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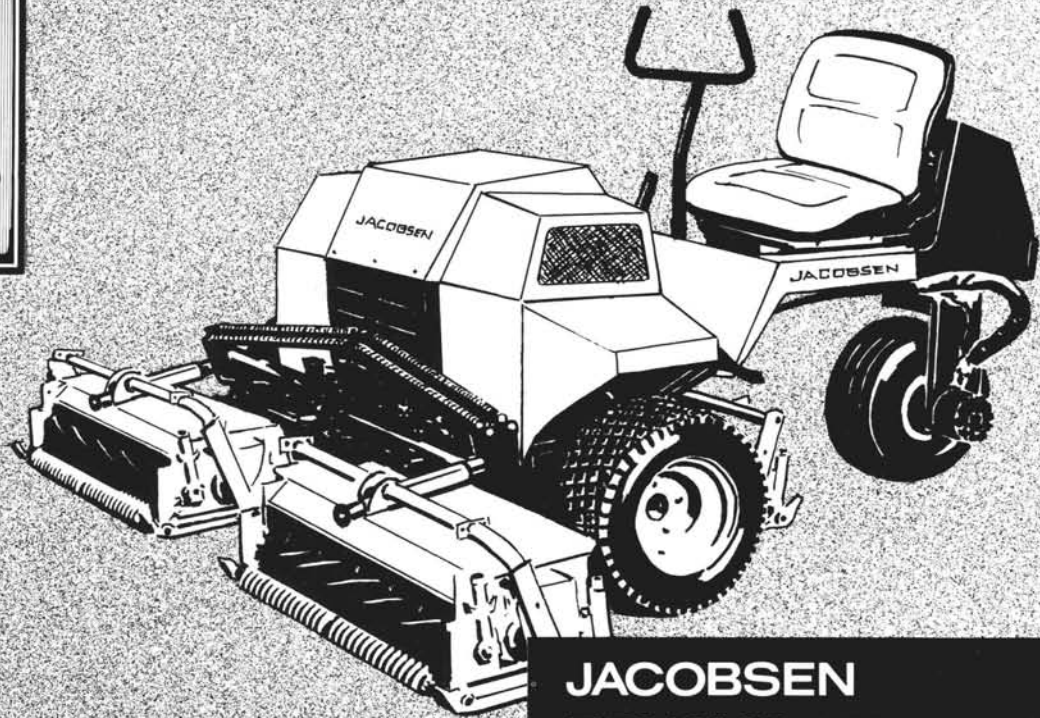
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## Midwest Breezes



## Upcoming Events — Mark Your Calendar

**February 1-8** — GCSAA Conference in Houston

**February 7** — Prayer Breakfast. Rm. 306. Geo. Brown Center at 8:00 a.m.

**March 9-10** — GCSAA & Wisconsin Seminar "Managerial Productivity"

**March 10** — USGA Green Section Conference, Belmont, MI. Call Jim Latham (414) 354-2203.

**March 14** — MAGCS monthly meeting at Nordic Hills

**April 25** — MAGCS monthly meeting at Marriott's Lincolnshire Resort

**May 23** — MAGCS monthly meeting at Silver Lake C.C. Joint Associations.

**June ?** — MAGCS meeting at Lake Shore C.C.

**July 18** — MAGCS meeting at Springbrook C.C. Seniors Day

**August**

**September**

**October**

**November 10** — MAGCS meeting at Lake Barrington Shores



*Can you identify any of these guys? The picture was taken in the spring of 1959! Answer on page 20.*

### "Winter Wishing"

While the Days grow longer,  
And We look towards Spring,  
We Dream those Dreams,  
Of Magnificent things.  
A touch of Spring-fever,  
Is what It's all about.  
While Wishing and Dreaming,  
Ice and Snow will move out.  
Amazing! how Spring-fever,  
Enlivens the mind,  
To Dream all those Dreams,  
New Seasonal kind.

