Product Safety Assessment

**Clopyralid**

Select a Topic:
- **Names**
- **Product Overview**
- **Manufacture of Product**
- **Product Description**
- **Product Uses**
- **Exposure Potential**
- **Health Information**
- **Environmental Information**
- **Physical Hazard Information**
- **Regulatory Information**
- **Additional Information**
- **References**

**Names**
- CAS No. 57754-85-5
- Clopyralid MEA salt
- Clopyralid
- LONTREL® herbicide
- 3,6-dichloropicolinic acid
- RECLAIM® herbicide
- 3,6-dichloro-2-pyridinecarboxylic acid, monoethanolamine salt
- STINGER® herbicide
- TRANSLINE® herbicide

Much of the information in this document relates to the registration and sale of clopyralid in the United States of America. For details applicable to other geographies, consult the relevant Product Label, Safety Data Sheet or Contact Us.

**Back to top**

**Product Overview**
- Clopyralid is the common name for 3,6-dichloro-2-pyridinecarboxylic acid, the active ingredient in a series of herbicides manufactured by Dow AgroSciences (DAS), a wholly owned subsidiary of The Dow Chemical Company. Clopyralid herbicide formulations are sold under the trade names LONTREL®, RECLAIM®, STINGER® herbicide, and TRANSLINE® herbicide. These products are formulated as red-to-brown colored liquid concentrates.3 Clopyralid is a systemic herbicide that internally disrupts weed growth, ultimately resulting in target plant death.2 For further details, see Product Description.
- Clopyralid is used to control established broadleaf weeds. It is registered for use on corn, beets, spinach, stone fruits, barley, oats, wheat, and a variety of other crops. It is also used in forestry, Christmas tree plantations, fallow cropland, pastures and rangeland, and nonresidential turf, including golf courses.3,4 For further details, see Product Uses.
- Occupational exposure to clopyralid could occur in manufacturing or formulating operations or during herbicide application in the field. Consumers could possibly be exposed to clopyralid by consumption of trace residues in food, and/or drinking water, or following applications on recreation sites such as golf courses. Based on extensive risk-assessment calculations, the U.S. Environmental Protection Agency (EPA) concluded “there is a reasonable certainty that no harm will come to the general population and to infants and children from aggregate [cumulative] exposure to clopyralid residues.”5 For further details, see Exposure Potential.
• Eye contact may cause very slight temporary corneal injury. Clopyralid vapor may irritate the eyes, resulting in minor discomfort and redness. Prolonged skin contact may cause moderate irritation with local redness, but is unlikely to result in absorption of harmful amounts. Some clopyralid formulations contain isopropanol. Inhaling excessive amounts of isopropanol for long periods of time may be hazardous. For further details, see Health Information.
• Clopyralid is not considered to be persistent in soil, expected to contaminate groundwater through leaching, and is practically non-toxic to honeybees and aquatic organisms on an acute basis. For further details, see Environmental Information.
• Clopyralid herbicide formulations are combustible. Avoid elevated temperatures and direct sunlight. These products are incompatible with acids, oxidizing materials, halogenated organics, and some metals. Consult the Product Label for specific use and storage information. For further details, see Physical Hazard Information.

Manufacture of Product

• Manufacture – Dow AgroSciences manufactures clopyralid, the active ingredient, at Pittsburg, California and formulates products in the U.S.; New Plymouth, New Zealand; and Drusenheim, France.
• Process – Clopyralid is manufactured in several forms, including the potassium salt, triethylammonium salt, and monoethanolamine salt. All forms readily hydrolyze to the parent acid. The structure of clopyralid acid is shown below.

\[
\text{HO} \quad \text{Cl} \\
\text{Cl} \\
\text{N} \\
\text{O} \\
\text{Cl}
\]

Product Description

Clopyralid is the common name for 3,6-dichloro-2-pyridinecarboxylic acid, the active ingredient in a series of herbicides manufactured by Dow AgroSciences, a subsidiary of The Dow Chemical Company. Clopyralid is typically formulated as a salt and marketed by Dow AgroSciences under the trade names LONTREL® herbicide, RECLAIM® herbicide, STINGER® herbicide, and TRANSLINE® herbicide. These products are formulated as red-to-brown liquid concentrates that are mixed with water and applied as a spray. Clopyralid is absorbed by the foliage and roots of plants, however herbicidal activity is limited to broadleaf plants and some species of woody brush. Once inside the plant or in the environment, clopyralid salts are readily converted to clopyralid acid. Clopyralid is a systemic herbicide, meaning it disrupts the internal growth processes of established weeds, ultimately resulting in death 1 to 4 weeks following application.

