Item ID Number	05482	☐ **Not Scanned**
Author	Young, Alvin L.	
Corporate Author	United States District Court, Eastern District of New Yor	
Report/Article Title	Declaration of Alvin L. Young, In re: "Agent Orange" Product Liability Litigation, All Cases, August 30, 1984	
Journal/Book Title		
Year	0000	
Month/Day		
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Number of Images	0	
Descripton Notes		

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

IN RE "AGENT ORANGE	)
	)
PRODUCT LIABILITY LITIGATION	)
	)
ALL CASES	)

DECLARATION OF ALVIN L. YOUNG

I, Alvin L. Young, being duly sworn, depose and state that based on the records, files and documents to which I have access, control and supervision, the following is true to the best of my knowledge, information and belief:

(1) I am a Senior Staff Scientist (AFSC 2616) with the United States Air Force, currently detailed as Senior Policy Analyst, Office of Science and Technology Policy, Executive Office of the President, Washington, D.C. Since 1968, I have served as an expert for the government in areas of science related to the military herbicide Agent Orange. Specific areas of expertise include formulation, equipment design, application, military use, dioxin contamination, environmental fate, toxicology and human risks to exposure.

(2) Agent Orange, as formulated and procurred for the Department of Defense, consisted of approximately a 50:50 mixture of the normal-butyl esters of 2,4-dichlorophenoxyacetic acid and 2,4,5-trichlorophenoxyacetic acid. The product was formulated to contain approximately 8.6 pounds active ingredient (acid equivalents of 2,4-D and 2,4,5-T) per gallon of liquid. Thus the product contained roughly 4 pounds of each herbicide in the acid form.

(3) The herbicides 2,4-D and 2,4,5-T have been commercially available and widely used since the late 1940's. Numerous formulations including the iso-butyl and normal-butyl ester formulations were used commercially in the United States prior to, during, and after the use of Agent Orange in Vietnam. In the 1960 Farm Chemicals Handbook, formulations of the normal-butyl ester of 2,4-D containing 4 and 6 pounds per gallon active ingredient were recommended for weed control in wheat and other field grains. In the same handbook, formulations of the normal-butyl esters of both 2,4-D and 2,4,5-T (as a mixture) were recommended for brush control on rangelands and in reforestation. Typically these latter formulations contained the active ingredient at 4 and 6 pounds per gallon. As late as 1980 normal-butyl esters of 2,4-D were commercially available (DOW ESTERON 76BE) containing 6 pounds (acid equivalents) per gallon.

4. Analyses in the early 1970's of archived samples of commercial formulations of 2,4,5-T and archived samples of Agent Orange showed similar levels of dioxin (2,3,7,8-tetrachlorodibenzo-p-dixoin) contamination (See Young, A.L. et al. 1978. The Toxicology, Environmental Fate, and Human Risk of Herbicide Orange and Its Associated Dioxin, Air Force Technical Report OEHL - 78-92).

I declare under penalty of perjury that the above is true and correct.

Date: August 30, 1984

Alvin L. Young

ESTERON* 76BE
HERBICIDE

For the Control of Many Broadleaf Weeds, Herbaceous Perennials and Woody Plants Susceptible to 2,4-D in Grass Pastures, Certain Crops and Non-Crop Areas.

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SPECIMEN LABEL

ACTIVE INGREDIENT:
2,4-Dichlorophenoxyacetic Acid, Butyl Esters 79.2%
INERT INGREDIENTS: 20.8%
2,4-D Acid Equivalent 63.2%—6 pounds per gallon
E.P.A. Registration No. 464-279

USE DIRECTIONS

Use ESTERON 76 BE herbicide to control bitterweed, croton, dandelion, docks, galinsoga, henbit, kochia, lambsquarters, marshelder, mustards, peppergrass, pigweed, plantains, ragweed, shepherdspurse, thistles, vetch, wild radish, and many other broadleaf weeds, without injury to most established grasses; also for control of 2,4-D susceptible woody plants such as coastal sage, sandsage, elderberry, hazel, locust, poison oak, sumac and willow. Use in small grains, corn, sorghum, grass seed crops, postures, rangeland and in non-crop areas.

