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1. TOTE Weed Eradicator. Total kill, plus maximum safety. Acts positively on annuals, biennials, perennials; sterilizes soil. Exceptionally high LD rating. One gallon of TOTE in 15 gallons water treats 1000 sq. ft. at 83.3% labor saving.

2. E.W.T. 2,4-D Selective weed killer kills all broadleaf weeds-dandelions, plantain, poison ivy. Spares good grass.

3. PENETRATE. Organic soil improver opens dense soils, improves porosity, encourages deep stronger root growth. Not a wetting agent.

 DOLGE LAKE DYE. Turns muddy water hazards and ponds bright, lasting blue. No danger to pets or wildlife.



Plus BOOST J70 miracle solvent cleaner for all machinery and golf carts.

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1. CINDET, the one multi-purpose cleaner and wax stripper does all routine cleaning jobs better, faster, easier. Cleans all surfaces, floors, walls.

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No Doubt About it... Merion Bluegrass First Choice Always...

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MERION BLUEGRASS ASSOCIATION

101 PARK AVENUE, NEW YORK 10017



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VS!

share it or take it over. Citing a recent survey indicating people would most like to spend their "discretionary income" on home improvement, Lederer interpreted this desire in terms of nursery stock sales. "The nursery industry is getting only \$2 billion of the \$17 billion a year earmarked for home improvement. A great deal more is available if we only learn to speak up for our share."

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- **REVEGETATION TECHNIQUES** now under study may make possible the reclamation of 250,000 acres of strip mining spoil banks in Virginia and West Virginia and similarly devastated areas throughout the nation, says USDA. Two methods are being explored: (1) using plants that can tolerate the toxicity present from excess amounts of minerals and soil acidity; and (2) neutralizing the acidity of the soil through fertility management. In the first year, best results with plants after soil fertility treatments came from weeping lovegrass and tufcote bermudagrass. Mulch is extremely important, researchers found, to prevent loss of moisture and formation of a hard crust that is nearly impossible for young seedlings to break through.
- A CASE OF MISTAKEN IDENTITY may be causing undue concern regarding pesticide residues, according to an article by three Wisconsin soil scientists in a recent issue of Pesticides Monitoring Journal. The trio, B. E. Frazier, G. Chesters, and G. B. Lee, found "apparent" residues of chlorinated hydrocarbon pesticides in soil sealed since 1909-1911, some 35 years before chlorinated hydrocarbons were discovered. Though the gas chromatograph can detect to parts per billion, the device cannot necessarily distinguish pesticides from compounds in nature each and every time. Confirmatory testing should follow before statements are released, the scientists advised.
- **ELEGANT TOOLS BUT POOR CRAFTSMEN**... that's how an industry researcher describes "a weak link" in the safe use of pesticides. Dr. Julius E. Johnson, vice-president and director of research and development for Dow Chemical Co., has called for more training of pesticide applicators. Though not wishing to discredit "those competent professionals who do a good job," he urged training in agricultural schools leading to the granting of professional licenses. Two categories should then be used to classify agricultural chemicals: those for licensed professionals only and those for non-professionals.
- HORTICULTURAL RESEARCH INSTITUTE wants to research the theory that man is genetically programmed to "warm, humid air, green growing plants, and the presence of warm-blooded animals." The project has been okayed, but delayed, because of the lack of a particular kind of green stuff-money.



We lower tree-care costs. From top to bottom.

Davey tree service saves you money. Money for equipment. Money for maintenance. Money for insurance and training. Money for payroll.

Davey uses the finest equipment that money (our money) can buy. The equipment list includes specially built trucks, aerial basket units, cranes, power saws, brush chippers, stump grinders, and the widest variety of quality hand tools.

Davey also has the personnel. Highly trained

and ably supervised, they're ready to handle your tree removals, pruning, spraying, feeding, and planting.

Try us. We're ready to lower your tree-care costs. From top to bottom.



