

US EPA ARCHIVE DOCUMENT

Received
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Dan Rieder

February 25, 1992

Dear Dr. Dan Rieder:

I am the review manager for Benomyl. I've encountered some phytotoxicity issues that were published in the NY Times and the Wall Street Journal concerning Benlate. Harry Craven recommended that I forward these issues to you. I've enclosed these articles. Could you please look them over and let me know if I should be imposing phytotoxicity data requirements for Benomyl (None are mentioned in the standard), or be taking any specific actions on this matter. I can be reached at 308-8077.

Sincerely,

Susanne Cerrelli

Susanne Cerrelli
Review Manager <H7508W>

Nasty Blight: Bad-Acting Pesticide Is Costing Du Pont Co. Millions

Continued From First Page
 believe there is something going on that could possibly get into the food chain," says Robert Haines, a former chemical-company research manager and now consultant for Florida Environmental Management Inc. "Growth on Du Pont sites quickly when the ambient insecticide and has made interim payments in some cases while damages were negotiated. However, some growers now say that the company is dragging its feet in negotiations."

Du Pont says that 87% of the Benlate claims in Florida have been settled, denied or withdrawn, and that the number of new claims has slowed steadily. Growers and their lawyers say claims settled so far tend to be the smaller ones. The 500 or so Florida claims remaining include a good many for over \$1 million, they say, adding that Du Pont typically is paying about half of claimed damages. (The company won't comment on that.)

Morris Bailey, Du Pont's manager of Benlate products, says the company and its outside adjuster, Crawford & Co., of Atlanta, are handling claims as fast as they can. Evaluating them is complicated; Benlate damage such as yellowing leaves in young plants or stunted roots can be caused by many other things. The limited understanding of how Benlate harms further complicates damage assessment. "We're as frustrated as the claimants,"

drome now associated with Benlate. The second case of atrazine contamination, last March, may have been a stroke of luck. Until then, the often-subtle first symptoms of Benlate poisoning hadn't been associated with the fungicide. But Du Pont's contamination warning and recall—besides preventing even more damage—led to record checks and helped growers to make the link. "Suddenly, everything fell into place," says Mr. Raker of Michigan. "The problem seemed to go away after Mr. Raker's Benlate-sprayed areas were scrubbed and treated with activated charcoal to absorb contaminants. But like a science fiction movie in which the monster only seems dead, something harmful apparently was still lurking. Mr. Raker's plant production now appears normal, but he claims he saw signs of Benlate-associated plant sickness at least twice after he quit using the fungicide."

Studies by a horticulture expert, David Koranski of Iowa State University, indicate the unknown toxic agent somehow adheres to surfaces of things in areas where Ben-

late has been sprayed. Research indicates its toxicity is amplified by heat, light and humidity, he says.

Maybe It's the Mixer

The culprit might be one of Benlate's "inert" ingredients, such as chemicals used to make it easier to spray. One theory suggests those ingredients have somehow interacted with the fungicide. In Florida, Little is known about inert ingredients, chemical companies generally treat them as trade secrets. Du Pont says its scientists have found no evidence that heat, light or humidity make things worse, nor any signs of a lingering chemical. But last week the company committed to pay Florida growers for "residual problems" at a university of Florida researchers presented preliminary evidence that foliage-plant growers are having such problems. It continues to sell a form of Benlate that hasn't caused problems, a "wetable" powder, withdrawn, were "dry flowable" versions.

The 1989 case of Benlate contamination with atrazine weed-killer is still haunting Du Pont. A Sioux City, Iowa, firm called Terra International Inc., which used to formulate Benlate for Du Pont, was blamed for the 1989 contamination, and its insurer was assumed to be atrazine damage.

But now, Terra says it has obtained a letter that Du Pont sent to the Environmental Protection Agency in 1989 indicating that the low levels of atrazine found in Terra-made Benlate wouldn't have caused the amount of plant damage growers cited. Terra has sued Du Pont in Woodbury County court in Sioux City, seeking reimbursement for damages Terra paid. Last week Du Pont countersued in Delaware chancery court, saying it has no reimbursement obligation. Its countersuit says Terra's suit "has created a crisis" in managing damage claims in the matter. The chemical company adds that Terra's suit "threatens to protract unreasonably a situation which is harmful to the reputation of Du Pont and its products."



