

While Supplies Last ...

**As stockpiles of mercury-based
snow mold controls dwindle,
Northern superintendents
hustle to find alternatives**

PHOTOS BY BRIDGET FALBO

BY BRIDGET FALBO

When the Minnesota State Legislature passed a law in 1994 banning the sale of products using mercury, golf courses were especially hard hit — there were virtually no other effective options for controlling snow mold.

The legislation came on the heels of a decision in 1993 by the manufacturers of Calo-Clor, the leading mercury-based fungicide, to cancel the product's federal registration. The company knew any attempt to defend the label against an EPA special review was fruitless.

From that point, the golf course management industry, especially in Minnesota, knew that the end was near for controlling snow mold with mercury-based fungicides.

But now, after five years of university and industry research at golf



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courses, superintendents in the north country have found workable substitutes for the mercury-based products. But the legislation brought about changes in cultural and application practices — and a lot of worry on the part of superintendents who are trying to open courses as early in the year as possible.

“Treating for snow mold is the most critical application a golf course in Minnesota makes all season,” says Dave Krupp, owner of Minneapolis-based Precision Turf and Chemical, and a 26-year industry veteran.

Minnesota’s growing season is short. Successful golf course revenues depend on starting the season early. Outbreaks of snow mold can cause loss of revenue and strain working relationships between superintendents and management. In harsh cases of snow mold, damaged greens might not return to healthy turf until July.

“The main use for (Calo-Clor) was for snow mold on golf course tees and greens,” says John Sierk, pesticide regulatory consultant for the Department of Agriculture in St. Paul, Minn. “Golf course groundskeepers felt it was the most effective alternative.”

Sierk explains that Minnesota law and the federal action banned the sale of pesticides containing mercury compounds, but allowed for their use until stocks were depleted.

“Mercury products were the most efficacious for snow mold control because of their persistence,” Krupp says. “They lasted throughout the long snow-covered season.”

Stockpiling and alternatives

In an effort to keep the ire of club owners and members at bay, some course superintendents stockpiled the fungicides, which was legal, but not in the spirit of the law. A survey by the Minnesota Golf Course Superintendents Association in 1996 revealed that Calo-Clor was used for snow mold treatment two years after its ban.

But many superintendents quit using Calo-Clor, says Ward Stienstra, a recently retired University of Minnesota turf pathologist and a recognized expert in snow mold research. Even though some courses have stockpiles of Calo-Clor, they are using alternative chemicals to treat snow mold, adds Jon Powell, a turf pathologist at the University of Minnesota.

“You can get excellent control with these products as long as they are put down before snowfall,” he adds. Stienstra and Powell agree that the alternatives are successful in treating snow mold. “They have been as good as mercury,” Stienstra says, “although one may argue that we may not have as much residual carryover in the spring of the year.”

He adds that if a course experiences extended snow melt in March, then additional wet snowfall, another application would be necessary to prevent pink snow mold from developing.

Powell says that the change from mercury to alternative chemicals has changed application methods. “[Superintendents] have to make due with combinations of fungicides rather than one applica-

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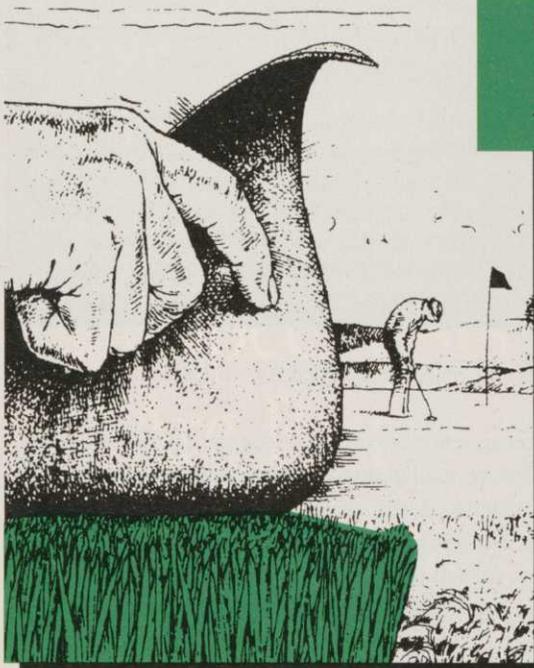
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tion," he adds. The need to combine chemicals has also increased costs to fight snow mold.

Ahead of the curve

Rather than stockpiling, at least one superintendent voluntarily stopped using the mercury-carrying pesticides before the ban went into effect. Jim Nicol, CGCS superintendent at Hazeltine National GC in Chaska, Minn., says he stopped using the pesticides because of perceived concerns about worker health.