How to remove the without removing

Every summer you've tried to hold your Poa annua. But suddenly it's unusually hot and humid and your fairways and greens start to wilt. Big brown patches crop up. You find your Poa annua infested with disease. You're in trouble. You could lose your fairways and greens.

Don't say it can't happen to you. It can. Because no matter how careful you are, no matter how much you water to avoid wilt, no matter how often and lightly you fertilize to avoid stress, one day your "failure grass" is going to fail. So why gamble and try to hold your Poa annua? Why not get rid of it before it fails?

How do you do it? How do you keep

the course beautiful, the players playing, the Poa annua on the way out, and the desirable grasses on the way in, all at the same time?

WIPING OUT THE POA ANNUA WITHOUT WIPING OUT THE COURSE

It's not as difficult as it sounds. Not if you do the job slowly. Gradually. With a simple, well thought out program.

A program that precisely builds up the control level in your soil to a point that weakens the Poa annua and allows the desirable bent and bluegrass to fill in.

A program that allows you to start with one fairway or green, or as many as you want. A program that is so effective that most

Poa annua the golfers

of your players won't even know that the course is being treated.

A program that even improves play by inhibiting the uneven, unsightly Poa annua seed heads.



A program that will work because it's already worked on many other courses.

A program that, in the final analysis, doesn't have to cost you an arm and a leg.

A SUCCESSFUL TESTED PROGRAM FOR THE GRADUAL REMOVAL OF POA ANNUA

This tested 6-point program is successfully eliminating the Poa annua at Greenbrier, National Cash Register Country Club and hundreds of other courses. It can do the same for you. 1. Drain low areas: Improve drainage of fairways with trenching and vertical slitting. 2. Correct soil acidity: Apply lime to greens or fairways if under a pH of 6. 3. Aerate, thatch or spike the grounds and eliminate phosphorous in your fertilizer program. Make room for new growth. Bring up some soil, get seed against soil.

Overseed often. 4. Apply from 4 to 6 pounds of Chip-Cal Granular per 1,000 square feet on fairways, or 2 to 4 pounds on greens. Apply in the spring and fall. Vary application rates according to the percentage of Poa annua, available phosphate, pH and soil type. 5. Achieve Poa annua control: Light sandy soils low in phosphorus require less Chip-Cal to reach control.

6. Maintain control: Use 2 to 4 pounds of Chip-Cal per 1,000 square feet, either in the spring or fall. If Poa annua is dying too fast, use a liquid phosphate as a check valve.

Note: Chip-Cal Granular has been specially formulated for your Poa annua restriction program. It's granulated on a vermiculite base. Which helps give you a more uniform application and a more gradual release when you're building up your soil's control level. Chip-Cal also prevents crabgrass, goose grass, and controls soil insects and chickweed.

14 OTHER CHIPCO TURF PRODUCTS THAT TAKE CARE OF EVERYTHING FROM KNOTWEED TO SNOW MOLD

In addition to Chip-Cal Granular to control Poa annua, we have the most complete line of products to help you with your other turf problems.

For example, in the spring, Chipco Turf Herbicide MCPP controls clover and knotweed on greens and fairways. And in the summer, Chipco Microgreen improves your turf's health and vigor. Used in the fall and winter, Chipco Rho-Mold will prevent unsightly and destructive snow mold.

WANT TO KNOW MORE ABOUT POA ANNUA AND OTHER TURF PROBLEMS? WRITE US

We'll send you back everything you need to know.

Address: Chipco Turf Products Mgr., Rhodia, Inc., Chipman Division,



Dept. GS, Box 2009, New Brunswick, New Jersey, 08903.

TURF PRODUCTS

CHIP-CAL

A Capsule Look At a Newborn Giant Already Running

By GENE INGALSBE

WHAT IS the Environmental Protection Agency? The most frequent answer from observers in the chemical industry has been: "We shall have to wait and see."

The inference is that ERA has yet to project its "image" with regard to pesticides; that EPA will be *how it acts* and on *what basis* it acts. So far, not enough experience has been gained from working with the new agency to characterize it more specifically.