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Du Pont to Boost 4th-Period Charges By \$350 Million

By SCOTT MCMURRAY
 Staff Reporter of THE WALL STREET JOURNAL

Du Pont Co. said it will increase its planned fourth-quarter charges by \$350 million, or 50 cents a share, to cover costs of recalling its Benlate DF fungicide and a restructuring plan that was announced in July. The total expected fourth-quarter charge of about \$75 million, or \$1 a share, will leave it with a net loss for the quarter. In last year's fourth quarter, Du Pont had net income of \$483 million, or 71 cents a share. Du Pont said that \$175 million, or 25 cents a share, of the added charge is for the estimated costs, net of expected insurance coverage, of recalling Benlate. The Wilmington, Del., company pulled Benlate shipments were found to be contaminated with a herbicide. Benlate is used on fruits, vegetables and ornamental plants to curb fungus growth.

Du Pont spokesman John Malloy declined to estimate the insurance payments Du Pont expects to receive to help cover damage payments and other costs tied to the recall. In this year's first half, Du Pont took a charge of \$11 million, or six cents a share, related to Benlate. Scientists at Du Pont and outside researchers say they aren't sure what is causing Benlate to kill plants. But it appears to be unrelated to the incident that led Du Pont to take the product out of circulation. The 20-year-old fungicide was pulled from the market by Du Pont this spring after traces of the herbicide atrazine were detected in some Benlate packages for the second time. Atrazine was first detected in certain Benlate shipments in 1989. The other \$175 million, or 25 cents a share, of the latest charge is related to cost-cutting in the company's fibers, imaging and electronics divisions, among others, Du Pont said.

Revised
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Du Pont

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Nasty Blight Bad-Acting Pesticide Is Giving Du Pont A Costly Headache

It Mysteriously Sickness Plants, Causing Company to Incur A Liability to Nurseries Gardenias That Won't Grow

By DAVID STRIPP

Staff Reporter of THE WALL STREET JOURNAL

When the seedlings at his nursery started withering last spring, Gerald Raker suspected a mold, so he did the obvious thing: He sprayed them with Benlate. Like many U.S. growers, he had found that Benlate, a fungicide from Du Pont Co. for fruits, vegetables and ornamental plants, always got the job done.

Not this time. All the seedlings in the sprayed area began slowly dying. "We were going nuts," says the Litchfield, Mich., nurseryman. After first blaming his workers, then suspecting sabotage by a disgruntled ex-employee, he finally zeroed in on what he believes is the real culprit: the pesticide, itself.

His blight was among the first signs of what has become one of the most mysterious, and potentially most costly, pesticide debacles the U.S. has seen. Soon after Mr. Raker's problems surfaced, Du Pont pulled the most widely sold form of Benlate off the market, suspecting contamination.

It was already too late for hundreds of growers. Benlate was one of the biggest-selling commercial pesticides in the U.S., and it now is alleged to have caused plant damage in 40 states. In Florida, the worst-hit state, many greenhouse growers say they're nearing bankruptcy, and more than 1,000 have filed claims against Du Pont. "It's wiped out eight years of retained earnings," says Paul Remelius, a nursery owner in Stuart, Fla.

Many Suits Settled

Du Pont doesn't deny that there's a problem with Benlate. But despite putting a small army of scientists to work on it, the company is baffled. Meanwhile, costs are rising. The company, based in Wilmington, Del., has paid out \$120 million in settlements so far, mostly in Florida. It has already taken after-tax charges of \$41 million from the recall, and said Friday it will take an added \$175 million after-tax charge this quarter (see page A5). Growers and university researchers estimate Du Pont's ultimate liability higher.

Except in Florida, the problem hasn't received widespread notice. Recent Wall Street analysts' reports on Du Pont don't mention it, and the recall of most Benlate in March didn't affect the stock of the giant chemicals concern, which had 1990 revenues of about \$40 billion. Du Pont mentioned Benlate in its second- and third-quarter reports, but in one-line references, mostly deep in lists of footnotes.

A lawyer for several Florida nurseries, Sidney Crawford, contends that Du Pont "has done a tremendous job of keeping the wraps on" the Benlate story. The company denies that. Settlements have required growers to keep quiet about their damages, but Du Pont officials note that this is standard in legal settlements, and that they have disclosed news about the Benlate recall on several occasions.