Product Uses

Clopyralid controls established broadleaf weeds and some species of woody brush. It is registered by the U.S. Environmental Protection Agency (EPA) for use on:
• Crops – canola, corn, garden beets, mint, popcorn, sugar beets, spinach, stone fruits, turnip, barley, oats, wheat, and others
• Fallow cropland
• Pastures and rangeland
• Forestry

® Trademark of Dow AgroSciences LLC
• Rights-of-way
• Tree plantations – Christmas trees and others
• Turf (nonresidential) – grasses grown for seed or sod farms, golf courses
• Ornamental grasses – in landscapes and nurseries

Clopyralid is not registered in the United States for use on residential lawns.

Clopyralid products are also registered for use on a global basis. Countries with registrations include Belgium, Czech Republic, France, Germany, Hungary, Italy, Poland, Spain, the United Kingdom and sixteen other Member States of the European Union. Registrations also authorize sales in more than 25 other countries, including Australia, Canada, New Zealand, Russia and Ukraine.

Exposure Potential

Clopyralid is used in the production of commercial herbicides. Based on the uses for clopyralid, the public could potentially be exposed through:

• **Workplace exposure** – Exposure could occur in a clopyralid manufacturing facility or in facilities that formulate it into herbicides. Those working with clopyralid in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each facility should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit unnecessary exposure. Agricultural workers could be exposed while mixing or applying herbicide in the field. Applicators are expected to follow label precautions, including wearing personal protective equipment appropriate to the application method. See Health Information and Product Label.

• **Consumer exposure to products containing clopyralid** – Clopyralid is currently registered for commercial use only. Consumers could possibly be exposed to trace residues from treated crops and/or drinking water, or through contact with treated turf on recreational areas such as golf courses. Prior to registering pesticides, the EPA performs extensive risk-assessment calculations using conservative, health-protective, high-end estimates of pesticide concentrations in drinking water, food, and nonfood sources. For clopyralid, risk assessments were performed for acute (single, high dose), intermediate-term, and chronic (long-term) exposures. Conservative assumptions were used to assess the risk from exposure to clopyralid from dietary and non-dietary sources. Risk estimates are below the EPA’s level of concern for all population subgroups for all exposure durations. Assuming baseline personal protective equipment (PPE), occupational risk estimates are expected to be below EPA’s level of concern. Based on these assessments, the EPA concluded that “there was reasonable certainty that no harm will result to the general population and to infants and children from aggregate exposure to clopyralid residues.” See Health Information.

• **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, ditches, sewers, waterways, or groundwater. Absorb small spills of this material with an inert material such as sawdust or sand. Place in suitable container for disposals. Wash thoroughly after handling. This description provides a general overview; please consult the relevant Safety Data Sheet or Product Label for more information about protective equipment and procedures. See Environmental, Health, and Physical Hazard Information.

• **Large release** – Industrial spills or releases are infrequent and generally fully contained. If a large spill in the United States does occur, dike the area to keep the material out of sewers and waterways. Personnel engaged in clean up of spills must wear appropriate protective equipment. Consult the relevant Safety Data Sheet or Product Label for more detailed information about protective equipment and procedures.

• **In case of fire** – Wear positive-pressure, self-contained breathing apparatus (SCBA) and protective fire-fighting clothing. Use water fog, alcohol-resistant foam, carbon-dioxide, or dry-chemical extinguishers to fight fire. Dry-chemical or foam extinguishers are preferred. Toxic,
irritating gases may be formed under fire conditions. Contain water from fire-fighting to prevent entry into surface or ground water. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

- **Emergency Response Information** – In the case of an emergency such as poisoning, product spillage or fire associated with a Dow AgroSciences product in the United States contact us at 800-992-5994 (additional information is available at [www.dowagro.com/rc/response/na.htm](http://www.dowagro.com/rc/response/na.htm)). For emergencies outside the United States, access [http://www.dowagro.com/re/response/index.htm](http://www.dowagro.com/re/response/index.htm) for a list of country sites or contact pages for relevant information.

**Health Information (formulated product)**\(^\text{17}\)

Researchers conduct animal studies to define the potential for a pesticide to cause harmful effects to human health. These tests are carried out using doses high enough to cause toxic effects. Effects seen at toxic doses in animals are unlikely to occur after short-term, low-level exposure in humans. The level of exposure must be considered to estimate the risks of harmful effects.\(^\text{18}\)

**Eye and Skin Contact** – Eye contact may cause very slight temporary corneal injury. Clopyralid vapor may irritate the eyes, resulting in minor discomfort and redness. Prolonged skin contact may cause moderate irritation with local redness, but is unlikely to result in absorption of harmful amounts.