"Registration activity is just about at a standstill until we get some guidelines on whether research data required or registration procedure has changed," said one industry spokesman.

In the words of the President who created EPA on Dec. 2, 1970, one thing is "perfectly clear"—EPA has the power to act.

When the public furor over pollution of all sorts seemed to endanger the contents of the ballot box, some intense political soul searching about what to do began. Outcries against pollution weren't new. Nor had government turned a deaf ear in the past to people who wanted cleaner, air, water and landscape. In fact, government had been extremely responsive, assigning responsibility for a portion of the environment to some 80 different federal agencies. What hadn't been decided was where the buck stops. It now appears the buck stops at EPA.

What has been shaking the rafters is that EPA not only has the power to act, it also has begun to exercise that power within 60 days of its formation! Few new government agencies have been able, or demonstrated a willingness, to function so quickly.

Dozens of municipalities and industries have found themselves under legal pressure to stop polluting the air and water. The Federal Refuse Act passed in 1899 has been dusted off and fitted with teeth. Permits are to be required for dumping wastes into rivers and lakes. The Department of Army, charged with carrying out the program, already has written and published lengthy procedural instructions. A reorganization of air quality districts is under way. Ten regional EPA offices have been formed and interim coordinators announced.

Right or wrong, the decision on DDT demonstrates how quickly EPA can act. Within a few days after a U.S. Court of Appeals "ordered the federal government" to cancel remaining uses of DDT, the EPA notice went out on the cancellation and on a 60-day review to determine whether DDT and certain uses of 2,4,5-T should be suspended.

Clearly, persons who want to change the environment now know where to go. The buck stops at EPA.

'Political-Mix' in Decisions

During a visit to EPA offices, concern was expressed on the part of industry on how such power might be exercised. If you mean to ask whether we are going to be "swayed by activist groups," answered an EPA spokesman, I can assure you that decisions will be based upon reasonable assessment of the facts. "But you have to expect a certain political-mix with each decision," he added.

How strong the political-mix will be remains to be seen.

Additional verbal reassurance comes from EPA administrator William D. Ruckelshaus, who has said: "The alarm has been sounded. Now we must begin to act. This places a new responsibility on all of us. All of us must begin to distinguish between those corrective environmental actions which are helpful and those blind over-reactions which are harmful."

Ruckelshaus Has Aggressive Record

Beyond emphasizing that EPA will carefully evaluate the benefitrisk equation to every alleged pollutant, he talks tough. There is no indication he'll.use benefit-risk as a loophole to treading softly.

We've let technology run unchecked "in a 300-year war against nature," he charged. With no more frontiers and the spoils of that war upon us, a new "environmental ethic is needed," he stated.

"There is no excuse for the delay and dalliance which have brought us to our current crisis," he asserted, calling for every member of society to participate.

"I am going to insist, with the authority I have, and with all the powers of persuasion at my command, that all existing means of controlling pollution be applied, across the board, in every city and town and on every industry in this country—starting right now."

Ruckelshaus, 38, an Indiana Hoosier and a Harvard-educated lawyer, served five years as deputy attorney general for Indiana, his duties including legal assistance to health and pollution agencies. He

REGIONAL COORDINATORS

Region I Lester Klashman Room 2303 John F. Kennedy Fed. Bldg. Boston, Mass. 02203 617/223-7210

Region II Gerald M. Hansler Room 847 26 Federal Plaza New York, N.Y. 10007 212/264-2525

Region III Lloyd Gebhard P.O. Box 12900 Philadelphia, Pa. 19108 215/597-4506

Region IV John R. Thoman Suite 300 1421 Peachtree St. N.E. Atlanta, Ga. 30309 404/526-5727

Region V Francis T. Mayo 33 East Congress Parkway Chicago, III. 60605 312/353-5250



Environmental Protection Agency

initiated numerous state legal actions against polluters and drafted the Indiana Air Pollution Control Act.