Unsolved Mysteries

But how could a pesticide that has been used for 20 years, apparently safely, go so badly awry?

Benlate-affected plants behave mysteriously indeed. They seem to play Peter Pan, refusing to grow up. The damaging chemical from Benlate "appears to be a plant growth regulator" that stunts growth, says Jim Davidson, a University of Florida research dean whose school is trying to crack the case. A plant may look fine, but "it doesn't grow to full maturity. A gardenia plant that should be two feet high and have buds may be only one foot high."

This has posed a business-ethics issue for some growers: whether to sell plants sprayed with Benlate that may keel over once removed from their greenhouse life-support system and tender loving care. The dilemma has been especially acute for severely hurt growers who've suspected competitors of cutting their losses by quietly selling sick plants.

"It was very tough to work four or five years on something and have to put a chainsaw to it just when it was just about mature," says Mr. Remelius, the Florida ornamental-plant grower. "We took the high moral ground" and paid the price financially, he says.

No Comment

Many growers are reluctant to talk about the Benlate problem, fearing they could lose business or face claims from customers whose plants later die. "I don't think it's a problem the public needs to know about," snaps one nurseryman in Boston.

Many growers and some scientists outside Du Pont suspect that this is a case of unknown interreactions among chemicals. Under certain conditions, compounds in Benlate might break down or react with substances in the environment to form chemicals toxic to plants. If so, crop damage from traces of the stuff could continue after usage had stopped. Such rogue reactions, if confirmed, would raise basic questions about how much pesticide makers really know about the long-term effects of some of their products.

There's no evidence Benlate has hurt animals or people. But the possibility that it is fostering unknown chemical reactions toxic to plants has raised concerns. "I be-

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D. P. R.

"All the News
That's Fit to Print"

The New York Times

New York: Today, cloudy, light rain, windy. High 40. Tonight, cloudy, a drizzle. Low 33. Tomorrow, a few low clouds, some rain. High 40. Yesterday, high 64, low 43. Details are on page B7.

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VOL. CXXI, No. 48,886

Farmers Worried as a Chemical Friend Turns Foe

By ANNE RAVER
Special to The New York Times

WAUCHULA, Fla. — In a state that produces half the country's winter fruits and vegetables, one of the biggest cucumber farmers in Florida has no crop.

"We have 1,150 acres that's not worth a damn to anybody," said the farmer, Ronald Moye, who used to produce bushel after bushel of perfectly shaped cucumbers, cabbages, melons and peppers on his farm here in south central Florida.

Now, he has a wasteland where even the weeds will not grow. Cucumber seeds will not germinate. Broccoli plants wither and die. And he is afraid

that the very water, that flows through his land is contaminated.

The invisible killer is Benlate, a Du Pont fungicide that had been the farmer's best friend in a hot, steamy land where molds, and fungi grow faster than mosquitoes.

For two decades it was the secret to the unblemished fruits and spotless leaves of Florida's \$2.2 billion a year in food crops and ornamental plants. But



now growers are cursing the chemical. Its manufacturer, E.I. du Pont de Nemours & Company, of Wilmington, Del., with total 1991 sales of \$38.7 billion, has already paid more than \$205 million to settle damage claims, most of them from Florida, but others coming from across the country. Annual sales of Benlate were \$100 million.

"To my knowledge, this sort of situation has never occurred with any other agricultural chemical ever," said Morris Bailey, the company's manager of Benlate products. "It's the biggest that's ever occurred in terms of cost."

But one year after the company

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Farmers in Florida Worry About a Chemical's Effects

Continued From Page A1

pulled Benlate (pronounced BEN-late) off the market, Du Pont executives say they still have no idea what caused the problems.

And although Du Pont says that the worst is over and it is safe to replant fields where millions of plants have died, many farmers say their biggest fear is that the damage could last for many seasons.

Independent researchers say the most likely explanation is that the granular form of Benlate used on the affected plants acts in combination with heat, humidity and other factors and somehow turns poisonous. The real test of how deep the problem is will come in late March, when the hot, humid season begins here.

Another form of Benlate, a powder, is still used on fruits and vegetables and has not been linked to any damage.