**Kenneth R. Zanzig**

Hospitality room sponsors at the Hiatt Hotel in Houston will be the following: Thursday, February 4th - Turf Products, Ltd. & Chicago Turf and Irrigation; Friday, February 5th - Arthur Clesen, Inc.; and Saturday, February 6th it will be Illinois Lawn Equipment Inc.

The January 11th meeting at Wilmette G.C. had 80 in attendance for a very delicious lunch. Tom Healy from Layne Western gave a talk of winter maintenance of your pumping plants and then Jerry Faubel and Bill Roberts updated us on their committee assignments with the GCSAA.

The seminars held at Pheasant Run in conjunction with the GCSAA & MAGCS were excellent as usual. The turnout was a little less than expected. If you haven't taken any of these seminars, you are really missing out on a fine educational session.

Don't forget to attend the Prayer Breakfast if you are in Houston. This year it is on Sunday and at a little later time than it has been in the past. The coffee and rolls will be served starting at 7:30 a.m. with the session starting at 8:00 a.m. It all takes place in room 306 of the George Brown Center.

**For Sale:** Roseman Hydra-Gang Mowers, Frame, Hydraulic pump, & 11 cutting units. Call (312) 668-3323 Mike or Tony.

We are sad to report that Adolph Bertucci's mother passed away on December 31, 1987.

Marge Meyer (Tony's wife) had a spell in the hospital just before Christmas. But she was able to get home for the holiday and is doing fine at the present time.

Dave Louttit went into the hospital on January 11th with severe back problems suffered when he was moving furniture. Let's hope by the time you are reading this, all is well again.

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**For Sale:** Best Offer on a Jac F-10 Fairway Unit, also a Toro GMIII in good condition is for sale. Call Steve Cummins at (312) 382-3252.

**GCSAA NEWS:** Billboards are to greet travelers on the two main freeways leading from Houston's airports promoting the 59th GCSAA Conference. Smothers Brothers have cancelled out of the conference entertainment and Ronnie Milsap will be performing. Ronnie Milsap is a vocalist, contemporary keyboard wizard and producer.

## Wilmette C.C. Meeting Pictures



*The politicians table with Dudley giving a salute!*



*Tom Healy from Layne Western our guest speaker*



*Bill Roberts, GCSAA Director*



*Jerry Faubel, GCSAA Director*



## Just How Toxic Are the Chemicals We Are Using on Our Courses?

by Paul Sartoretto, Ph.D.

W. A. Cleary Chemical Corp.

For the past fifteen years I have been going around the country speaking at regional or monthly meetings of the Golf Course Superintendents on the subject of tank mixing pesticides with the emphasis on compatibility and avoiding phytotoxicity. There is a relationship between human toxicity and phytotoxicity as you will see, primarily because of the close similarity of the toughness of the epidermis of the grass blade and our outer skin.

The skin of the grass blade has its stomates through which air and water pass in and out. Whereas our skin has pores through which water diffuses.

In my talk I make a general broad statement that all the insoluble pesticides can be tank mixed and sprayed and you will not incur phytotoxicity. The reason is obvious. Even though the insolubles have to be ground down to micron size in order to get them to disperse in water, the micron particles are too large to diffuse through the stomates. They have to be thousands of times smaller, actually molecular in size and in solution to diffuse into the cells of the grass blade.

The same principle applies to our outer skin. The insolubles cannot be absorbed through our pores because the particles are too large, and only the solubles that are molecular in size can diffuse through the skin.

You can take a certain amount of comfort in knowing that you work with a large number of insolubles, and that they cannot penetrate our tough outer layer of skin, and can conclude that epidermal toxicity with insolubles (wetable powders and flowables) is non-existent to a very high degree.

From what you have learned thus far you can see how doubtful the claim was that a golfer died as the result of dermal exposure to Daconil 2787 which is an insoluble and was sprayed on the grass. No way could Daconil have diffused into his body. It could be argued that Daconil vaporized and that he breathed in a sufficient amount of it to poison him. I will now show you how doubtful this mode of toxicity is with respect to Daconil.

