

SYSTEM CONFIDENTIAL

ENVIRONMENTAL CASE  
RD&E ANNUAL CONFERENCE REPORT

1979

Case Summary

November 14, 1979

2:00 p.m.

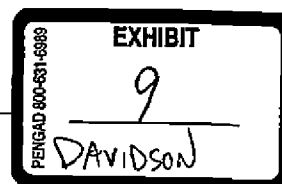
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## Environmental Case

### Case Summary

November 14, 1979

Work continued in all three projects of the Environmental Case to meet their respective objectives:

- Evaluation of the human eye irritation potential of present and proposed product formulations continues under the Eye Toxicology Project (92065) - Fred Ferguson.
- Monitoring of regional vermiculite ores and the worker environment for OSHA - regulated asbestiform minerals continues under the Vermiculite Contamination Investigation (92075) - Al Davidson.
- Studies investigating the fate of fertilizer applied to turfgrass are in progress under the Effect of Fertilizer On Water Quality Project (92085) - Larry Robinson.

#### I. Summary of 1979 Activity

During 1979 53 product formulations were submitted for eye irritation testing. This brings to a total of 65 formulations that have been submitted since November, 1977 (Appendix I). These represent a total of 21 fertilizers and 44 pesticide formulations. All fertilizers tested now require a CAUTION signal word under criteria of the Consumer Product Safety Commission. Of the 44 pesticides tested; 6 retain the CAUTION designation; 9 are classified as DANGER; and 29 must have a WARNING label.

Forty-three samples of regional vermiculite ores and the worker environment were sampled during 1979. These were subjected to varied test procedures to determine if asbestiform minerals were present. The results are attached (Appendix II). Generally, the ores can be ranked in the following way according to asbestos content: South African << South Carolina = Libby = Virginia. Asbestos fibers have been detected in the worker environment, but these counts are well below maximum tolerable levels.

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The test utilizing the leaching lysimeters near the bypass in Marysville are continuing. All data from this summer and fall are not yet in, but results appear to confirm last summer's data. That is, there appears to be no significant difference in leaching between Turf Builder, Fairway, urea and controls. Much more leaching was noted from ammonium nitrate. No significant difference was noted between 0.45# N/M monthly and 0.9# N/M bi-monthly on leaching. The 2x rate, 1.8# N/M bi-monthly caused the most leaching.

This year an improved irrigation system was installed which should allow better detection of differences among treatments due to more uniform watering.

An updated report is due from Dr. George Snyder in Fort Lauderdale. His preliminary results showed most leaching occurred from  $\text{Ca}(\text{NO}_3)_2$  and urea, with much less from IBDU, MU (34% CWIN), SCU-64, SCU-8, Check, TVA-SCU and UF (in that order).

A "Fate of Nitrogen" Workshop is scheduled for November 29 and 30, 1979. The objective of the workshop is to bring together a group of experts of diverse backgrounds to discuss the problems associated with nitrate pollution. To be considered are the following:

1. The scope of the pollution problem.
2. Factors which minimize the pollution.
3. Directions for future research.

## II. Plans and Objectives - 1980 Program

Twenty-two retail products and 39 ProTurf products require new eye toxicology testing. This testing will be done by November, 1980.

A proposed sampling protocol for monitoring asbestos is currently being circulated for approval and adoption (Appendix III). Sampling of regional vermiculite ores and the worker environment for the presence of asbestiform minerals will continue.

The barrel leaching study in Marysville and the Fort Lauderdale study will continue for one year or more. In addition, porous cups should be installed in Marysville in order to collect leaching data under more natural conditions.

