

Today specially packaged industrial chemical products for consumer use are more and more finding their way into the home market area. The golf industry can also benefit from use of industrial chemicals in the clubhouse, pro shop and on the course to solve some of its unique maintenance and sanitation problems.

Quaternary ammonium compounds

Unlike common household detergents, quaternaries do not contain chlorine, phenol, heavy metals, mercurials or alkalies. They have inherently a high surface activity and when diluted with water, they are chemically stable, odorless and nearly tasteless, except for some bitterness in concentrated forms.

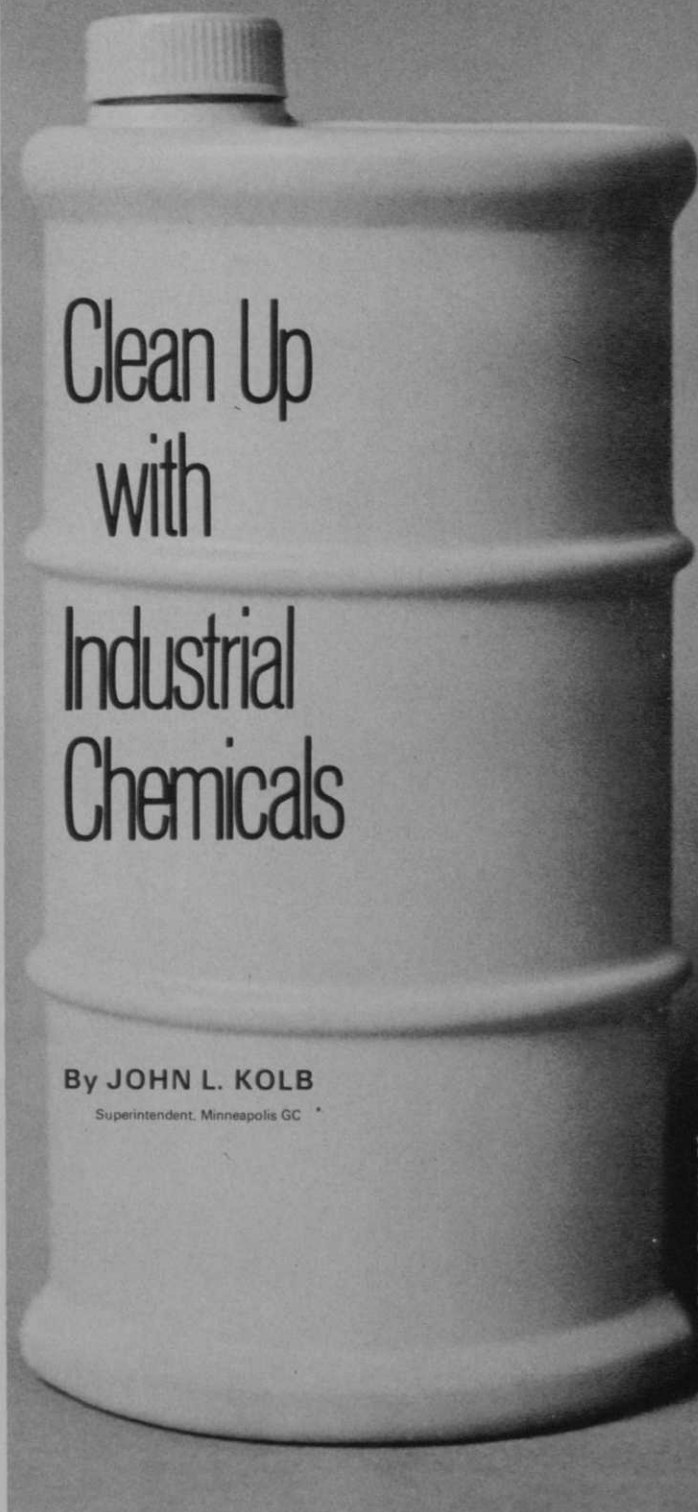
Quaternaries are also intrinsically anti-bacterial. The Food and Drug Administration, while undertaking procedural tests for the United States Department of Agriculture, observed that this compound kills *Eberthella typhosa* and *Staphylococcus aureus* (both pathogenic to man) in dilutions of water. This characteristic makes these compounds suitable in the clubhouse kitchen for washing and rinsing food stuffs. (Food and drug laws should be checked, however, before using these compounds.) And they can be used also in the dish and silverware washers as well as on the swimming deck and in the shower rooms to prevent infectious fungus diseases. They remain stable even in steamy, humid temperatures.

