

A few years ago, Grey County farmer Karl Chittka toured an unusual demonstration plant in Guelph, where sludge from the city's wastewater plant was processed into a fertilizer. On its website, Lystek International Inc., the company that developed the process, describes it as akin to pasteurization, "involving a combination of heat, alkali, and high-shear mixing." What comes out the other end is "a high-solid, pathogen-free, nutrient-rich, liquid bio-fertilizer product."

Chittka had used applications of municipal sludge, also known as biosolids, before, and he'd liked the results. Not only were the applications economical (they were free), but he immediately saw a difference to soil health. "It's a way of getting organic material back into the ground," he says.

There were concerns, too. While the biosolids underwent some processing, not all of the pathogens were destroyed, and he worried about what other materials might find their way into the mix from municipal sewers.

The Lystek product, on the other hand, really captured Chittka's interest. Yes, he had to pay for it – \$35 per acre. But, like the original biosolids treatments he used, the Lystek product would boast an array of nutrients only without the risks, and the company was prepared to apply it themselves.

This spring, he will add Lystek's fertilizer on 55 of his 300 acres. In doing so, he may well be embracing a type of product poised to become a new standard for biosolids.

Rick Mosher, Lystek's president and CEO, says it's always been recognized



Karl Chittka feels the process used by Lystek International has taken the risk out of spreading its biosolids derived fertilizer product.

that municipal biosolids have value for farm fields, but come with some baggage. "There were some nuisance orders, there were some issues with application or poor handling." The introduction of standardized non-agricultural source provincial rules and regulations, which came into effect in 2011, was a step forward, he says.

Even with those controls in place, he predicts the use of biosolids like the ones

Chittka first applied is on the wane. The future for biosolids lies in the further processed products, such as that which Lystek is making, he says. "We basically took all the positive sides, augmented it, improved the fertilizer value and got rid of some of the issues."

Because it's considered a fertilizer, which is regulated by the Canadian Food Inspection Agency, Lystek's product also eludes complicated provincial regula-

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Lystek plant, above, at Dundalk is expected to receive its fertilizer certification from the CFIA this spring.

tion. Mosher anticipates the agency will issue registration for its Dundalk plant by spring. (The registration is based on facility rather than product). The plant began operation last year. The company also has its patented technology at work near Kingston, in Guelph and in St. Marys. A facility in Elora is being built and commissioned this spring and another is being built in North Battleford, Saskatchewan.

An increasing number of Ontario municipalities are further treating biosolids, using processes such as lime or alkaline stabilization, pelletization and biodigestion, confirms Michael Payne, owner of Black Lake Environmental Ltd. in Perth and a former provincial environmental management specialist.

Payne says further treatment may help facilitate acceptance of broader use of biosolids in agriculture because it eliminates some of the commonly perceived problems, such as concerns about pathogens and odour.

“But of course there will always be those individuals in the public who won’t accept land applications of that



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Scientific research has largely demonstrated the safety and benefits of biosolids applications, says Michael Payne.



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material regardless of how you do it, period," he says.

For the most part, scientific research has demonstrated the safety and benefits of biosolid applications, Payne says. However, he acknowledges there's still work to be done on assessing the impact of some of its contents, such as pharmaceuticals and personal products that have more recently sparked public concern. A national effort currently underway seeks to address that knowledge gap.

Launched in 2013, the three-year initiative, says a notice on the Canadian Water Network website, "will provide the most comprehensive investigation to date on the impacts of municipal biosolids land application on living organisms."

There are three areas of study: the impact of land-applied biosolids on biota and soil-plant relations; biosolids' chemical make-up both before and after alkaline stabilization, composting and resource recovery treatment processes; and the impact of the treatment strategies on reducing the concentration of what it terms "emerging substances of concern" – components like antibiotics and personal care products.

Partners in the initiative include several Canadian municipalities, among them Toronto and the Halton Region as well as Environment Canada, the Ontario ministries of the Environment and of Agriculture and Food and private companies such as Black Lake Environmental and Lystek.

The initiative plans a workshop to present its findings to end-users in 2014. As well, presentations to stakeholders, including the farm community, will be co-ordinated.

For Chittka, however, the proof is already in the soil. The first time he added biosolids to his farm, his dew worm population exploded. Of course, that presented an entirely new challenge – having to fend off the hundreds of gulls that followed behind while he plowed. **BF**