### EYE IRRITATION TEST RESULTS

I. List of Retail Products and Proposed Products With New Eye Toxicology Data

|        |                                                              |
|--------|--------------------------------------------------------------|
| F-7627 | Turf Builder 26-3-3                                          |
| F-7888 | Improved Turf Builder(N) 27-3-3                              |
| F-7888 | Turf Builder W 27-3-3                                        |
| F-7673 | Turf Builder(S) (FAS)                                        |
| F-9025 | Turf Builder S ( $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ ) |
| F-8509 | Turf Builder Polyform                                        |
| F-8100 | Turf Builder(E)                                              |
| F-8428 | Lawn Pro Super Turf Builder N(HD)                            |
| F-7787 | Lawn Pro Super Turf Builder W                                |
| F-8500 | Lawn Pro Super Turf Builder I(HD)                            |
| F-8500 | Lawn Pro Super Turf Builder(S) (HD)                          |
| F-5314 | Starter Fertilizer                                           |
| F-8785 | Bermudagrass Fertilizer                                      |
| F-7529 | Turf Builder Plus Halts                                      |
| F-8286 | Improved Turf Builder Plus Halts(N) 7.5 lb/A                 |
| F-8297 | Improved Turf Builder Plus Halts I 7.5 lb/A                  |
| F-8649 | Improved Turf Builder Plus Halts W/S 7.5 lb/A                |
| F-7530 | Turf Builder Plus 2                                          |
| F-7988 | Improved Turf Builder Plus 2                                 |
| F-7921 | New Bonus S                                                  |
| F-7384 | Turf Builder Plus Moss Control                               |
| F-8429 | Summer Insect Control Plus Fertilizer                        |
| F-1813 | Lawn Weed Control                                            |
| F-6447 | Grow Flowers                                                 |
| F-5437 | Grow Shrubs and Trees                                        |
| F-6018 | Grow Acid Loving Plants                                      |
| F-5314 | Grow Transplants                                             |
| F-5314 | Vegetable Garden Fertilizer                                  |
| F-7905 | Spoon Fed Care                                               |
| F-7381 | Lawn Moss Control With Fertilizer                            |
| F-3586 | Halts                                                        |

II. Retail - Present Products With No New Eye Toxicology Data

|        |                                                        |
|--------|--------------------------------------------------------|
| F-6151 | Turf Builder With Halts(Dacthal)                       |
| F-6949 | Super Turf Builder Plus Halts                          |
| F-6928 | Crabgrass Preventer and Dandelion Control & Fertilizer |
| F-5419 | Starter Fertilizer With Crabgrass Preventer            |
| F-6976 | Super Halts Plus                                       |
| F-7679 | Turf Builder Plus 2 for Iron Deficient Soils - I       |
| F-7645 | Turf Builder Plus 2 for Grass W/S                      |
| F-7054 | Lawn Pro Super Turf Builder Plus 2(N)                  |
| F-7645 | Lawn Pro STB +2 For Iron Deficient Soil (I)            |
| F-6713 | Lawn Pro STB+2 For Grass W/S                           |
| F-6789 | Bonus D                                                |
| F-6669 | Super Bonus For Dichondra                              |
| F-6927 | Turf Builder Plus Lawn Disease Preventer               |
| F-6457 | Lawn Insect Control Plus Fertilizer                    |
| F-6617 | Western Lawn Insect Control Plus Fertilizer            |
| F-6617 | Chinch Bug Control Plus Fertilizer                     |
| F-6459 | Lawn Insect Control                                    |
| F-4805 | Western Lawn Insect Control/Kwit                       |
| F-6563 | Summer Crabgrass Control                               |
| F-5263 | Lawn Disease Preventer                                 |
| F-7718 | Spot Dandelion Control                                 |
| F-7717 | Spot Grass and Weed Control                            |

III. ProTurf Present Products With No New Eye Toxicology

|        |                                         |
|--------|-----------------------------------------|
| F-8500 | HD Fertilizer Plus Iron                 |
| F-8426 | HD Nitrogen Fertilizer                  |
| F-8160 | New HD Nitrogen Plus                    |
| F-5410 | Fairway Fertilizer                      |
| F-8506 | HD Fairway Fertilizer                   |
| F-5749 | Super Fairway Fertilizer                |
| F-8427 | HD Super Fairway Fertilizer             |
| F-8423 | HD Greens Fertilizer                    |
| F-8404 | HD Nitrogen/Potassium Fertilizer        |
| F-5437 | Fertilizer With Minors                  |
| F-6619 | HD Starter                              |
| F-8403 | Improved Iron S                         |
|        | Agrisul Sulfur                          |
| F-7507 | HD Fertilizer With Weed Grass Preventer |
| F-6560 | Fertilizer Plus Dicot Weed Control II   |
| F-2450 | California Fertilizer Plus Fungicide    |
| F-7212 | Fertilizer Plus 101BS Fungicide         |
| F-3474 | FF - II                                 |
| F-4358 | Fertilizer + Fungicide                  |
| F-8425 | HD Fertilizer Plus DSB Fungicide        |
| F-6617 | Fertilizer Plus Insecticide III         |
| F-6474 | Weedgrass Preventer                     |
| F-6722 | KOG Weed Control                        |
| F-96   | Broad Spectrum Fungicide                |
| F-6472 | 101 Broad Spectrum Fungicide            |
| F-6385 | Systemic Fungicide                      |
| F-5441 | Fungicide III                           |
| F-6481 | Fingicide II                            |
| F-6459 | Insecticide One                         |
| F-6987 | Insecticide III                         |
| F-7719 | Nematocide/Insecticide                  |
| F-6479 | Selective Poa Annua Control             |
| F-6617 | Fertilizer Plus Insecticide III         |
| F-6457 | Lawn Insect Control Plus Fertilizer     |
| F-7291 | Fertilizer and Crabgrass Preventer      |
| F-8079 | ProGrow Container Fertilizer            |
| F-8807 | ProGrow Premix Fertilizer Plus Minors   |
| F-8134 | ProGrow Container Fertilizer(HD)        |
| F-7838 | ProGrow Ornamental Herbicide I          |
| F-8205 | ProGrow Container Fertilizer Plus       |