Course superintendents might use these compounds as a ball washer detergent and algicide to prevent the odoriferous growth of algae and anaerobic bacteria. By adding a quaternary ammonium compound to the water, ball washers can go two to three times longer without changing water than they can with present detergents. However, no chemical yet developed can keep grass clippings, sludge, mud and other debris from accumulating in the ball washer.

Quaternary materials are no more corrosive to metal than water is. Nor is there injury to the skin or membranes. The combination of exceeding low toxicity and rapid anti-bacterial action provides a safe, but effective way of sanitizing water tanks and water systems on courses where these systems are drained for the winter. Drained water tanks should be scrubbed down immediately after draining to remove the non-toxic algae and sludge that have accumulated on the tank walls. Before reactivating in the spring, the tank should be

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These hard-working compounds can be big time and labor savers whenever a club is confronted with tough cleaning, sanitizing and pest control problems. They are effective, safe and reliable



PHOTOGRAPH BY LEONARD KAMISLER

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rinsed and scrubbed with a quaternary compound which will guarantee against contamination by *Eberthella typhosa*, *Escherichia coli* or coliforms. (Again, all these bacteria forms are pathogenic to man.) An added advantage of this material is that it is tasteless, and treated equipment

will not impart odors or flavors to the water.

Emulsifiers

Emulsifiers are one of a group of materials, along with household detergents and wetting agents, that alter the attractive forces of water on various surfaces with which the water comes in contact. Emulsifiers have an affinity for a wide

range of materials both organic and inorganic, and after coming in contact with these materials, develop an affinity for water. Thus, clear, fresh water will practically dissolve them or take them into suspension. Every golf course superintendent should have these materials on hand to degrease his motors and engines. Emulsifiers are excellent for removing the tar-like material on grass cutting equipment caused by plant cell-sap. It will remove all the accumulated dirt that collects around leaky seals or oily areas of a machine.

In the past the superintendent left his equipment in a semi-clean state until the end of the season and then steam cleaned or soaked the machine parts in ordinary solvent after dismantling it. Both of these processes often brought dismay because the dry plant cell-sap resists dissolution by both these processes.

Now the superintendent can have sparkling new-looking equipment all season long by making up a concentrated solution of emulsifier cut to about these ratios: six parts water to one part emulsifier. The solution is sprayed on equipment with an ordinary three-gallon chemical or pack sprayer. After setting for a few minutes, the material can be rinsed off with water from a garden hose.

Smart golf professionals may want to borrow this material to clean golf clubheads since grass cell-sap often resists ordinary solvents.

Gopher control

What is to be proposed here is not practical for huge areas, but it is most practical for a 200-acre plot such as a golf course.

The Minneapolis area abounds in grain elevators and big money had been spent on research to rid elevators of rodents and insect pests. One company came

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up with a very volatile material made up of 80 per cent carbon tetrachloride plus 20 per cent carbon bisulfide (carbon disulfide). This material, known as Grain Fumigant, can be purchased from any elevator supply company in liquid form and is used in the following manner.

Pocket gopher: Using a good probe such as a piece of pipe with a diameter of three-fourths to seven-eighths inches, locate the main runway by probing into the soil 12 to 18 inches back from the mound on the side where the horse shoe like depression is found. Remove the probe carefully to leave a clean hole and pour approximately two plus ounces of liquid into the opening. Then take a fist-full of moist dirt from the mound and plug the probe hole. This one treatment will probably do the job, but on large diggings use two to three probes.

Striped gopher: This strange creature is never quite sure which hole is his home, but if you persistently follow and harass him he will eventually duck into an opening. When he ducks into this opening he usually goes down about eight to 10 inches and then turns around to see what you are going to do.

This treatment is effective only when you have chased or seen a gopher enter a particular hole. When you have found it, pour approximately two ounces of the fumigant into the hole. Then stomp the hole shut.

Carbon tetrachloride is not without its drawbacks. Care should be exercised in spilling and inhaling the fumes. It is also very volatile, and its partner, carbon bisulfide, is foul smelling.

Small hip flasks or other glass containers of this fumigant are carried on fairway and rough tractors as well as the utility cars used by workmen. □