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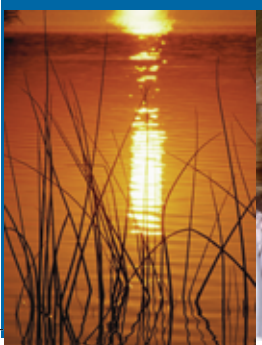

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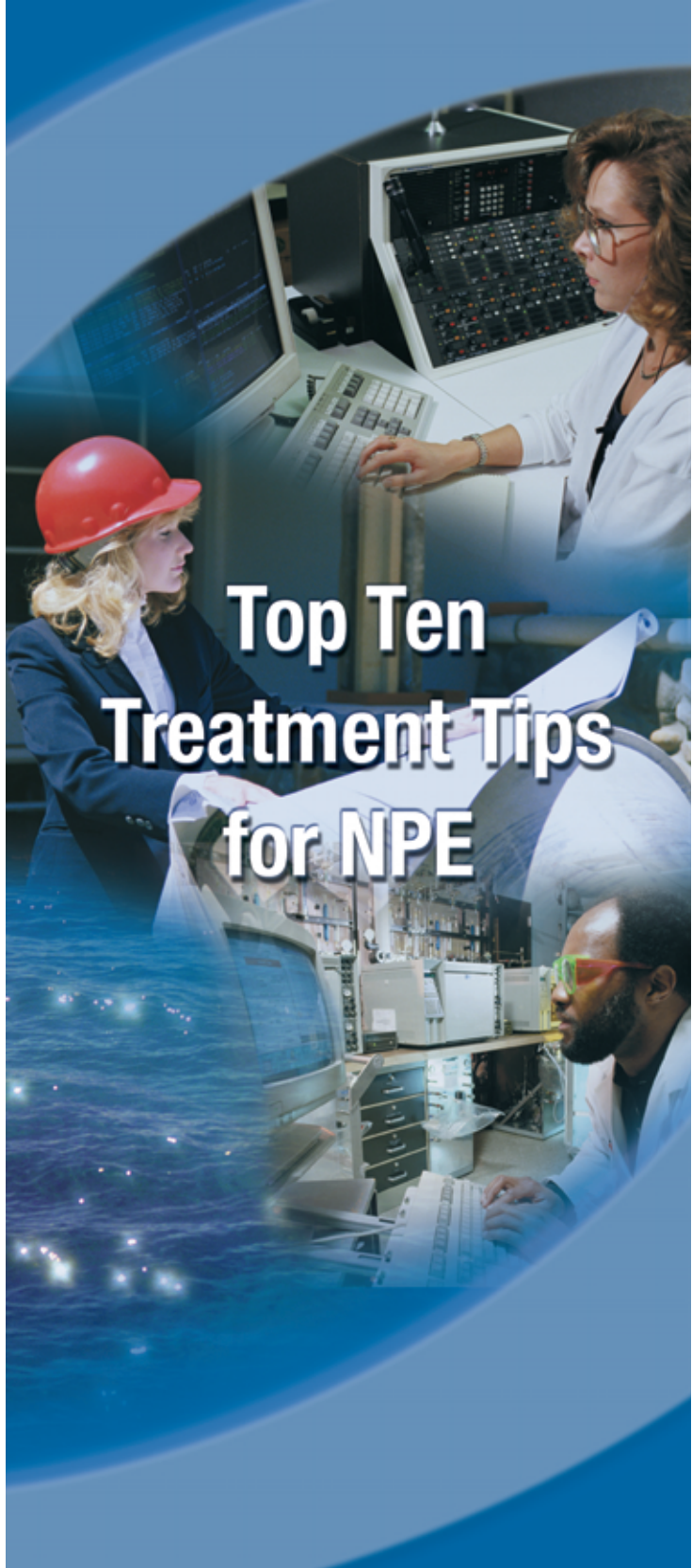

Top Ten Treatment Tips for NPE

WHY NPEs?

Over the past 40 years, nonylphenol ethoxylates (NPEs) have emerged as a preferred ingredient in a wide variety of applications ranging from detergents to water-borne paint. They are also used in the manufacture of paper and textile products.

To promote responsible environmental management of NPEs, the APE Research Council (APERC) is developing an Environmental Management Program to provide manufacturers, processors and users of these products with guidance on pollution prevention, control and treatment. NPE treatment does not require extraordinary measures. Here are the "Top Ten Treatment Tips for NPEs":

10 *Treatment Is Good*

Activated sludge plants can treat NPE surfactants when influent levels are up to 10 ppm. Plants can become acclimated to higher levels (50 ppm and above). Removal rates are typically 95%. Effective treatment will generally ensure compliance with environmental water quality guidelines for NPE — and many other chemicals.

9 *The Fundamental Things Apply as Time Goes By*

Even if the plant is designed right, monitoring and controlling normal operating parameters (DO, nutrient levels, sludge age) to maintain optimum treatment is very important.

8 *If It Hurts When You Do That, Don't Do That*

Treatment plants can only handle what they're designed to handle. Antifoam is useful in responding to surfactant spills or surges. It's best to evaluate antifoams in the lab first.

7 *Equalization: Timing Is Everything*

Batch discharges can cause short-term disruption — so consider using equalization to prevent overloading. This can be the cheapest solution over the long run.

6 *Get the Scoop on All Your Soap*

NPEs are not the only surfactants in your wastewater influent — other types also can create foam and affect treatment plant performance.

5 *Pretreatment Is Good*

Pretreatment, by distillation, flotation, flocculation or membrane processes, is very effective at reducing the level of NPE and other chemicals in wastewater before biological treatment.

4 *Pollution Prevention Is Better*

Consider reuse of wastewater, reducing quantities of chemicals, scheduling production to avoid clean-ups, and other pollution prevention basics.

3 *The Solution to Pollution Isn't Necessarily Substitution*

Substituting for NPE can create problems. Alternative surfactants should be evaluated thoroughly for their effects on product quality, wastewater load, treatment plant performance and costs.

2 *End-of-Pipe Dreams*

Tertiary treatment, such as chemical oxidation or carbon adsorption, can remove trace levels. But these techniques have relatively high costs and should be needed only in cases where the preceding tips are not sufficient.

1 *Keep Informed*

APERC and your NPE supplier are willing to help you with your questions regarding treatment. Check the APERC web site, **www.aperc.org**, or contact us directly for more information.