此處所列之產品，係根據美國農藥管理局（EPA）之規定，在1970年以前，經核准註冊，且其成分，均係由天然物質所組成，不含任何化學合成之毒物，故其對人體之毒性，極低，且其對環境之污染，亦極小，故其對人體之健康，無任何危害，且其對環境之污染，亦極小，故其對人體之健康，無任何危害。

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IV. Formulations With Caution III EPA Label

|        |                                                                                                |
|--------|------------------------------------------------------------------------------------------------|
| F-8803 | House Plant Insecticide(Not a granular)                                                        |
| F-9295 | Turf Kleen(Not a granular)                                                                     |
| F-8070 | ProTurf Fertilizer Plus DSB Fungicide(TD-1771)                                                 |
| F-7529 | Present Turf Builder Plus Halts<br>10 lbs/Acre Active - Non Free Urea Base                     |
| F-8301 | Ornamental Herbicide Proposed<br>Backup Formula - Ronstar 4 lbs/A<br>on Polyform HD 10 lbs 4/M |
| F-8324 | Turf Builder Plus 2, W/S Backup with MCPP/MCPA<br>Plus Fe on Turf Builder at 1.25 N/M          |

V. Formulations with Danger EPA Category I Status

|        |                                                                           |
|--------|---------------------------------------------------------------------------|
| F-8455 | Turf Builder Plus 2 (I) Polyform Backup MCPP/MCPA                         |
| F-9349 | Improved Turf Builder Plus 2 Backup<br>MCPP/MCPA (Varying Rate of 1 & 6). |
| F-9350 | Improved Turf Builder Plus 2 Backup<br>MCPP/MCPA (Varying Rate of 1 & 6). |
| F-7384 | Turf Builder Plus Moss Control (PCP)                                      |
| F-7893 | Improved Turf Builder Plus Halts W/S 10 lbs/A Active                      |
| F-8649 | Improved Turf Builder Plus Halts W/S<br>75 lbs/A Active (1 of 3 samples). |
| F-8456 | Turf Builder Plus 2 (I) Polyform<br>Backup MCPP/MCPA                      |
| F-8743 | Ornamental Herbicide (Value Added)<br>Ronstar/Surflan Backup              |
| F-8208 | Vegetable Garden Insecticide<br>(Biatrol Plus)                            |

[illegible]

# ASBESTOS ANALYSIS/BULK SAMPLES

| <u>Date</u> | <u>No. Samples</u> | <u>Description and Laboratory</u>                                                                         | <u>Results</u>                                                                                                                                                                                                                                           |
|-------------|--------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feb. 1976   | 10                 | Grace-Libby 2 raw ore, 2 expanded, 2 sand. African 2 raw ore, 1 expanded, 1 sand. Turf Builder product-1. | Clayton results questionable. Gulf - detected Chrysotile in African ore and sand. - detected Tremolite in African ore and Graco ore.                                                                                                                     |
| July 1976   | 4                  | Grace-Libby number 2,3, and 4 raw ore and Virginia vermiculite ore.                                       | Gulf - detected tremolite in all three Grace ores and no asbestos detected in Virginia sample.                                                                                                                                                           |
| April 1977  | 1                  | African ore                                                                                               | Clayton - detected chrysotile(2%), crocidolite(5%), and tremolite(1%).                                                                                                                                                                                   |
| April 1977  | 2                  | African Ore                                                                                               | McCrone - African ore - Doubtful presence of an amphibole in the tremolite - actinolite sieves, and unable to detect chrysotile by x-ray diffraction. Light microscopy analysis did not confirm presence of amphibole but did show traces of chrysotile. |
|             |                    | Virginia ore                                                                                              | - Virginia ore - by x-ray diffraction detected approximately 10% Tremolite-actinolite. Light microscopy showed a portion of the amphibole, equivalent to approximately 3 to 5% of the total sample to be asbestiform.                                    |

