

*Pollution Prevention Pays in Food Processing*

## Liquid Assets for Your Dairy Plant

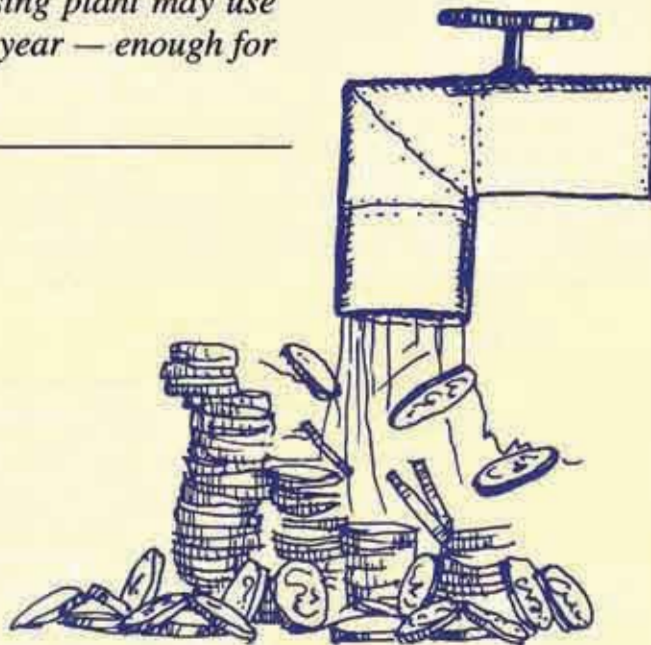
*Did you realize that your dairy processing plant may use more than 50 million gallons of water a year — enough for a town of 1,000 people?*

### Saving Water Can Save You Money

Water has many uses in dairy processing — cooling, washing, heating, and cleanup. Many plants use more than 4 gallons of water to process each gallon of milk.

Water and sewer service costs have been rising rapidly, and these increases can cut into profits. Using water more efficiently, however, can help to counter these increases. Realizing the potential for savings, some plant managers have cut their plant's water use to as little as 1 gallon of water per gallon of milk processed.

Cutting water use has a double benefit: it not only lowers the plant's water bill, it can also help to cut sewer charges because most municipalities compute those charges as a percentage of the metered water usage. In addition, reducing water use will reduce sewer surcharges if the waste concentration does not increase proportionately.



### Protecting Your Water Supply

Cutting costs is not the only reason to take water conservation seriously. Some dairy plants are located in communities without an abundant water supply. Because it takes large amounts of water to process dairy products, a plant can have a major effect on the local water supply even under the best of circumstances. During a drought the impact can be disastrous.

In 1986, the southeastern states were stricken by the worst drought in nearly a century. Had the situation worsened, dairy processors would have faced water limitations, production cutbacks, and even temporary plant closings. By reducing water consumption now, processors can increase their chances of getting through the next drought without having to curtail operations.

## Saving Money by Saving Water: An Example

How much could a dairy plant save by reducing its water use to 1 gallon of water per gallon of milk processed? To find out, let's consider two plants that each process 75,000 gallons of milk per day. Each pays a total of \$1.90 per thousand gallons for water and sewer services. However, plant A uses 1 gallon of water per gallon of milk processed while plant B uses 4 gallons.

Water and sewer costs for the two plants are shown in the table. Because plant A uses 3 gallons of water per gallon of milk *less* than plant B — a savings of 225,000 gallons per day — its operators can put \$427.50 more in the bank *each day*, a total savings of \$106,875 per year. In effect, processor B is pouring that amount of money down the drain.

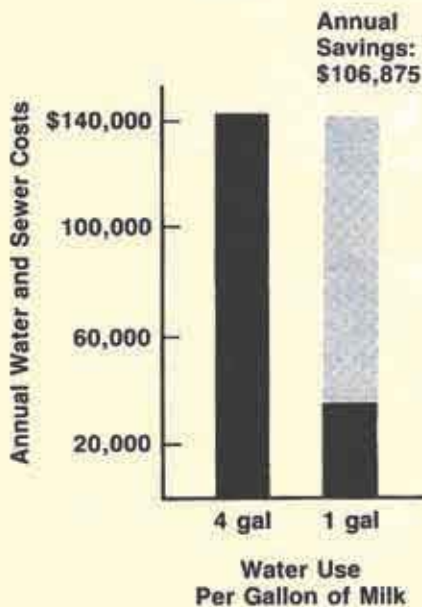
**Water and Sewer Costs and Savings for Two Dairy Plants Processing 75,000 Gallons of Milk Per Day**

	Plant A	Plant B	Savings
Water use per gallon of milk (gallons)	1	4	3
Daily water and sewer costs . . . . .	\$142.50	\$570.00	\$427.50
Annual water and sewer costs . . . . .	\$35,625	\$142,500	\$106,875
Cost per thousand gallons of milk . . .	\$1.90	\$7.60	\$5.70

If you know your local water and sewer charges, the amount of water used in your plant to process a gallon of milk, and your plant's daily production, you can use the following worksheet to estimate the amount you would save by reducing water usage to a target value you select.

**Water and Sewer Costs and Savings for Your Dairy Plant**

	Current	Target
Enter <b>current</b> and <b>target</b> water usage per gallon of milk (gallons) . . . . .	_____	_____
Enter daily production in gallons: _____		
Multiply <b>current</b> and <b>target</b> water use values by daily production to determine daily water use . . . . .	_____	_____
Divide daily water use by 1,000 to determine daily water use in thousands of gallons . . . . .	_____	_____
Enter your combined water and sewer cost per thousand gallons: \$ _____		
Multiply your daily water use (in thousands of gallons) by your water and sewer cost to determine your daily cost . . . . .	\$ _____	\$ _____
Enter the number of days your plant operates each year: _____		
Multiply the <b>daily</b> water and sewer cost by the number of days your plant operates each year to determine your <b>annual</b> water and sewer cost . . . . .	\$ _____	\$ _____
Subtract the annual cost for your <b>target</b> use from the annual cost for your <b>current</b> use to determine your potential annual savings . . . . .		\$ _____



## You CAN Save Water and Money

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A study of the U.S. dairy industry showed that it is possible to reduce water use to less than 1 gallon per gallon of milk processed. Challenge and encourage your employees to reach that goal in your plant. Consider establishing a reward and personal recognition program for employees who contribute significantly to water conservation. Some helpful ideas are given in the box.

*Managers set the pace for water conservation and waste reduction. Your interest and involvement will let everyone in the plant know that reducing water use is important. There's no better time than now to take a close look at your plant and encourage your employees to work with you in conserving water and cutting waste.*

***Be considerate. . . and be prepared. Start conserving water now.***

### Water Conservation Tips

- Always treat water as a raw material with a real cost.
- Set water conservation goals for your plant.
- Make water conservation a management priority.
- Install water meters and monitor water use.
- Train employees how to use water efficiently.
- Use automatic shut-off nozzles on all water hoses.
- Use high-pressure, low-volume cleaning systems.
- Don't let people use water hoses as brooms.
- Reuse water where possible.
- Minimize spills of ingredients and of raw and finished product on the floor; always clean up the spills before washing.



Helping people put knowledge to work.

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*Food Science Extension, North Carolina State University, Campus Box 7624,*  
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*Other publications of interest to dairy processors include:*

*Cut Waste to Reduce Surcharges for Your Dairy Plant (CD-26)*  
*Water and Wastewater Management in a Dairy Processing Plant (CD-28)*  
*Dairy CEOs: Do You Have a \$500 Million Opportunity? (CD-29)*

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