Nicol, the immediate past president of the MGCSA, has discovered a reliable alternative method. First, he applies a dormant feeding of Milorganite. Then he applies a tank mix of PCNB with Heritage, a relatively new fungicide.

Prior to the first snowfall, Nicol applies Daconil Weatherstick to the greens and tees. The combination treatment has increased the cost of preventing snow mold, but Nicol said that the few extra thousand dollars spent is worth it.

Although he proactively changed his application technique, Nicol believes the ban was unnecessary because the government hadn't proven that mercury entered lake ecosystems through proper golf course application.

"The MGCSA testified in hearings against the ban for two reasons," Nicol explains. "No investigation had been done to prove it affected ground water, and the high-tech respirators and clothing worn by applicators helped protect them."

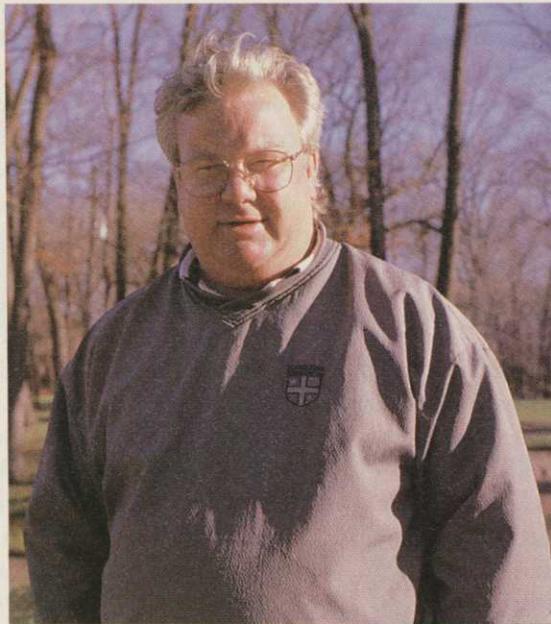
But when the ban went into effect, MGCSA supported the research and use of alternative chemicals.

A little goes a long way

Ed Swain, a research scientist at the Minnesota Pollution Control Agency, also says there's no direct evidence that the use of mercury-containing pesticides cause environmental harm. "But we've made the reasonable conclusion that it contributes to the accumulation of mercury in the environment," Swain adds.

The problem with mercury is that a little goes a long way. MPCA research indicates that about one drop of mercury falls annually on Minnesota lakes through precipitation. But as mercury moves through a lake's food chain and into the tissues of fish, its strength can be magnified up to one million times. That one drop is enough for the Minnesota Health Department to recommend restricting consumption of fish from 90 percent of the 700 lakes that have been tested for mercury.

MPCA scientists believe that most mercury reaches aquatic ecosystems through air pollution, rather than through runoff and ground-



Superintendent Jim Nicol says he stopped using mercury-based pesticides because of perceived concerns about worker health.

water as was assumed at the time of the ban. However, Swain says the likelihood that the mercury could become airborne during application to a golf course supports the original decision.

Coping

Superintendents have found that a combination of enhanced turf management skills and a cocktail of chemical solutions can be successful in controlling pink and gray snow mold. Although the weather plays a major role in snow mold development, proper fall turf-care practices can control pathogens that cause snow mold, Stienstra says.

First, regular sprayer tune-ups and accurate calibration are critical, Stienstra says. Ap-

Snow Mold Field Studies

Field tests at the University of Minnesota indicated that the following two combinations are most effective against snow mold pathogens:

- A fall application of Chipco 26GT at 4 fluid ounces, PCNB at 4 ounces and Daconil Weatherstick at 8 fluid ounces per 1,000 square feet.
- A fall application of Heritage 50wg at 0.4 fluid ounces, Turfcide 400 at 12 fluid ounces (1 gallon per 1,000 feet) both averaged a disease rate of 0%.

In the literature on this study, Ward Stienstra, a recently retired University of Minnesota turf pathologist, warned that an application of products to control pink snow mold may be needed in the spring after snow melt. Course results may vary because of turf composition and weather conditions. (Although Turfcide packaging states to "irrigate it in," these instructions were meant when used for prevention of smut; apply without irrigation for snow mold prevention.)

plication should take place on a dry course and when weather will allow it to dry.

Stienstra urges superintendents to take steps to promote vigorous turf conditions in the fall to ensure healthier spring rebounds. But he cautions that over-fertilization can result in turfgrass continuing to grow and becoming matted under the snow. He recommends mowing well into the fall to counter this.

Lastly, as most superintendents know, well-drained soil with limited compaction increases the health of the plants to ward off disease. (See sidebar above for recommended applications in Minnesota.)

The bottom line

The days of complete confidence in snow mold control are over. But with each passing year, superintendents are gaining new alternatives and insights into the fight against the disease. ■

Falbo is a freelance writer who lives in Albertsville, Minn.