| <u>Date</u> | <u>No. Samples</u> | <u>Description and Laboratory</u>                                        | <u>Results</u>                                                                                                                                                        |
|-------------|--------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| May 1979    | 15                 | a) Libby BN452316 5/11/79                                                | Trace Tremolite - actinolite in -100M fraction                                                                                                                        |
|             |                    | b) African 5/14/79                                                       | No asbestiform materials detected.                                                                                                                                    |
|             |                    | c) Virginia B0603970 4/12/79                                             | Tremolite - actinolite (massive form) at 1% level in -100M fraction, trace level in -70+100M fraction. Would be 0.035% asbestos based on bulk ore.                    |
|             |                    | d) African Sand (~90%)                                                   | Trace Tremolite-actinolite in -100M fraction. Could be contaminated.                                                                                                  |
| June 1979   | 11                 | a) Virginia C80602341 (C-12)<br>B80603970 (C-6)                          | No asbestiform material detected.                                                                                                                                     |
|             |                    | b) Virginia Sand (~100%)                                                 | No asbestiform Material detected.                                                                                                                                     |
| July 1979   | 3                  | Libby Sand (~95%)                                                        | No asbestiform material detected.                                                                                                                                     |
|             | 9                  | Virginia WM602419 (6/25/79)<br>B80603970 (6/29/79)<br>B80603825 (7/2/79) | Tremolite-actinolite in -100M and -70+100M fraction (0.1%) of first two cars. With a trace in -100M of third car. Bulk analysis would be 0.0075 and 0.0064% asbestos. |
| August 1979 | 1                  | TB-Virginia Vermiculite Production Period                                | No Asbestiform Material Detected                                                                                                                                      |

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### APPENDIX III

#### ASBESTOS MONITORING - PROPOSED PROTOCOL

ASBESTOS MONITORING  
AIR, VERMICULITE ORE, PRODUCT

By: Gary Smith  
Dick Gruenbaum  
Al Davidson

1. VERMICULITE ORE & FINAL PRODUCT MONITORING

A. Test species, source & sampling site

1. Vermiculite

- a. African ore - Portsmouth
- b. Virginia ore - Charlottesville\*
- c. Libby ore - Marysville

\* Sample at source until Marysville sampling is tested.

2. Final Product

Turf Builder - Marysville

B. Test Frequency and costs

1. First Year - Six Times  
(establish working base lines)

|          |          |
|----------|----------|
| February | August   |
| April    | October  |
| June     | December |

Cost-\$6,800 plus 120 man hours per year. An additional cost of \$1,500 plus 18 man hours would be needed to test Marysville as the sampling source for Virginia ore.

2. Following years - Four times

|       |           |
|-------|-----------|
| March | September |
| June  | December  |

Cost-\$3,600 plus 60 man hours per year.  
(cost based on 1979 pricing)

C. Responsibility

- 1. Sampling - Quality Assurance
- 2. Sample preparation + Analysis - Analytical Research

D. Procedures (see attached)

II. AIR MONITORING

A. Marysville Production Area Monitoring - Trionized Plant

- 1. Vermiculite Unloading Area
- 2. Expander Operations Area

3. Control Process Area
4. Packaging Area
5. Warehouse Area
6. Dryer Area
7. Screening & Milling Area
8. Feeder Area
9. Resin Area

B. Test Frequency & Costs

The working baseline information has been established for the Trionized Plant so the following represents a maintenance audit.

Three test periods a year - Vermiculite unloading & expander operation areas are tested, on each test period. The remaining areas are tested on at least one of these periods.

February  
May  
October

Cost-\$1,000-\$2,000 plus 96 man hours per year.  
(Cost based on 1979 pricing)

C. Responsibility

Safety & Environmental Protection

D. Procedures(see attached)

## VERMICULITE ORE SAMPLING

### 1. Vermiculite Ore

- Trucks - Obtain a 1/2 cubic foot sample with a shovel from the top of the truck.
- Railcars - Obtain a 1/2 to 1 cubic foot sample with a shovel from one bottom section of car during unloading. For new suppliers obtain one sample from each section.
- Warehouse- Obtain a 1 cubic foot sample with a shovel from several different locations on the storage pile.

- 2. All samples are to be split down to appropriate size in the QA laboratory using a 1:1 splitter.

# TREMOLITE ANALYSIS OF #4 and #5 ORE COMPOSITE

