

TOAST™ WINS THE FEEDLOT ODOR WAR

Recently patented, TOAST™ (Tertiary Oxygen Activated Sludge Treatment) is the world's most advanced waste water treatment system for use on all livestock liquid manure feedlots and meat packing plants.

The system treats livestock waste with anaerobic and aerobic microbes and converts it to a low-viscosity effluent from which approximately 80% of the odor, and virtually all (99.7%) dangerous gases and vapors have been permanently removed.

In 1994 the Agricultural Utilization Research Institute (AURI) funded a successful initial product assessment of the system. Currently, the University of Minnesota is evaluating TOAST™ on a swine nursery farm in southern Minnesota. The project is a cooperative venture between the Minnesota Department of Agriculture, the University of Minnesota, and *Engineering Concepts*.

Considering the mounting resistance and hostility to conventional livestock operations, TOAST™ offers farmers an environmentally attractive and socially acceptable solution to livestock waste. TOAST™ offers a 21st Century bridge from the best wastewater treatment and chemical engineering industry technology to the agricultural industry.

TOAST™ features the highest quality industrial equipment with a life expectancy of 20-30 years (equal to the barn life). The effluent texture has a low viscosity and is easily drained. Unlike conventional methods, TOAST™ retains the nitrogen and phosphorus as solids in the effluent (over 50%), thus reducing ground water and air pollution.

TOAST™ is fully automated for remote operations and has small space and low maintenance requirements. Livestock operations using TOAST™ will have reduced ventilation and heating requirements, and will not need slotted floors. Field application is greatly simplified.

TOAST™ has a decontaminating effect with bacterial pathogenic agents (salmonella) and a disinfecting effect on viruses. Because the effluent from TOAST™ contains high quality protein without nitrates it has the potential for refeed.

TOAST™ is a trademark of Engineering Concepts



YOUR BRIDGE TO THE 21ST CENTURY

- For use on all livestock liquid manure feedlots and meat packing plants.
- Relatively odor-free operation (80% odor reduction).
- Eliminates 99.7% toxic gas emissions.
- Converts manure sludge into free-flowing liquid.
- Effluent buffered to pH neutral.
- Prevents groundwater contamination by phosphorus.
- Eliminates pathogens.
- Does not require chemical or other additives.
- Effluent retains high ammonia content; prevents ammonia from escaping into the atmosphere.
- Converts low quality manure into high quality protein feed.
- Small space, low maintenance and energy requirements.
- Automated for remote operation.
- Extremely competitive cost.
- Operates under severe weather conditions.
- Creates renewable lagoon cover.
- Suitable for operation near urban areas.

TOAST™ IS THE ANSWER!



Engineering Concepts has specialized in creating imaginative, innovative process solutions to technical problems using state-of-the-art chemical engineering. TOAST™ is a revolutionary aerobic treatment system using biological oxidation to convert ammonia and organic matter (mostly manure) to carbon dioxide, water, and microbe cells. It is environmentally safe and cost effective. The current conventional systems technology requires one thousand times more land area, one hundred times more power, and ten times more capital equipment expenditures. Conventional systems are environmentally and economically unsuitable for most livestock operations.

TOAST™ is the only system in the world capable of providing economically feasible aerobic treatment for liquid manure.

University of Minnesota olfactometer test results:

	TOAST™ 100% AEROBIC ENVIRONMENT	STANDARD SEPTIC BASIN/LAGOON ENVIRONMENT
Effluent	• 358-508 units; H2S 40 PPB.	• 1310-2853 units; H2S 19000 PPB.
Barn Air	• 47-267 units*	• 340-480 units.
Lagoon	• 607 units; H2S 170 PPB.	• 5000-10000 units.

TOAST™ revolutionizes conventional technology:

	TOAST™ 100% AEROBIC ENVIRONMENT	STANDARD SEPTIC BASIN/LAGOON ENVIRONMENT
Odor	• 99.7% less H2S, 80% odor reduction.	• Emits dangerous lethal gases.
Quality of Odor	• Healthy farm odor.	• Offensive, pernicious odor.
Additives	• None	• Chemicals and dilution water.
Texture	• Low viscosity, easily drained, solids will separate.	• High viscosity sludge is difficult to remove.
Nitrogen	• No nitrification. Buffered to pH neutral.	• Nitrogen loss into atmosphere contributes to ozone depletion.
Phosphorus	• Phosphorus held as solid near root area.	• Contributes to groundwater pollution and algae growth.
Pathogens	• Salmonella-free.	• Uncontrolled.
Basin	• No volume loss due to additives. Drains easily.	• Additives require basin increase.
Operation Life	• 20-30 years. Industrial design.	• Subject to failures.
Animal Environment	• Quiet, easily herded.	• Angry, irritable, distressed.
Human Environment	• Provides comfortable working environment.	• Provides stressful, unhealthy working environment.
Washability	• Cleans off skin easily. Useful for washdowns.	• Odor remains on skin for days. Manure is health hazard.

* University of Minnesota olfactometer unit is the volume of fresh air per volume of odorous sample.

For additional information call *Engineering Concepts* (507) 625-8830

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