

United States  
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# Making Your Wastewater Treatment Plant Work

Good Operation  
and Maintenance  
is the Key





ENVIRONMENTAL PROTECTION AGENCY

**W**astewater is water that we have used for various purposes—in our homes, in schools, in hospitals, and in industrial plants.

It is polluted water. Human and industrial wastes—bacteria, chemicals, and viruses—must be removed before the water can be safely returned to rivers and lakes.

To make this water reusable we have systems for cleaning it. In most communities, wastewater drains into sewer systems which carry it through a complex system of pipes to a plant for treatment.

We must clean used water. Our Nation has grown. There are more people and more industries who need and use water. As a result, our water pollution problems have increased, and more treatment plants are needed to help solve them. That's why Congress authorized some \$18 billion to help communities like yours to build new plants or to improve the ones they have.

This new construction will help, but it is not enough. We must also make sure that treatment plants work properly, and that they are kept in good repair.

And that's where you can help. As a community resident and as a taxpayer, you have a responsibility to make sure your tax monies are well-spent, and that the waterways in your area are kept clean—clean enough for swimming and for fishing.

## **What is a Treatment Plant?**

A wastewater treatment plant is basically a big water-cleaning machine. It consists of a series of tanks, screens, filters and other devices to separate out the wastes. Like other big machines, the plant can't run itself; it needs people who can operate and maintain it. It requires a planned program of operation and maintenance; operation to make it work; maintenance to keep it working. That's O&M, and it is the key to making your wastewater treatment plant work efficiently.

Machines and plants must be looked at in terms of O&M. If a system can't be operated effectively, or if it is difficult to keep in operation, it can't do its job of cleaning water very well. So when we talk about O&M at wastewater treatment facilities, we're really

getting into the nitty-gritty of water pollution control. In reality, we are in a war against polluted water and the treatment plant is our best weapon.

It's a war in which we can't call a truce—we are all using more and more water and polluting it in the process. That means we'll continue to need well-run, well-kept treatment plants to clean our water. This is especially true since the law now requires more and better wastewater treatment to protect the Nation's health and welfare.

The law—the Federal Water Pollution Control Act Amendments of 1972—is a tough law. Its goal is to end all discharges into the Nation's waters by 1985. An earlier deadline of July 1983 calls for water clean enough for recreational uses and for the protection of fish and wildlife.

It is to achieve these goals that Congress authorized vast sums of your money to help build new wastewater treatment plants and to improve existing ones.

But construction is only part of the answer. To make sure we have clean water and are getting our money's worth out of the plants we have or that we are building, we must make sure they have good operation and maintenance.



## **How does a Treatment Plant Work?**

A wastewater treatment facility is designed to treat a specific amount of wastewater each day. In a town of 20,000 people, for example, the plant may be designed to treat a flow of about two million gallons per day (2mgd). This figure is called the plant's design flow. More important are the plant's design criteria which tell us what percentage of waste the plant should remove from the water.

According to a survey\* published by the U. S. Environmental Protection Agency (EPA), however, as many as one-third of the treatment plants may not be operating as they should. The survey showed that the major problems were inadequate operation and maintenance of the facilities. The most common faults were:

- improper operation of machinery by inadequately trained operators
- inadequate laboratory tests of wastewater at various stages of processing, making it hard to find out if the process was working properly
- unsatisfactory maintenance of machinery and equipment
- mechanical breakdowns

Unless a plant is poorly designed or is overloaded with more wastewater than it is designed to handle, these problems usually can be solved by improving its O&M.

## **What Makes a Plant Work**

An efficient plant, one which has good operation and maintenance, is a plant that has well-trained people—operators and maintenance men, laboratory technicians and chemists, managers and supervisors. The more skilled and motivated they are, the cleaner our waters will be, and that is the real payoff.

What makes people work well? They need training; they need the right tools and equipment; they need decent pay; and they need good working conditions.

Giving them these things costs money, but not providing them really costs more—much more considering the immense cost to the

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\*Statistics were based on an inspection of a limited number of Federally funded plants after they had begun operation.

environment. Why? Because we can't get our money's worth out of the treatment plant unless we're willing to make investments in people. A community may spend millions to build a new plant, then give it a yearly budget so small that adequate operation and maintenance is impossible.

Look at it this way: most of us would not think of buying a new car and then driving it without periodic tune-ups, oil changes, and lubrication by trained mechanics. If we didn't, we know that one day the car would simply grind to a halt, its engine and our investment a total loss.

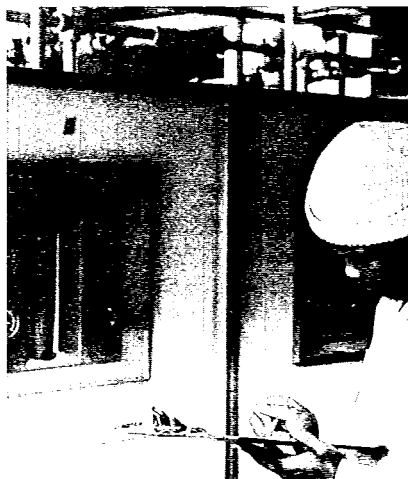
Each of us has a similar vested interest in making sure that the wastewater treatment plant in our community has similar attention and care so that it functions the way it was designed.

You have a large investment in your local treatment plant. And that plant, like your car, needs to be serviced by trained people to protect that investment.

## **An Important Job**

What helps people to do a good job? They need to know that their job is important and that their work is appreciated.