Florida strawberry farmers, who produce 20 percent of the nation's crop and who were among the hardest hit, say they are optimistic. But at least one grower has seen signs of continued trouble. "I've had a lot of deformed berries the last few days, since the humidity went up, and the production is way down," said Steve Schmidt, who farms 25 acres near Plant City.

Du Pont promises to pay for any recurring damages, but the company also insists that there are none. Be-

The nightmare started two and a half years ago, but nobody blamed Benlate.

"The first symptoms resemble downy mildew, little pink spots in the center of the leaves," said Tom Smyth, the manager and now the sole employee of Moye Farms, where 300 acres worked the fields.

"Usually you spray on Benlate as a preventative, and then you spray again at the first sign of a problem," he said, driving by an abandoned field. "Then the spot doesn't go away, so you figure you got a bad case. So instead of a quarter of a pound an acre, you hit it with half a pound."

The roots shriveled up, the plants flopped over, the few vegetables that grew were deformed. But the farmers did not suspect that the poison was in their sprayers.

Mr. Moye has cleared and planted 200 new acres never treated with Benlate. His crop is not coming in well, and he worries about his irrigation system.

"The water that runs through the old fields may be contaminating the new ones," he said.

Widespread Damage

Wherever it is hot and muggy — from the tropical plant farms of Costa Rica to seedling greenhouses in Michigan — growers went through much the same cycle, not realizing until it was too late that the millions of dead plants had been killed by the very chemical they were counting on as the cure.

But Florida has been hit the hardest. Du Pont has already paid \$180 million in damages here, and the state's agriculture commissioner, Robert Crawford, says the actual loss will be much higher.

"What has not been compensated is the loss of the market share — what growers stand to lose because they don't have their product out there," he said. "It's a billion-dollar problem, when you factor that in."

Palm Beach Plant Factory, one of the largest landscape nurseries in south Florida, whose plants supplied chains like K-Mart and Walmart, has closed and thrown out 2.5 million plants.

Jones & Scully, the largest orchid grower in Florida, with a world-wide mail-order business, has put a sign on its door: Closed indefinitely. A breeding line developed over two generations has vanished. The gene pools are in the dump.

Claims are also coming in from nurseries in Hawaii and Michigan. Tropical foliage farms in Puerto Rico and Costa Rica, which produce millions of cuttings for American nurseries, have virtually shut down. More than 30 lawsuits have been filed and attorneys are compiling many more.

Florida growers are still shaky from a 1989 freeze that killed \$500 million worth of crops. People still talk about the dark days of the '80s, when \$70 million worth of citrus groves were destroyed to prevent the spread of canker.

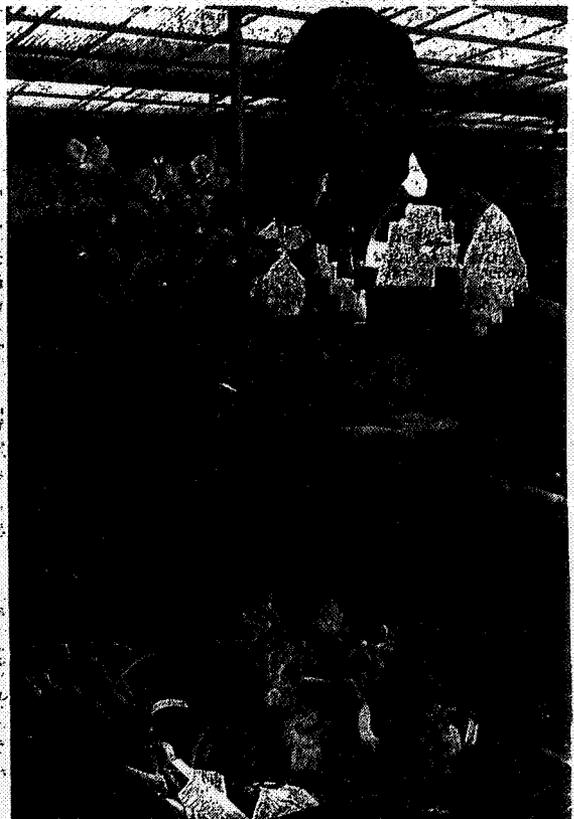
"And all of a sudden Benlate comes along and deals us a blow even bigger than Mother Nature delivered," said Mr. Crawford.