Apply ESTERON 76 BE as a water or oil spray during warm weather when weeds or brush are actively growing. Application under drought conditions often will give poor results. Use low spray pressure to minimize spray drift. On cropland and along roadsides, do not exceed 20 psi pressure. Apply enough spray volume to provide uniform coverage of weeds and brush, usually 5 to 20 gallons per acre by ground equipment and 3 to 5 gallons by aircraft. Higher gallonage may be used if desired to improve spray coverage and to reduce the hazard from spray drift.

Generally, the lower dosages recommended on this label will be satisfactory for young, succulent growth of sensitive weed species. For less sensitive species and under conditions where control is more difficult, the higher dosages will be needed. For crop uses, do not mix with oil or other adjuvants unless specifically recommended on this label. Deep-rooted perennial weeds such as Canada thistle and field bindweed and many woody plants usually require repeated applications for maximum control. **Do not apply ESTERON 76 BE where spray drift may contact nearby susceptible crops or other desirable plants or may contaminate water for irrigation or domestic use. Do not apply in the vicinity of 2,4-D sensitive crops or ornamental plants since vapors from this product may cause injury to such crops or plants. Read and follow all Use Precautions given on this label.**

NOTE: If there are uncertainties concerning special local use situations or specific crop variety tolerances to 2,4-D, consult local Extension Service or University Specialists for advice.

TO PREPARE THE SPRAY: (1) Fill the spray tank about half full with water, then add the required amount of ESTERON 76 BE, with agitation, and finally the rest of the water. NOTE: ESTERON 76 BE in water forms an emulsion which tends to separate unless the mixture is kept agitated. (2) If oil is added, first mix the ESTERON 76 BE and the oil and then add this mixture to the water with agitation. However, with adequate agitation, the oil can be added **after** the ESTERON 76 BE is mixed in the water if **strong agitation** is provided. (3) If straight oil is used, a solution is formed and separation does not occur. Do not allow any water to get into the oil-herbicide mixture to avoid formation of an invert emulsion.

WEED CONTROL IN SMALL GRAINS NOT UNDERSEEDED WITH A LEGUME: NOTE: Water is recommended to make up the spray. If oil is used, there is a greater risk of crop injury and of spray drift. Do not permit dairy animals or meat animals being finished for slaughter to forage or graze treated grain fields within 2 weeks after treatment.

Spring Wheat and Barley: Apply ⅓ to ⅔ pint per acre by air or ground equipment. A ½ pint per acre rate of ESTERON 76 BE is an average dosage, effective on many weeds. Spray when grain is in full tiller stage (usually 4 to 8 inches tall) but before the boot stage and when weeds are small. Do not apply before the tiller stage nor from early boot to the dough stage. Higher rates (up to 1⅓ pints per acre) may be required to control certain weeds but crop injury may result.

Winter Wheat and Rye: Apply ⅓ to ½ pint per acre in the spring at the full tiller stage but before the early boot stage. See more complete use directions under **Spring Wheat and Barley.**

Spring Seeded Oats: Apply ⅓ pint per acre at the full tiller stage but before the early boot stage. Oats are less tolerant to 2,4-D than wheat or barley and are more likely to suffer some injury, especially if higher rates (½ to ⅔ pint) are used to control difficult weeds.

Preharvest Treatment: Apply ⅔ to 1⅓ pints per acre when grains are in the hard dough stage to control large weeds that may interfere with harvest. Best results will be obtained when soil moisture is sufficient to cause succulent weed growth. NOTE: Do not feed treated straw to livestock.

WEED CONTROL IN CORN: Use one of the following three programs: **Preemergence:** Apply 1⅓ to 2⅔ pints per acre to soil anytime after planting but before corn emerges. Do not use on light sandy soil. **Emergence:** Apply ⅔ pint per acre just as corn plants are breaking ground. **Postemergence:** After emergence of corn, use ⅓ pint per acre. Application of ½ to ⅔ pint per acre may be needed for maximum control of some weeds but such rates are more likely to injure the corn. If corn is over 8 inches tall, use drop nozzles to keep the spray off the corn foliage as much as possible. Do not apply from the tasseling to dough stage. Do not use with oil, atrazine or adjuvants. Crop injury is more likely to occur if corn is growing rapidly under high temperature and high soil moisture conditions. To reduce breakage of stalks from temporary brittleness caused by 2,4-D, delay cultivation for 8 to 10 days after treatment. NOTE: Hybrids vary in response to 2,4-D and some are easily injured. Spray only varieties known to be tolerant to 2,4-D. Contact seed company and Extension Service Weed Specialists for this information.