Whereas the grass plant breathes through stomates and receives nutrition not only through the stomates but also the roots, we humans breathe through our lungs and receive nutrition through our mouth, and then via the alimentary canal, by digestion into the blood stream. We measure toxicity primarily by the minimum lethal dosage necessary to kill an animal by ingestion. Let us use aspirin as a bench mark to compare with our pesticides. It takes 1750 milligrams of aspirin for every

(cont'd. page 19)



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*Zdzislaw Filary, a visiting scientist from Pozan, Poland, going over the results with Dr. Harry Niemczyk who is on the right.*

## **Movement of Insecticide Residues in Turfgrass Thatch and Soil**

**H.D. Niemczyk, Z. Filary and H. Krueger**

**Department of Entomology**

**Ohio Agricultural Research & Development Center**

**The Ohio State University**

**Wooster, OH 44691**

Formulations of three insecticides were applied September 12 to 4 replicates of plots 10 by 10 ft. located on an Ohio golf course fairway with 0.75 inches thatch and silt loam soil. The purpose of the experiment was to trace the downward movement of recoverable residues in turfgrass thatch and underlying soil.

Isazofos (Triumph) 4EC and 2% granules, isofenphos (Of-tanol) 2 "flowable" and 5% granular were applied at 2 lb. AI/A. Ethoprop (Mocap) 10% granular was applied at 5 lb. AI/A. Liquid treatments were applied with a pressurized sprayer that delivered 4 gal. of spray/1000 sq. ft. Granules were applied with a drop spreader. Immediately after treatment, each plot was hand-irrigated with 200 gal/1000 sq. ft. The test site had no irrigation system but rainfall (including 0.75 inches, 2 days posttreatment) occurred regularly throughout the sampling period. A standard 1.0 inch soil probe was used to obtain samples of thatch, the first 1.0, and second 1.0 inches of soil from each plot at 2, 5, 15, 29, 57 and 91 days posttreatment. Samples were kept frozen at -18°C until analyzed by GLC for recoverable residues.

Analysis showed that at 2, 5, 15 and 29 days 97% + of recoverable residues from all treatments were found in the thatch (Table 1). At 57 and 91 days, 90% + of residues were still in the thatch. Mean residues in the first 1.0 inch of soil never exceeded 0.4 ppm. Despite water solubilities of 750, 150, and 20 ppm for technical ethoprop, isazofos and isofenphos, respectively, immediate posttreatment irrigation and regular rainfall, very little of these insecticides moved into the underlying soil. These results should be of considerable significance in terms of the role of turfgrass thatch in the potential for these materials to leach into groundwater. Thatch is apparently an excellent filter.

## **Brain Food**

**by Dennis C. Wilson, Sunset Ridge Country Club**

De we learn from the monthly meetings, NCTE programs and national convention? If your answer is no, then your brain has stopped growing.

At the NCTE, this year there was something for everyone. Workshops for the club mechanics, ITF educational workshops, morning and afternoon talks that sum up the whole 1987 season in three days, a trade show with reps present from all the different turf products and equipment who were willing to answer any and all questions. And of course, sitting down with friends over coffee or a cocktail and talking.

After being at the NCTE for three days a few of us stopped to have a cocktail. We got to talking about aerifying and different types of machines available to us. One Superintendent said it would be great to have a machine that could aerify without tearing up the golf course. We all laughed and made comments about his statement. Then one superintendent said, why does it have to be a machine? Why couldn't we use sound to loosen the soil.

Pretty far out, right. Well, maybe, but they take pictures of unborn babies with sound and you can break glass with sound, so why not loosen soil with sound. I know you're thinking we may have had two too many cocktails. But I remember in the 60's a young superintendent talking about computers for your irrigation systems and test equipment for disease control and what do we have now. Yes, we all thought he was a little far out.

