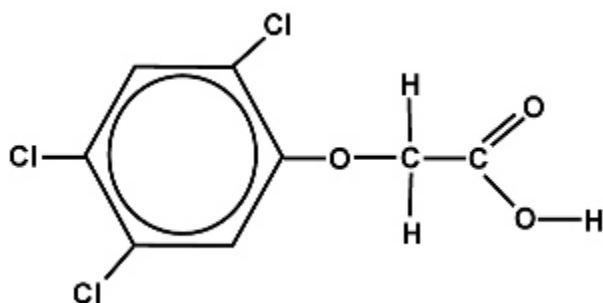


2,4,5-TRICHLOROPHENOXYACETIC ACID

Overview

2,4,5-Trichlorophenoxyacetic acid (2,4,5-T) is a chlorophenoxy acid [herbicide](#) that is no longer registered for use in the United States. Ester forms of 2,4,5-T and [2,4-D](#) were used as defoliants in the Vietnam War (e.g., [Agent Orange](#)) and concern about contamination with 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) led to the discontinuation of 2,4,5-T use as an [herbicide](#) in 1985.

Chemical Description



2,4,5-T is produced commercially by condensation of sodium chloroacetate with sodium 2,4,5-trichlorophenoxide. At high temperatures the action of alkali on 2,4,5-trichlorophenol can produce some 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD, or [dioxin](#)). It is impossible for manufacturers to produce 2,4,5-T without some TCDD contamination.

Technical grade 2,4,5-T (94%) takes the form of colorless crystals. Melting point is 153-156 oC. The vapor pressure is 700 nPa at 25oC. It is sparingly soluble in water (150 mg/l), but its salts with alkali metals and amines are water soluble. Esters of 2,4,5-T are insoluble in water but soluble in oils ([#Rotterdam convention, Annex III](#)).

Uses

It was used for selective control of weeds in cereal crops and lawns, nettles in pasture and woody weeds in forestry, particularly with conifers.

Trade names: Dacamine, Ded-Weed, Farmco Fence Rider, Forron, Inverton 245, Line Rider, T-Nox, Transamine, Brushwood Killer, Brush-Rhap, Brushtox, Esterone, Fruitone A, Reddon, Spontox, Tormona, Tributon, Veon 245, Verton 2T, Visko Rhap Low Volatile Ester, Amine 2,4,5-T for Rice, Super D Weedone, Trinoxol, Weedar, Weedone ([#Rotterdam convention, Annex III](#)).

Routes of Exposure and Metabolism

The substance can be absorbed into the body by inhalation of its aerosol and by ingestion ([#ICSC](#)). Once absorbed into the body, 2,4,5-T is eliminated mostly unchanged in the urine, with an elimination half-life of approximately 19 hours ([#CDC](#)).

2,4,5-T on the soil may be degraded chemically or biologically, volatilized, absorbed in the soil, or leached beyond the depth of plant roots. 2,4,5-T is moderately mobile in sandy and clay soils. Half-life on grass is 8-17 days, in soils 21-24 days. Normally, only small amounts enter water, where it does not persist as it is absorbed by clay or biota within a few days. Esters of 2,4,5-T are usually hydrolyzed within a few days. There is no significant bioaccumulation ([#Rotterdam convention, Annex III](#)).

Human Health Effects

Acute Health Effects

Inhalation of 2,4,5-T can cause cough and sore throat, and exposure to eyes leads to redness and pain. Ingestion results in diarrhea, drowsiness, headache, nausea, and vomiting ([#ICSC](#)).

Chronic Health Effects

2,4,5-T is listed as a possible carcinogen on the [IARC Carcinogens list](#). [State of California Proposition Carcinogen List](#) ranks 2,4,5-T as a "known" carcinogen ([#PANNA](#)).

The EU lists it as endocrine disrupting chemical. Also, it is listed as a probable endocrine disruptor by the Illinois EPA (#PANNA).

Environmental Health Effect

In general, the long-term ecological impact of 2,4,5-T can be considered low, but increases with the level of TCDD impurity.

2,4,5-T is phytotoxic to almost all broad-leaved crops, especially cotton, tomatoes, ornamentals, grapes, and fruit trees.

Toxicity to organisms

Fish: Eight-day dietary LC50 for bobwhite quail, 2776 mg/kg diet; LC50 for rainbow trout, 350, and for carp, 355 mg/l (96 hours). TCDD level not specified.

Birds: Low toxicity to birds.

Bees: Honey bee LD50 1.01 µg/bee in laboratory (48 hr, 65% relative humidity, 26.7°C) (#Rotterdam convention, Annex III).

Precautions

Given the unavailability of 2,4,5-T, the general population is unlikely to be exposed to 2,4,5-T (#CDC).

Regulation

Its international trade is restricted by the Rotterdam Convention. In the USA 2,4,5-T is regulated under Air Contaminants (Occupational and Safety Health Act), Hazardous Constituents (Resource Conservation and Recovery Act), Hazardous Substances (Superfund), Registered Pesticides (Federal Insecticide, Fungicide, and Rodenticide Act) (#Chemical Profile for 2,4,5-T).

Breaking News

News from Environmental Health News

Breaking Stories

- ♣ Agent Orange used widely in Ontario over decades, Minister says
- ♣ Herbicide 'very widely used'
- ♣ Minister calls for national probe of agent orange
- ♣ Ontario Hydro sprayed Agent Orange to clear corridors
- ♣ Premier accuses Tories of hiding Agent Orange use
- ♣ Agent Orange hotline set up
- ♣ Ontario probes Agent Orange poisoning
- ♣ Star Exclusive: Agent Orange "soaked" Ontario teens
- ♣ Army tested 17 pounds of Agent Orange chemical on sections of Fort Detrick

Scientific Studies

- ♣ Pesticide exposure and self-reported gestational diabetes mellitus in the Agricultural Health Study.
- ♣ Secret ties to industry and conflicting interests in cancer research.

Source : <http://www.toxipedia.org/display/toxipedia/2%2C4%2C5-T>