Employees in a treatment plant understand that their job is important, but they may wonder how much it is appreciated. They perform a vital public service, but more often than not receive little or no recognition for it. Because they wear no uniform and because the plant is often on the outskirts of the community, they are invisible.



We must recognize that the men and women who fight pollution are protecting our health and welfare as much as policemen who fight crime and firemen who fight fires. We must support these pollution fighters in their work or the national war on pollution may be lost.



## **What Can You Do?**

The best and first thing you can do is to join with your local treatment plant staff in its fight against pollution. This requires very little—only that you take an active interest in what is going on at the plant, especially in operation and maintenance.

## **How Do You Start?**

A good source of information is the discharge permit that the treatment plant is required to have. The permit is issued under the National Pollutant Discharge Elimination System (NPDES), a cooperative State-Federal effort required by law. It is a legally binding agreement to comply within a certain time with the State and Federal discharge requirements. It lists what and how much the plant can discharge into waterways. It also contains plant design data, water quality data, and schedules of compliance.

It is not a license to pollute; it is a mandate to perform.

It is an enforcement tool, and periodic monitoring and reporting are required to see that plants are actually performing as promised.

By reviewing the permit document you will be able to judge how well your plant is doing its job. Copies must be made available to you. You can get a copy of the permit from your treatment plant staff or from an EPA Regional Office.

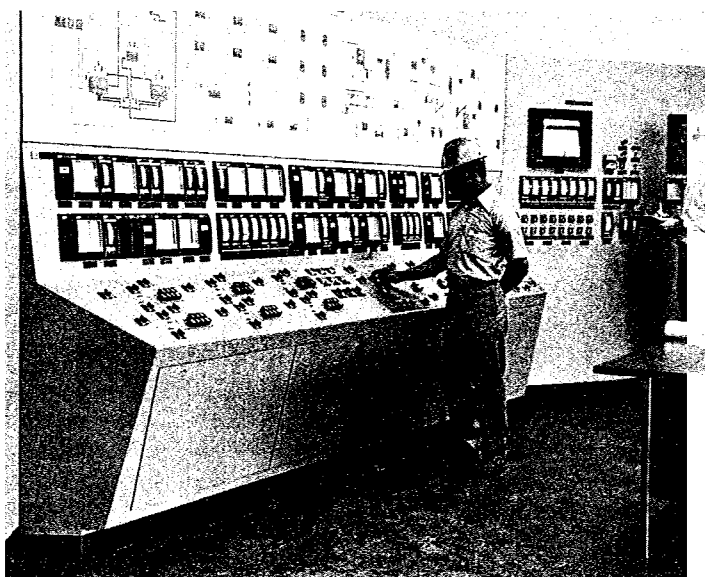
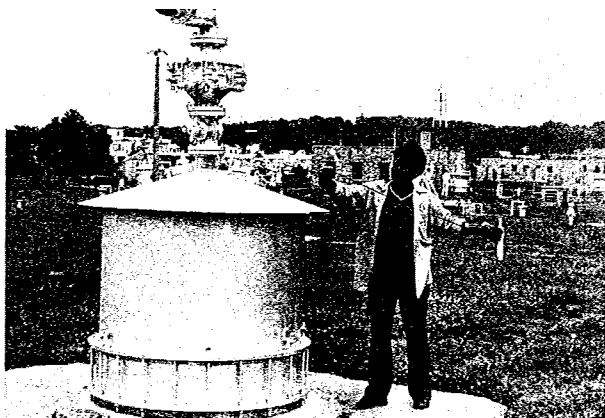
But don't overlook the best source of O&M information—the local plant superintendent and members of his staff. They know better than anyone else what it will take to improve operation and maintenance at their plant.

## **You Are Important**

You are a voter and taxpayer—that makes you important. It means that members of the plant staff, the people who make the budgets and arrange the priorities for water pollution control in your community, are responsible to you for their actions. They work for you and they know it.

When you and other citizens begin to pay attention to your wastewater treatment plant, local officials will respond. They welcome citizen support and interest. That's why you are the most effective anti-pollution force of all.





## **What Questions Should You Ask Your Local Officials About O&M?**

Here are a few:

***What kind of performance record does the plant have?*** The plant's design criteria set the standards; how far are we from achieving or exceeding those standards?

***What types of wastes are treated by the plant?*** Does runoff from rain and snowfall pass through? Are there any special problems with industrial wastes?

***What, if any, mechanical problems affect the plant's performance?*** Are these frequent problems?

***How large is the plant's staff?*** Does the plant have a full time operator? Who actually hires plant personnel? What qualifications are required? Are operators certified by the State? How are employees trained for their jobs? Are opportunities for continuing training provided? Compare skills needed by the technical staff with skills of other community service occupations. What are the differences in salaries?

***Does the plant have its own laboratory?*** What kind of sampling and testing program exists? The NPDES permit system requires frequent self-testing and reporting; how is this requirement being met?

***What type of maintenance system is in use?*** Is it a preventive system, or does it merely respond to breakdowns?

***Is there an operation and maintenance manual written especially for the plant that is actually used by the operators?***

***Who sets the yearly operation and maintenance budget for the plant?*** Is money collected for water service and sewer-use charges set aside to finance water quality activities, or is it placed in the community's treasury for general use?

***Visit your wastewater treatment plant and ask yourself the following questions:***

How does the plant look? Is it kept clean? Are the grounds landscaped? Is the general environment attractive? Is it a desirable place to work?

What you learn can provide the basis for a long or short-term program or campaign toward achieving our clean water goals.

