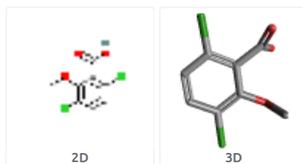


Dicamba

PubChem CID: 3030

Structure:

[Find Similar Structures](#)

Chemical Safety:

[Laboratory Chemical Safety Summary \(LCSS\) Datasheet](#)Molecular Formula: $C_8H_6Cl_2O_3$

Synonyms:

dicamba
3,6-Dichloro-2-methoxybenzoic acid
1918-00-9
Mdba
Mediben

[More...](#)

Molecular Weight: 221.03 g/mol

Dates:

Modify: 2020-02-26
Create: 2005-03-25

Dicamba is a white solid dissolved in a liquid carrier. The carrier is [water](#) emulsifiable. The primary hazard is the threat to the environment. Immediate steps should be taken to limit its spread to the environment. Since it is a liquid it can easily penetrate the soil and contaminate groundwater and nearby streams. It can cause illness by inhalation, skin absorption and/or ingestion. It is used as a herbicide.

[▶ CAMEO Chemicals](#)

Dicamba is a [methoxybenzoic acid](#) that is [O-methylsalicylic acid](#) substituted by [chloro](#) groups at positions 3 and 6. It has a role as a xenobiotic, an environmental contaminant, a herbicide, a synthetic auxin and an agrochemical. It is a [methoxybenzoic acid](#) and a [dichlorobenzene](#). It is a conjugate acid of a [3,6-dichloro-2-methoxybenzoate](#).

[▶ ChEBI](#)

11 Safety and Hazards



11.1 Hazards Identification



11.1.1 GHS Classification



Showing 1 of 4 [View More](#)

Pictogram(s)	 Corrosive Irritant
Signal	Danger
GHS Hazard Statements	H302: Harmful if swallowed [Warning Acute toxicity, oral] H318: Causes serious eye damage [Danger Serious eye damage/eye irritation] H412: Harmful to aquatic life with long lasting effects [Hazardous to the aquatic environment, long-term hazard]
Precautionary Statement Codes	P264, P270, P273, P280, P301+P312, P305+P351+P338, P310, P330, and P501 (The corresponding statement to each P-code can be found at the GHS Classification page.)

► [EU REGULATION \(EC\) No 1272/2008](#)

11.1.2 Health Hazard



SOLID: Harmful if swallowed. (USCG, 1999)

U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.

► [CAMEO Chemicals](#)

11.1.3 Fire Hazard



Not flammable. (USCG, 1999)

U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.

► [CAMEO Chemicals](#)

Not combustible. Liquid formulations containing organic solvents may be flammable. Gives off irritating or toxic fumes (or gases) in a fire.

► [ILO International Chemical Safety Cards \(ICSC\)](#)

11.1.4 Hazards Summary



The major hazards encountered in the use and handling of dicamba stem from its toxicologic properties as an organochlorine herbicide. Contact with dicamba may cause burns to the skin and eyes. Results from animal testing have indicated that dicamba is a compound of low acute toxicity; however, effects of acute exposure to humans have been reported to include appetite loss, weight loss, vomiting, depression, muscular weakness, and even death if sufficient quantities are inhaled, ingested, or absorbed through the skin. Those involved in the manufacture, formulation and application of this pale, odorless, crystalline herbicide are at risk of exposure. Those at risk should wear boots, protective gloves, and goggles. Breathing dicamba dust is to be avoided and areas of the body that may have contacted dicamba should be washed with soap and **water**; particularly before smoking, eating, or using toilet facilities. Considered non-flammable, dicamba burns only with great difficulty. Therefore, any fire involving dicamba should be extinguished with agents suitable for use on surrounding materials. A positive-pressure breathing apparatus and special protective clothing should be worn under such emergency conditions. Fire control **water** should be diked to prevent its entering **water** sources and sewers. Dicamba is stable, and resistant to oxidation and hydrolysis under normal storage conditions. While no label is required for shipment, dicamba should be clearly identified in storage areas. Containers of dicamba may be shipped by air, rail, road, or **water**. Small liquid spills of dicamba may be reduced to solid phase by evaporation, and then removed by vacuum cleaning. Large land spills should be deposited in excavated pits, ponds or other holding areas that have been sealed with an impermeable flexible membrane liner. Surface flow should be diked with soil or sand bags. Spills of dicamba in bodies of **water**, first may need to be treated with activated **carbon**, then immobilized masses removed with mechanical dredges or lifts. Before permanent land disposal of dicamba, consult with environmental regulatory agencies.