He served two years in the Indiana House of Representatives, becoming the first legislator in Indiana political history to become majority leader in his first term.

Ruckelshaus was defeated in his bid for the U.S. Senate in 1968, but the following year was appointed assistant attorney general of the U.S. Civil Division. In this capacity, he was in charge of a division which oversaw 200 lawyers and who carried a caseload in excess of 19,000 cases at the time he was named EPA administrator last November.

Johnson's Career Is Fisheries Research

Perhaps of more direct interest to the pesticide industry is the man who is the acting commissioner of the Pesticide Office, Dr. Raymond E. Johnson.

A half-dozen pesticide industry officials queried about their impression of Johnson rate him "as a responsible administrator." None expressed an unfavorable opinion.

Johnson earned a doctorate in fisheries work from the University of Michigan in 1942. After six years as supervisor of fisheries research

CHART

ORGANIZATION

Region VI Bill V. McFarland 1114 Commerce Street Dallas, Texas 75202 214/749-2827

Region VII John M. Rademacher Room 702 911 Walnut St. Kansas City, Mo. 64106 816/374-5493

Region VIII Donald P. Dubois Room 9041 Federal Office Bldg. 19th and Stout Sts. Denver, Colo. 80202 303/837-3283

Region IX Paul DeFalco, Jr. 760 Market St. San Francisco, Calif. 94102 415/556-4303

Region X James L. Agee Room 501, Pittock Block 921 S.W. Washington St. Portland, Ore. 97205 503/226-3914 for the Minnesota Department of Conservation, he entered federal service in the Bureau of Sport Fisheries and Wildlife, U.S. Department of Interior, where he served until his EPA appointment. Since 1965, he had been assistant director for research in the fisheries and wildlife bureau. In 1968, he received the Interior Department's Distinguished Service Award "in recognition of eminent service in the conservation of natural resources."

EPA Born a Giant

EPA has made a fast start as a new agency primarily because it was not formed from the ground up, man by man. Instead, it is a collection of functioning agencies and departments. For example, the entire pesticides registration division from USDA moved to EPA.

These operating groups brought their budgets with them, giving EPA a \$1.4 billion budget this fiscal year. When fully staffed, EPA is estimated to have 6,000 employees. At formation, a building couldn't be found big enough to house the entire family.

Here is a capsule of what major administrations went to EPA and from whence they came:

From the Department of Interior —The Federal Water Quality Administration, functions provided by the Federal Water Pollution Control Act, and the Water Pollution Control Advisory Board functions relating to studies on the effects of in-



secticides, herbicides, fungicides, and pesticides upon fish and wildlife resources administered by the Gulf Breeze Biological Laboratory of the Bureau of Commercial Fisheries at Gulf Breeze, Fla.

From the Department of Health, Education and Welfare—Then National Air Pollution Control Administration, including the Air Quality Advisory Board, the Environmental Control Administration's bureaus of Solid Waste Management, Water Hygiene, and Radiological Health, functions of establishing tolerances for pesticide chemicals under the Federal Food, Drug, and Cosmetic Act.

From the Atomic Energy Commission — Functions administered through its Division of Radiation Protection Standards.

All functions of the Federal Radiation Council.

From the Department of Agriculture—Functions under the Federal, Insecticide, Fungicide and Rodenticide Act; functions under section 408 (1) of the Federal Food, Drug, and Cosmetic Act; and functions administered through the Environmental Quality Branch of the Plant Protection Division of the Agricultural Research Service.

Table 1 gives a skeleton organization chart for EPA and Table 2 outlines the 10 regional territories, coordinators and addresses.

Functions of the Pesticide Office

EPA's Pesticide Office is charged with these responsibilities:

"The office shall be responsible for the pesticides activities of the Agency, including establishment of tolerance levels for pesticides residues which occur in or on food and the registration of pesticides uses for protection of human safety; monitoring of pesticides residue levels in foods and portions of the environment; review of pesticide formulations for efficacy and hazard; regulation of sale or use patterns when necessary; checking for compliance with label provisions, research on effects on human health. non-target fish and wildlife and their environments; and establishment of guidelines and standards for analytical methods of residue detection."



