



Using Sand and Gravel Filters to Treat Food-Processing Wastewaters Reduces Sludge, Improves Quality of Discharge Water

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Food-processing wastewaters are two to 10 times stronger than domestic wastewater and conventional wastewater treatment technologies are not necessarily the best way to deal with these strong wastewaters.

Conventional wastewater treatments have extremely high costs associated with operation and even higher costs when used for processing wastewaters. These costs can range anywhere from \$150,000 to \$500,000 per year and cover everything from electricity to chemicals and specially trained technicians. Even with the high costs, large volumes of sludge, which need to be disposed of, will result. At the same time, effluent or discharge quality is often poor. And if there's a malfunction—fines can be \$10,000 per day or more. Alternative methods of treating this wastewater are essential to keep food production costs lower while producing cleaner effluents that meet Ohio stream discharge standards.

The scientists looked at cheese-processing wastewater using gravel and sand filters known as aerobic fixed-film treatment units. These units work by moving the wastewater (by gravity) through different levels of sand and gravel. Microorganisms colonize in the gravel and sand particles and consume the pollutants in the wastewater. The scientists found that the fixed-film units were able to effectively renovate the strong wastewaters of the cheese processor. ►

Although the fixed-film treatment units take up more space, construction costs for both conventional and fixed-film units are similar. However, the gravel and sand filters run virtually by themselves without the need for costly electricity, chemicals, or technicians. Since the units run almost on their own without a good deal of mechanical mechanisms involved, malfunctions are much less likely to occur. Also, with the fixed-film treatment units, the large volumes of sludge in need of disposal are eliminated while the resulting effluent or discharge water is cleaner. The savings potential for processors, consumers, and the environment can be quite large.

Scientists are currently looking at the effectiveness of the fixed-film units with the wastewater produced in a turkey-processing operation. They have received \$50,000 for the study.

OBJECTIVES

Identify a safe, cost-effective way of treating the strong wastewaters resulting from food-processing activities.

ACHIEVEMENTS

This research showed that using a fixed-film sand and gravel treatment unit rather than conventional wastewater treatment could effectively treat the wastewater produced from a cheese-processing plant. The fixed-film units reduce costs associated with operation and maintenance while producing a higher quality, cleaner effluent.

THE FUTURE

Since the units have proved effective in handling wastewater from a cheese-processing plant, scientists are now looking at the wastewater produced in a turkey-processing operation. Scientists have received \$50,000 to study the effectiveness of using these fixed-film units in that setting.

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