► [HSDB](#)

11.1.5 Fire Potential



This chemical is a noncombustible solid.

Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 6th Edition Volume 1: A-K, Volume 2: L-Z. William Andrew, Waltham, MA 2012, p. 906

► [HSDB](#)

11.1.6 Skin, Eye, and Respiratory Irritations



Dicamba irritates the eyes, skin, and respiratory tract.

Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 6th Edition Volume 1: A-K, Volume 2: L-Z. William Andrew, Waltham, MA 2012, p. 906

► [HSDB](#)

11.2 Safety and Hazard Properties



For more Interactions (Complete) data for Dicamba (7 total), please visit the [HSDB record page](#).

12.1.13 Toxicity Summary



IDENTIFICATION AND USE: Dicamba is a crystalline solid, white (reference grade) or brown (technical grade). It is a growth regulating herbicide. It controls broadleaf weeds in asparagus, corn (field, silage, popcorn), grass seed crops, grain sorghum, noncropland, pastures, rangeland, reduced-tillage, fallow, small grains not underseeded to legumes, sugarcane, turf, between cropping; brush and vines in pastures, industrial areas, noncropland, rangeland; perennial broadleaf weeds with spot treatments and ropewick applications. **HUMAN STUDIES:** Dicamba is moderately toxic by ingestion and slightly toxic by inhalation or dermal exposure. Symptoms of poisoning with dicamba include loss of appetite (anorexia), vomiting, muscle weakness, slowed heart rate, shortness of breath, central nervous system effects (victim may become excited or depressed), [benzoic acid](#) in the urine, incontinence, cyanosis (bluing of the skin and gums), and exhaustion following repeated muscle spasms. In addition to these symptoms, inhalation can cause irritation of the linings of the nasal passages and the lungs, and loss of voice. Most individuals who have survived severe poisoning from dicamba have recovered within 2 to 3 days with no permanent effects. Dicamba is capable of inducing DNA damage since it significantly increases the unwinding rate for liver DNA in vivo and also induces unscheduled DNA synthesis in human peripheral blood lymphocytes in vitro in the presence of exogenous metabolic activation. Furthermore, dicamba causes a very slight increase in sister chromatid exchange frequency in human peripheral blood lymphocytes in vitro. **ANIMAL STUDIES:** In rabbits, dose-related dermal irritation was observed. Desquamation was seen predominantly in the 1000 mg/kg/day group while moderate erythema, moderate edema and atonia were observed exclusively in the 1000 mg/kg/day group. Technical dicamba was fed in diet to rats (60/sex/group) at 0, 50, 250 or 2500 ppm in the diet for 115 to 118 weeks. Brain ventricular dilatation associated with pituitary anterior adenomas were observed in females at \geq 250 ppm. Adrenal enlargement was increased at \geq 250 ppm in both sexes. Increased macroscopic lesions in liver at \geq 250 ppm (males) and lesions in lymph nodes at 2500 ppm (males) were observed. There were increased malignant lymphomas in females at \geq 250 ppm, increased parafollicular cell carcinoma, and adenoma, as well as increased follicular adenoma and carcinomas in treated males, primarily at 2500 ppm, but could be extended down to the lower doses. Chronic treatment of adult and newborn rats with less than 0.04xLD50 of dicamba caused disorder of oxidative phosphorylation and focal necrosis in the heart. Similar changes were observed in rat embryos of dams exposed to the pesticide. In a rat developmental study, no treatment-related fetotoxicity or developmental effects were observed at any dose level based on assessments of numbers of pregnancies, implantation and resorption sites, and viable and dead fetuses, as well as litter weights and external, skeletal and visceral fetal examinations. Dicamba was negative in the Ames test with Salmonella typhimurium TA98, TA100, TA1535, TA1537 and TA102 with or without activation. **ECOTOXICITY STUDIES:** In fish, dicamba exposure could result in histological lesions, plasma vitellogenin increases, changes in sex hormone levels, and alterations of hormone-related gene expression. Dicamba induced primary DNA breaks in amphibians. Dicamba significantly increased lady beetle mortality and reduced their body weight. Plants exposed to sublethal levels of dicamba may produce fewer floral resources and be less frequently visited by pollinators.