**Inhalation** – Vapor concentrations are attainable that could be hazardous on single exposure. Some clopyralid formulations contain isopropanol. Excessive inhalation of isopropanol may cause eye, nose, and throat irritation. Excessive exposure for prolonged periods of time may cause lack of coordination, confusion, hypertension, hypothermia, circulatory collapse, respiratory arrest, or death.

**Ingestion** – This material has very low toxicity if swallowed. Harmful effects are not anticipated from swallowing small amounts.

**Cancer and Birth Defect Information** – Clopyralid is classified by the U.S. Environmental Protection Agency as "not likely to be a human carcinogen."\(^\text{19}\) Clopyralid caused birth defects in laboratory animal studies at doses that were severely toxic to the mother. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure. Mutagenicity studies have been negative.

For more information, see the relevant Product Label or Safety Data Sheet.

**Environmental Information**\(^\text{20,21}\)

Microbes readily break down clopyralid in soil, and it would not be considered persistent in soil under realistic use conditions. Carbon dioxide is the major breakdown product. Field studies show clopyralid has minimal potential to contaminate groundwater through leaching. Clopyralid is practically nontoxic to honeybees, earthworms, fish and other aquatic organism on an acute basis. It is slightly to practically non-toxic to birds on an acute basis.

For more information, see the relevant Product Label or Safety Data Sheet.
Physical Hazard Information

Clopyralid herbicide formulations are combustible. Avoid elevated temperatures and direct sunlight. Store these products in the original container with the lid tightly closed. These products are incompatible with acids, oxidizing materials, halogenated organics, and metals such as brass, copper, zinc, and aluminum. Contact should be avoided. In fire conditions, hydrogen chloride, nitrogen oxides, chlorinated pyridine, and other compounds could be formed. Consult the Product Label for specific use and storage information.

For more information, see the relevant Product Label or Safety Data Sheet.

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of clopyralid. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Product Label, Safety Data Sheet, or Contact Us.

Additional Information

- Safety Data Sheet (http://www.dowagro.com/label/index.htm).
- Contact Us (http://www.dowagro.com/contact/index.htm)
- LONTREL® Turf and Ornamental Herbicide Specimen Label, Dow AgroSciences LLC, Label Code: D02-071-005, June 29, 2004 (http://www.cdms.net/ldat/ld2QB003.pdf)
- STINGER® Herbicide Specimen Label, Dow AgroSciences LLC, Label Code: D02-043-013, March 28, 2005 (http://www.cdms.net/ldat/ld02P014.pdf)
- Buchwalter, D., et al., and Trevathan, W., (update), Clopyralid Pesticide Fact Sheet: Forestry Use, Oregon State University, Department of Environmental and Molecular Toxicology and National Institute of Environmental Health Services, November 2002 (http://www.oregon.gov/ODF/privateforests/docs/clopyralid.pdf)

For more business information about clopyralid, visit the relevant Dow AgroSciences web site at www.dowagro.com/.

References

2  Unpublished Information provided by Dow AgroSciences LLC.

® Trademark of Dow AgroSciences LLC
10 Buchwalter, D., et al., and Trevathan, W., (update), Clopyralid Pesticide Fact Sheet: Forestry Use, Oregon State University, Department of Environmental and Molecular Toxicology and National Institute of Environmental Health Services, November 2002, page 1.
18 Buchwalter, D., et al., and Trevathan, W., (update), Clopyralid Pesticide Fact Sheet: Forestry Use, Oregon State University, Department of Environmental and Molecular Toxicology and National Institute of Environmental Health Services, November 2002, page 1.
21 Buchwalter, D., et al., and Trevathan, W., (update), Clopyralid Pesticide Fact Sheet: Forestry Use, Oregon State University, Department of Environmental and Molecular Toxicology and National Institute of Environmental Health Services, November 2002, page 1.

Back to top

® Trademark of Dow AgroSciences LLC
NOTICES:

As part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment is intended to give general information about the chemical (or categories of chemicals) addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

The information herein is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Dow be responsible for damages of any nature whatsoever resulting from the use of or reliance upon the information herein or the product to which that information refers.

Nothing contained herein is to be construed as a recommendation to use any product, process, equipment or formulation in conflict with any patent, and Dow makes no representation or warranty, express or implied, that the use thereof will not infringe any patent.

NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

Dow makes no commitment to update or correct any information that appears on the Internet or on its World-Wide Web server. The information contained in this document is supplemental to the Internet Disclaimer, www.dowagro.com/company/disclaim.htm.

Back to top

Form No. 233-00437-MM-0910