The reason for this whole article is when you put that many people in the same place, all with the same goals in mind, things happen. Some thoughts a little far out, but nevertheless you are learning and I am glad to be a part of it.

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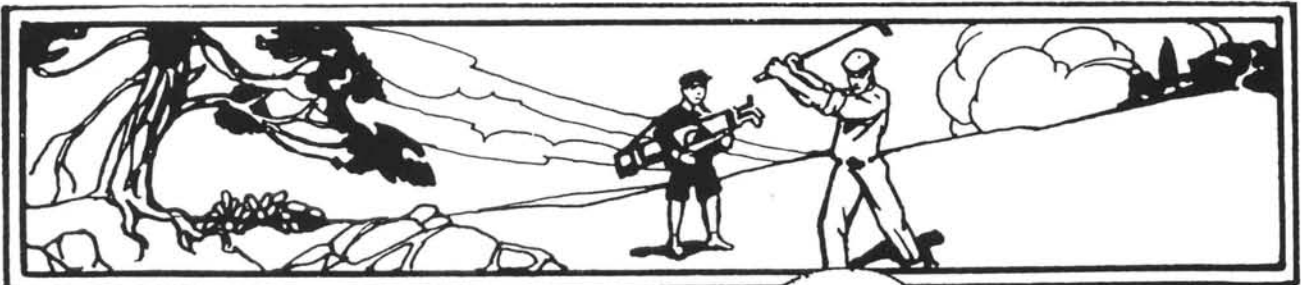
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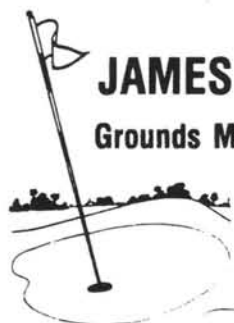
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(Just How Toxic cont'd.)

kilogram of body weight to kill 50% of the animals ingesting it. The MLD<sub>50</sub> of aspirin is 1750 — that's about 6 aspirin tablets. An adult weighing 50 kg (110 lbs). by extrapolation would die from 50 times the dosage or 300 aspirin tablets. In actuality 10 times the dosage or 60 aspirin is fatal — 17.5 grams about 2/3 of an ounce. Reference is Merck Index.

But Daconil 2787 has an LD<sub>50</sub> of 10,000 mg. That is six times safer than aspirin. That golfer would have had to ingest 100 grams or over 3 ounces of Daconil to have killed him. That's unlikely.

In my speech on how to avoid phototoxicity, I generalize by saying insolubles cannot burn, but solubles can and you must exercise caution in their use. We have been comparing an insoluble Daconil with a soluble aspirin. Aspirin is a safe soluble, but there are a number of solubles that you use that are not as safe as aspirin but keep in mind the LD<sub>50</sub> of aspirin as a bench mark.

You may have read recently about a fanatic that has been killing a lot of household pets in North Carolina by lacing pet food with the pesticide DISYSTON, an insecticide you don't use but farmers do. The LD<sub>50</sub> of DISYSTON is about 3mg. per kg. A cat or dog doesn't weigh much more than 3 or 5 kgs., so a lethal dose is not much more than 20 mg. which is equivalent of a couple pinches of salt. DISYSTON is a thiophosphate insecticide not much different than the thiophosphate insecticides that you are using, except yours are safer. Oftanol is 10 times safer with an LD<sub>50</sub> of 32; Dursban is about 50 times safer with LD<sub>50</sub>135; and Diazinon is 100 times safer with LD<sub>50</sub>300. Nevertheless, these are low LD<sub>50</sub>'s and the concentrates are potentially dangerous. They act on the insects and humans in the same way poisoning the nervous system.