12.1.14 Antidote and Emergency Treatment



Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing [water](#). Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Chlorophenoxy Herbicides and Related Compounds/

Currance, P.L. Clements, B., Bronstein, A.C. (Eds.); Emergency Care For Hazardous Materials Exposure. 3rd revised edition, Elsevier Mosby, St. Louis, MO 2007, p. 329

Basic treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer [oxygen](#) by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary Monitor for shock and treat if necessary Anticipate seizures and treat if necessary For eye contamination, flush eyes immediately with [water](#). Irrigate each eye continuously with 0.9% saline (NS) during transport Do not use emetics. For ingestion, rinse mouth and administer 5 mL/kg up to 200 mL of [water](#) for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated [charcoal](#) Monitor body temperature and treat if necessary. /Chlorophenoxy Herbicides and Related Compounds/

Currance, P.L. Clements, B., Bronstein, A.C. (Eds.); Emergency Care For Hazardous Materials Exposure. 3rd revised edition, Elsevier Mosby, St. Louis, MO 2007, p. 329

Advanced treatment: Consider orotracheal or nasotracheal intubation for airway control in the patient who is unconscious or is in severe respiratory distress. Positive-pressure ventilation techniques with a bag valve mask device may be beneficial. Consider drug therapy for pulmonary edema Monitor and treat cardiac arrhythmias if necessary Start IV administration of 0.9% saline (NS) or lactated Ringer's TKO /SRP: "To keep open", minimal flow rate/. Titrate to maintain adequate urine flow. For hypotension with signs of hypovolemia, administer fluid cautiously. Consider vasopressors if patient is hypotensive with a normal fluid volume Treat seizures with [diazepam \(Valium\)](#) or [lorazepam \(Ativan\)](#) Use [proparacaine hydrochloride](#) to assist eye irrigation /Chlorophenoxy Herbicides and Related Compounds

Currance, P.L. Clements, B., Bronstein, A.C. (Eds.); Emergency Care For Hazardous Materials Exposure. 3rd revised edition, Elsevier Mosby, St. Louis, MO 2007, p. 330

Respiratory protection. If any symptoms of illness occur during or following inhalation of spray, remove victim from contact with the material for at least 2-3 days. Allow subsequent contact with chlorophenoxy compounds only if effective respiratory protection is practiced. /Chlorophenoxy herbicides/

U.S. Environmental Protection Agency/Office of Prevention, Pesticides, and Toxic Substances. Roberts, J.R., Reigart, J.R. Recognition and Management of Pesticide Poisonings. 6th ed. 2013. EPA Document No. EPA 735K13001, and available in electronic format at: <http://www2.epa.gov/pesticide-worker-safety>, p. 100

Skin decontamination. Flush contaminating chemicals from eyes with copious amounts of clean [water](#) for 10-15 minutes. If irritation persists, an ophthalmologic examination should be performed. /Chlorophenoxy herbicides/

U.S. Environmental Protection Agency/Office of Prevention, Pesticides, and Toxic Substances. Roberts, J.R., Reigart, J.R. Recognition and Management of Pesticide Poisonings. 6th ed. 2013. EPA Document No. EPA 735K13001, and available in electronic format at: <http://www2.epa.gov/pesticide-worker-safety>, p. 100

Gastrointestinal decontamination. Consider gastric decontamination procedures ... If substantial amounts of chlorophenoxy compounds have been ingested, spontaneous emesis may occur. /Chlorophenoxy herbicides/

U.S. Environmental Protection Agency/Office of Prevention, Pesticides, and Toxic Substances. Roberts, J.R., Reigart, J.R. Recognition and Management of Pesticide Poisonings. 6th ed. 2013. EPA Document No. EPA 735K13001, and available in electronic format at: <http://www2.epa.gov/pesticide-worker-safety>, p. 100