TREATMENT 3S SPRING ONLY S80W 8* ACRE

TREATMENT 17F FALL AM@ 4" ACRE AT PLANTING S80W@ 8" ACRE

Wisconsin Trials Indicate

BEST HERBICIDES FOR TREE PLANTING

By GORDON R. CUNNINGHAM and GAVIN G. WEIS*

The establishment of new forest plantings by use of herbicides was started at the Hancock Experimental Farm in 1969. The objective of this trial is to determine the tolerance of two major Wisconsin Christmas tree species, white spruce and scotch pine transplants, to various herbicides on light sandy soils. Soils of this area are mapped at Plainfield sand, and are droughty under normal conditions.

Treatments were sprayed on an old alfalfa-brome sod and replicated three times. Predominant grass species were quack, brome and green foxtail. The major broadleaf weed was alfalfa with some redroot pigweed, hoary alyssum and white cockle.

Wettable powders and emulsifiable concentrates were applied with a bicycle plot sprayer having a 5 ft. swath. Granular materials were applied in a 3 ft. band with an applicator designed by Agricultural Engineers at the University of Wisconsin.

Simazine wettable powder and granules, atrazine wettable powder and dichlobenil (Casoron) granules were applied at 2, 4 and 8 lbs. (actual) per acre. Simazine WP at 2, 4 and 8 lbs. per acre was applied in combination with aminotriazole at 4 lbs. per acre and with paraquatdichloride (Paraquat at 1 lb. per acre. The treatments were initiated the fall before planting, and again the following spring before or during planting.

Fall treatments were applied on September 11, 1969. Spring treatments were applied immediately after plowing on April 17, with the following exceptions: aminotriazole and Paraquat were applied pre-plant on April 8; and the same materials were applied by directed spray on May 29.

Results show, after one growing season, for single herbicide treatments, atrazine 80W at 4 lbs. per acre, applied fall or spring, was one of the most effective* and was the least expensive in controlling both grasses and broadleaved weeds. Germination and growth of green foxtail in late summer was extensive. However, it did not appear to affect survival of the trees. Fallapplied Simazine WP and granules controlled grassy weeds effectively at 4 lbs. per acre, but was ineffective against broadleaved weeds. Simazine WP at 8 lbs. substantially increased the effectiveness of broadleaf weed control.

The ineffectiveness of dichlobenil was due probably to the fact that it was not incorporated into the soil at time of application. Vaporization from spring-applied dichlobenil granules may have resulted in lower tree survival.

Excellent weed control and survival of trees* were obtained with aminotriazole at 4 lbs. per acre applied in the fall, followed by 8 lbs. of Simazine WP applied at planting. Applying these same materials together in the fall, but decreasing the Simazine WP to 4 lbs. per acre, gave adequate weed control and tree survival.

This herbicide trial will be continued for at least two more growing seasons to observe effectiveness for continued weed control and for phytotoxicity to the trees.

* 90% or more

Cunningham is Extension Forester at the University of Wisconsin; Weis is superintendent of the Hancock Experiment Farm.



These are the spray rigs the Hancock Experimental Farm used in its herbicide trials on new forest plantings.

A Princep foundation gets most weeds before they become

Weeds. It's a more attractive way to keep bare ground bare. Using Princep® herbicide to kill weeds before they come up. That way you don't have a lot of ugly dead weeds hanging around as you do with contact weed killers.

> Not that Princep eliminates the use of contacts entirely. You may need them to get the few weeds Princep misses. But starting with Princep as the foundation for your herbicide program you can solve the bulk of your weed problems. More economically and safely than anything else.

> In fact, just about the only thing in any danger from Princep are weeds. It's safe to use. There's minimal leaching and no contact action, so it's safe to nearby crops and ornamentals.