Registered in 1970

Benlate is the trade name for benomyl, a systemic fungicide that kills a wide range of molds and other fungi. The chemical was registered with the Environmental Protection Agency in 1970. It causes tumors, birth defects and reduced sperm production in some laboratory animals and is extremely toxic to freshwater fish and aquatic invertebrates.

Benlate DF, introduced in 1978, is a "dry-flowable" granular form that mixes easily in water. Benlate WP, or wettable powder, is still widely used on grains, soybeans and many fruits and vegetables.

Scientists at the University of Florida and Iowa State University have



Susan Greenwood for The New York Times

Benlate, a Du Pont fungicide once considered the farmer's best friend, has become their worst enemy, causing plants to wither and die. Robert M. Scully Jr. of Jones & Scully, the largest orchid grower in Florida, has closed his business indefinitely because its breeding line, which was developed over two generations, has been destroyed.

A fungicide destroyed crops worth millions of dollars.

course so little is known about how the damage occurs, farmers face difficulty in trying to prove that a flaw in a single chemical is the cause.

For the same reason, there is no way to test soil or fruit or vegetables for residue. "To my knowledge there is absolutely no food safety problem," said Martha Roberts, the state's deputy commissioner for food safety. "But I could not give the specific analytic proof of that."

Pledge of Silence

As is routine in many legal settlements, when Du Pont pays a damage claim it obtains a pledge of silence from a farmer. Associations of growers have also encouraged members to be silent because they do not want customers to start questioning the tomatoes on the table or the poinsettias that died over Christmas.

The company continues to insist that newly planted crops can grow this year on soil that was treated with Benlate last year. "We do not have scientific evidence that there is a re-cropping problem," Mr. Bailey told growers at a meeting in Fort Lauderdale.

When Moye Farms filed a claim in 1991 saying that the chemical had contaminated the soil and was preventing new growth, Du Pont said that Benlate was not the cause. Mr. Moye sued, and the case is pending.

Unsuspected Culprit

Beyond the legal finger-pointing, many experts and farmers say that the mystery of Benlate highlights a deeper problem in American agriculture: Chemical producers and users know very little about how some of their most important, and most dangerous, products actually work.



The New York Times

A pesticide has blighted a large produce farm in Wauchula.

developed the greatest Benlate expertise outside Du Pont.

"We are getting numerous symptoms from this chemical, not just stunting and chlorosis, but other symptoms like light green and dark green, stem elongation and water-soaked spots," said Dr. David Koranski, a horticulture expert at Iowa State University. "And that's an indication that this may not be one chemical or single reaction, but a complex series of reactions."

The Ideal Conditions

Dr. Koranski said the reactions tend to take place in a very humid environment enhanced by a greenhouse covering such as plastic. The interaction may involve the breakdown of the products of benomyl, or inert ingredients used in Du Pont's Benlate DF formula.

Dr. Koranski's theories parallel those of Dr. Hilton Biggs, a University of Florida biochemist, who has studied soil samples from the Moye farm.

Growers contend that their soil is still tainted.

"The biology convinced me that we have a long-term residue problem on our hands," Dr. Biggs said in a telephone interview.

He said that the substance is long-lived, especially in soils that received heavy applications.

"But it does dissipate, and it's not like DDT," he said. "We may be talking about a half-life of ten to 11 months."

E.P.A. on Sidelines

The Federal E.P.A. has stayed out of the picture because Du Pont recalled the product, said Carleton Layne, chief of the pesticide section for Region IV, which covers Florida.

The state's main involvement so far has been to regulate the dumping of thousands of tons of Benlate-treated plants and materials. Officials say the waste can be safely stored in lined landfills. One state official, David Vogel, administrator of the pesticide review program, said the episode has caused many growers to ask tough questions about their dependency on a whole arsenal of chemicals.

"The Benlate issue has made them start thinking about their well," he said. "And some are saying, 'Maybe this contaminant that hurts my plants is hurting me.'"

The question is one that applies to a whole range of products, he said, from bug sprays to herbicides. "They're spending all this energy worrying about an unknown compound and then going out to spray on an insecticide that is far more dangerous," he said. "Sooner or later, the whole picture should click in."