Martin Schwalbe

Bill Van Heyst and Mike Thomson

deadstock on air quality

were found after a complete cycle with little odour being generated," notes Van Heyst. Overall, the performance of the flux chamber design displayed promising results regarding air flow patterns. Further testing is required to differentiate more fully between the various gasses. Extended sampling periods, a wider range of flow rates, and recovery tests for different gases will assist in determining optimal operating conditions.

Although cremation is not yet recognized under Ontario's Dead Animal Disposal Act, cremation may be added as an accepted disposal method for all livestock species, provided that it does not have an adverse effect on the environment. "Thus," Van Heyst says "the environmental impacts, particularly air quality impacts, of on-farm dead animal cremation units need to be fully characterized in order to demonstrate that they can meet the current Ontario environment ministry guidelines and Canada-wide standards."

In order to introduce realistic emission standards for commercial on-farm cremation units, a test protocol was developed to assess the emissions levels of a comprehensive set of target pollutants. Van Heyst and his colleagues tested four different commercially available cremation units using both pigs and chickens. Contaminants identified as a potential concern were nitrogen oxides, sulfur dioxide, carbon monoxide, total suspended particulates, acid gases, metals, volatile organic compounds, and semi-volatile organic compounds.

Van Heyst says the results of the cremation studies illustrate that the different designs of commercial cremation units produce varying emissions of target pollutants. While it was not possible to determine the differences in pollutant concentrations resulting from cremation of pig versus chicken carcasses, the team was able to obtain an indication of the emissions of contaminants and their variability with sufficient data to assess cremation's impacts on air quality.

rain and snow. Carcasses were added to a woodchip base and some space was left between the carcasses to allow sufficient air circulation and reduce pockets of anaerobic decomposition. Alternating layers of carcasses and wood chips were then placed in the bin, finishing with about 60 centimetres of wood chips. Mechanical turning to circulate air into the piles was performed once pile temperatures dropped steadily below 48 C, a temperature at which thermophillic composting is no longer sustainable.

Preliminary results show that composting is an effective method for deadstock disposal. "Almost no animal remains

The results indicate that, if best management practices are implemented – such as the operation of a secondary burner or after-burner at a prescribed temperature and time – then the resulting environmental impacts are minimized. "Upset conditions, such as frozen diesel lines, can dramatically increase the emission of some toxic pollutants such as dioxins and furans," he notes.

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