> So if your object is bare ground weed control, use the safe heribicide. And the best foundation herbicide. Princep.

> For information about Princep, brand of simazine, and other Geigy herbicides, AAtrex[®], Pramitol[®], and Atratol[®], write to Geigy Agricultural Chemicals, Division of CIBA-GEIGY Corporation, Ardsley, New York 10502.

> > Princep by Geigy

On Turf, Shrubs, Vines and Trees ... MAINTAIN SUCCESS BOOSTING

EDITOR'S NOTE: Interest has been rising almost in direct proportion to the favorable research and experience with growth retardants and that's a pretty exciting statement! One such product, MAINTAIN, caused a great deal of comment at two recent conferences, the Southern Weed Conference and the North Central Weed Control Conference. U. S. Borax representatives reported research on different formulations of MAINTAIN for use on turf, broadleaf weeds, ornamentals and trees. Because of the interest, we're publishing the complete paper.

By GORDON K. HARRIS, G. BURKE GARRETTE, and DAVID O. ANDERSON U. S. Borax & Chemical Corporation Los Angeles, Calif.

GREENHOUSE and preliminary field testing of chlorflurenol, a new growth retardant, (methyl 2chloro - 9 - hydroxyfluorene - 9 - carboxylate) was begun by U. S. Borax Research Corporation in 1966. Discovered by E. Merck of Darmstadt, West Germany, the product is now known by the trade name MAIN-TAIN CF 125.

Research plots were established in 1968 to determine dates and rates best suited for various grass species in the major soil and climatic zones in the United States and Canada. From these tests it was established that the optimum combination rate of one lb/A of MAINTAIN CF 125 plus 3 lbs/A of MAINTAIN 3 (maleic hydrazide) was the most promising.

USDA registration has been obtained for use on turf and associated broadleaved weeds for MAINTAIN CF 125 and MAINTAIN 3.

MAINTAIN CF 125 applied as a foliar spray has proved to be an effective method of retarding the growth of a broad spectrum of woody plants at very low rates. MAINTAIN CF 125 is absorbed and translocated rapidly to the terminal growing points where it interferes with the growth process. Foliage of a treated woody plant is usually darker green in color and remains retarded from two months to a full growing season.

MAINTAIN A is a formulation of chlorflurenol used with an asphalt emulsion as a tree wound dressing. It effectively inhibits growth of sprouts from the exposed cambium, and reduces the number and length of sprouts developing as a result of the pruning cut.

MAINTAIN S, a formulation of chlorflurenol in a solvent system, effectively penetrates the bark of woody plants and moves rapidly to the terminal growing points and inhibits new growth.

In 1968, MAINTAIN CF 125 and MAINTAIN 3 were used at several

rates and dates, alone and in combination, throughout the United States and Canada in four major regions — the Northwestern, North Central, Northeastern and Southern. Plots were 100 sq. ft., with either a three or five-foot control strip adjacent to each side of the plot to provide maximum accuracy in plot evaluations. Seventeen grass species were tested and some 35 broadleaved weed species, which were associated with the grasses, were tested.

In 1969, emphasis was placed on test plots of one acre or more which were applied with field-scale equipment available to the cooperator.

In 1970, the emphasis was geared to expanding field use and experiences.

Use of MAINTAIN CF 125 in combination with MAINTAIN 3 has been found to be economically effective in retarding grasses. Optimum retardation is obtained when treatments are made after spring mowing.

The MAINTAIN combination treatment does the following:

1. Interferes with the development of early growth stages of grasses, keeping the vegetative growth short and inhibiting the development of seed heads.

2. The active material translocates to the growing points of grass and



This median on a highway near Atlanta, Ga., was treated with 2 lbs./acre of MAINTAIN CF 125. In saving several mowings, it meant increased safety for workmen and traffic.



MAINTAIN 3 and CF 125 demonstrated excellent dandelion control at 1 gal. of each per acre at Rosemere in Quebec, Canada. Plots were treated in September and evaluated in July.