Results of a test to determine the effect of Micro-Solve on standard bacterial cultures are shown in Table 1. Pseudomonas aeruginosa, a common inhabitant of soil and sewage, was chosen to represent aerobic sewage treatment. Escherichia coli, the intestinal commensal of warm-blooded animals, was chosen to represent anaerobes (it is a facultative anaerobe) and indirectly anaerobic sludge digestion. The test was done primarily to determine differences that could be obtained in a standardized laboratory assay, which may be used to evaluate the toxicity of the product, and an assay designed to simulate actual application of the product. The standard bacterial cultures chosen for the test are commercial products commonly used in laboratory quality control procedures, and would logically be cultures of choice in any laboratory assay. Pseudomonas aeruginosa, American type Culture Collection (ATCC). Number 27853, and Escherichia coli, ATCC Number 25922, were originally obtained from a clinical specimen and a soil sample, respectively. Both were obtained from Difco Laboratories, Detroit, MI, as Bactrol disks, a lyopilized commercial product.

Dilution of Micro-Solve in water were made to encompass the concentrations encountered in application of the product. Dilutions of Micro-Solve were made in water alone to maximize contact with the bacteria.

After the specified contact periods, aliquots of the suspensions were removed and pour-plated in Standard Methods Agar to determine numbers of viable organisms. A control suspension was tested concurrently, which consisted of bacteria and water without Micro-Solve.

As shown in Table 1, Micro-Solve in water completely inhibited both bacteria as

compared with water alone. Their results were not surprising as it should be stressed that the experimental conditions were not similar to practice as were the conditions of the earlier experiment where sewage treatment organisms (mixed bacteria) were seen to increase in numbers in the presence of Micro-Solve. Thus we recommend that any evaluation of Micro-Solve, or any similar product, should be based on tests that simulate use rather than on artificially imposed laboratory conditions. Sewage treatment microorganisms are not expected to be exposed to Micro-Solve, or similar products, in simple water solutions. Sewage microorganisms are protected by sewage solids and solutes, which include complex lipids, carbohydrates, and nitrogenous compounds. The increase in numbers of sewage bacteria seen in the previous experiment, which was designed to simulate practice, indicated that conditions favorable for bacteria were enhanced by the presence of Micro-Solve. Increased numbers may have results from increased availability of nutrients.

Another test using the standard laboratory bacteria will be done to determine if sewage sludge solids and grease will protect these bacteria from the effects of Micro-Solve as was apparent when sewage sludge microorganisms were tested.

Results of a test (described in work proposed) to determine the dissolving capability of Micro-Solve for sewage grease are shown in Tables 2 and 3. In Table 2, it can be seen that a 1% solution of Micro-Solve dissolved 85% of the 5 g (wet weight) sample of sewage grease in 24 hours. Lower concentrations were not effective in 24 hrs. After four days contact, from 50% to 90% of the sewage grease was dissolved even at lowest the concentration of 0.05%. The increased dissolution seen over a 5-day period indicates that water was not limiting at 99% of the solution, and approximately 94% relative to the sewage grease on a wet weight basis. Twenty-four hours contact time probably is not practical in application of the product in the field, but then

85% dissolution of grease probably is not required to efficiently remove it from the sewage system. Micro-Solve also could be applied at concentrations greater than 1% directly to the grease cake to facilitate its removal more rapidly. The 1% concentration in this test was used only because that would result from applying the product full-strength to the fluid in a sewage lift station well. Direct application of Micro-Solve to the grease cake, of course, would result in faster, more thorough dissolution.

After five days of exposure to Micro-Solve, the remaining solid sewage grease was recovered from the test solution and measured. These results are shown in Table 3. In the 1% solution of Micro-Solve, the 5 g test sample of sewage grease had virtually disappeared. The grease that remained as solid material was more than 95.5% water (or volatile material) as compared with the original sample, which was 43% water or volatile material. Higher dilutions of Micro-Solve gave less dissolution of grease, but even at 0.1% concentration, 50% of the grease had dissolved. The apparent greater efficiency of the lower concentration, 0.05%, may only indicate that the sewage grease cake was not homogenous and that the individual 5 g sample originally contained more moisture, thus giving the appearance of dissolving to a greater extent.

TABLE 1. Survival of Aerobic and Facultative Anaerobic Bacteria in Solutions of Micro-Solve in Water, Plate Counts/mL recovered.

Dilution MS: Water	Test Organism	Tc	Time Exposure To	T24	T48
1 : 160	P.aeruginosa	0	0	0	0
	E. coli	0	0	0	0
1 : 1000	P.aeruginosa	0	0	0	0
	E. coli	0	0	0	0
	P.aeruginosa				
0 : 1	E. coli	0	800(120)	680(170)	>30,000
		0	570(140)	7700(2700)	>30,000

TABLE 2. Dissolution of Sewage Grease by Micro-Solve.

Estimated % dissolved

Dilution	Time Hours 24	96	120
1 : 100	85%	90	95
1 : 160	ND*	90	90
1 : 200	ND	90	90
1 : 1000	ND	75	75
1 : 2000	ND	50	50
0 : 1(Water Control)	ND	ND	ND

* Not Dissolved

Table 3. Sewage Grease Remaining
after 120 Hrs. Shaking in
Micro-Solve Solutions (5g Wet Weight, Test Sample).

Dilution, in Water	Weight Remaining g. Wet Wt.	Dry Wt.	Wt.Remaining % of Test Sample	% Solids Of Wet Weight	% Dry Weight Of Test Sample
	0.25	<0.05	5.0	<0.5	0*
1 : 100	1.0	0.5	20.0	50.0	17.5
1 : 160	1.0	0.5	20.0	50.0	17.5
1 : 200	2.5	1.5	50.0	60.0	52.6
1 : 1000	2.0	1.0	40.0	57.0	35.0
1 : 2000	3.5	2.0	70.0	57.0	57.0
0 : 1 (Water Control)					

* Less than 0.05g remained; virtually the percentage was nil.