Ironically, Granular Diazinon which is the safest of the three has been suspect for use on golf courses in some areas because of unfortunate misuse. They are usually formulated as emulsifiable concentrates dissolved in an organic solvent with an emulsifiable agent added. These in turn are to be mixed with large volumes of water, sprayed on the golf course with a further recommendation that they be watered in to get to the grubs. The same emulsifiable concentrate can be mixed with a granular carrier such as corn cobs or vermiculite so that they can be applied with a spreader with further recommendation that they later be washed into the soil with large volumes of water. If the corn cob is laced with Diazinon it becomes a tempting poisonous morsel for a bird. Birds weigh less than a kilogram, so all they have to ingest is about the amount of Diazinon that is equivalent to the amount of a baby aspirin.

Unlike the insolubles, the solubles can be absorbed through the skin. As a rule one need not worry about the diluted spray, but has to exercise caution in handling the concentrates. Wear protective clothing and a respirator when preparing the diluted mixture in the spray tank.

Let's consider a prominent soluble fungicide which has been around for many years and has a startlingly high toxicity. Yet you have used it successfully for a couple of decades without any fear that it could have been hazardous. This product is Actidione TGF — an antibiotic! Antibiotics are safe; haven't we all taken antibiotics, prescribed by doctors? Well, this one has a LD<sub>50</sub> of 2 mg. per kg.! But, Upjohn, the manufacturer, did

(cont'd. on page 20)

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an excellent job of formulating the product so that you received it in a form that was non-poisonous. A product must bear a skull and crossbones label if the formulated material has an LD<sub>50</sub>. By diluting Actidione with inerts so that you received a 2% mixture the formulated product then had an LD<sub>50</sub>100. You, in turn, were asked to dilute the product with water at the rate of 1 oz. per 3 gallons of water. The diluted spray then had an LD<sub>50</sub> 37,500.

This example emphasizes the importance of exercising great care and caution working with the formulated concentrate and at the same time demonstrates the minimal danger of handling the diluted spray. Actidione was taken off the market because EPA challenged the risk factor and Nor-Am made the business decision to drop the product.

Following is a table providing you with LD<sub>50</sub>'s of all the pesticides available to the Golf Course Superintendent. This data was taken from W. T. Thomson's Agricultural Chemicals 1985-86 Revision. Bear in mind that the LD<sub>50</sub> refers to the pure active ingredient so that if you want the LD<sub>50</sub> of the formulated product you divide by the percentage of active. For example, Caddy is 20% Cadmium Chloride solution. Since Cadmium Chloride has an LD<sub>50</sub> 88, dividing by 0.2, the LD<sub>50</sub> of Caddy becomes 440.

Nothing in my talk should be interpreted as a suggestion that you can ignore safety in using pesticides. Read and follow the label instructions carefully! Read the Material Safety Data Sheet carefully! Follow the manufacturers recommendations on personal protective equipment required. It is better to be overly safe than sorry.



**TOXICITY OF PESTICIDES**

Expressed as Minimal Lethal Dosage necessary to kill 50% of test animals by ingestion expressed in milligrams per kilogram body weight MLD<sub>50</sub> mg/kg.

INSECTICIDES	
Dasanit	4
Nemacur	15
Oftanol	32
Mocap	62
Dursban	135
Diazinon	300
Proxol	450
Sevin	500
Methoxychlor	6000

HERBICIDES	
Paraquat	150
2,4DP	300
2,4-D	375
DSMA	600
MSMA	700
Betasan	770
MCPP	930
Dicamba	1040
Pendimethalin	1250
Dacthal	3000
Balan	10,000

**FUNGICIDES**

Actidione	2
PMAS	40
Caddy	88
Bayleton	363
Cadminate	660
Thiram	780
Banner	1517
Koban	2000
Rubigan	2500
Chipco 26019	3500
Dyrene	5000
Alliette	5800
Fore	7500
Fungo	7500
Banol	7860
Daconil 2787	10,000
Tersan 1991	10,000
PCNB	15,000
3336	15,000

**Answer to Photo Quiz**

left to right: Harold Frederickson, Tom Gilman, Frank Dobie, Robert Williams, Henry, Josh & Bob Puzin