

DDT

**AS
A FARM AND HOME
INSECTICIDE**

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NORTH DAKOTA AGRICULTURAL COLLEGE
EXTENSION SERVICE
FARGO, NORTH DAKOTA

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WHAT IT IS

DDT is the common name applied to a synthetic organic chemical. The technical name of this material is "dichloro-diphenyl-trichloroethane". In the pure state, it is a crystalline solid, almost colorless and odorless. It is not soluble in water, but it dissolves in most organic solvents. Common solvents in commercial use include cyclohexanone, xylene, kerosene and other oils.

DDT was first prepared by a German student in 1874. However, its value as an insecticide was not noted until 1939, when Swiss investigators reported its effect on flies, clothes moths and other insects. Some time later it was made available to the United States Department of Agriculture, which found its use valuable to the armed services for various pest control operations.

HOW IT WORKS

As an insecticide, DDT acts as a nerve poison by contact. It vaporizes slowly, and thus provides the ability to remain in a toxic condition for a comparatively long time on a treated surface. This is one of the major advantages of DDT as an insecticide. It has a slow killing action, and it does not act as an insect repellent.

DDT is poisonous to higher animals, where it also seems to act mainly as a nerve poison. It is distinctly poisonous when swallowed, and can be absorbed through the skin from oil solutions. Accordingly, normal care must be taken when using this material, although it is not considered nearly as poisonous as other common poisons such as strychnine, arsenicals, etc.

COMMERCIAL FORMS AVAILABLE

The public can now buy DDT in the form of dusts, wettable powders, oil emulsions, light oil sprays, and aerosols or "bombs".

DDT dusts usually contain from 1 to 10 percent actual DDT mixed with a carrier, such as talc, pyrophyllite, etc. Dust applications made so insects come in contact with it are recommended for various household insects and for the protection of certain plants. Dusts containing from 5 to 10 percent DDT seem to work best.

DDT wettable powders usually contain from 20 to 50 percent DDT, a wetting agent and the inert carrier. These powders form suspensions in water rather than true solutions, and require continued agitation after mixing to prevent the DDT from settling to the bottom of the sprayer. Sprays from wettable powders will frequently leave a white residue on sprayed surfaces.

DDT oil emulsions contain the DDT, plus the oil and a wetting agent. Different strengths of such emulsions are available. These preparations mix quite readily with water, but are less stable because the oil may evaporate, and the DDT settle out of the mixture.

DDT light oil sprays consist of DDT dissolved in a light oil, such as kerosene. With a stainless and odorless oil, such mixtures provide good household sprays because they do not leave any unsightly residue. For this purpose, a 5 percent spray is recommended.

DDT aerosols contain the insecticide in a solvent under gas pressure in a metal container commonly called a "bomb". Releasing the valve of the container permits

the insecticide to escape in a fine mist or vapor form. Aerosols are mainly used to control flying insects in a closed room.

RECOMMENDED USES

Extensive trials against many insect forms have been reported. A complete summary of results obtained cannot be included in this brief circular. However, major application in this area of DDT appear as listed below.

AS A FLY SPRAY IN HOUSES AND BARNES

A DDT spray applied to walls, ceilings and other favored resting places of flies is effective in killing such insects for a period of several weeks. This is called a "residual spray" to distinguish it from a "space spray" or a "contact spray".

A wettable powder mixture containing $2\frac{1}{2}$ percent DDT is recommended by the U. S. Department of Agriculture. Two pounds of 50 percent DDT wettable powder mixed with 5 gallons of water will make about this concentration.

The wettable powder mixture will leave a whitish-colored residue, so where this is objectionable, a 5 percent emulsion is used (4 pints of 25 percent DDT emulsion to 5 gallons of water). Apply at the rate of 1 gallon per 1,000 square feet of surface.

FLIES ON CATTLE

The $2\frac{1}{2}$ percent wettable powder spray applied direct to cattle is recommended by the U. S. Department of Agriculture as effective for about two weeks. Apply the spray to the backs and bellies of the ani-

mals with a power sprayer, using enough material to make the hair thoroughly wet. Repeated applications continue the protection. Trials conducted by NDAC Experiment Station indicate that a lower concentration may be used successfully.

TICKS ON SHEEP

Sheep ticks are controlled by a spray containing 1 pound of 50 percent DDT wettable powder to 25 gallons of water. A pressure sprayer to force the mixture into the fleece is necessary. A dip containing two-tenths of 1 percent DDT in a pine oil emulsion is also recommended. A single treatment offers adequate control.

FLEAS ON DOGS AND IN HOMES

A single application of 5 to 10 percent DDT along the backs of dogs gives effective flea control for several weeks. Also treat infested litter or bedding, using either the powder or a 5 percent DDT spray. This treatment is not recommended on cats -- they may lick off enough DDT to prove fatal.

HOUSEHOLD INSECTS

A 5 percent DDT light oil spray will kill bedbugs, clothes moths and carpet

beetles. For bedbugs, apply the spray direct to mattresses, bedstead, wall boards, etc. For cockroaches, spray the corners and crevices where the insects are commonly observed. For other forms, apply direct to articles to be protected.

GARDEN PESTS

In general, a 2 to 5 percent DDT dust or spray will be effective against leafhoppers, flea beetles and chewing insects. Do not use it on cabbage, lettuce, or other plants whose exposed portions are to be used. Cucumbers, melons and certain other plants may show some burning from the insecticide. General use of DDT in the potato area is anticipated.

NOT A CURE-ALL

DDT has limitations. It is not effective against cattle grubs, poultry mites, certain aphids and other forms. Incomplete studies on its effectiveness against many insects suggest that more complete recommendations for its use will be available in the future. In the meantime the uses outlined here should be established, but due precautions, as indicated, must be observed.

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