

Diquat Dibromide TRED Facts

May 2002

EPA has approved the "Report of the Food Quality Protection Act (FQPA) Tolerance Reassessment Progress and Risk Management Decision (TRED) for Diquat Dibromide". The Federal Food, Drug, and Cosmetic Act (FFDCA) as amended by FQPA in 1996, requires EPA to reassess all the tolerances for registered chemicals in effect on or before the date of enactment of FQPA. In reviewing these tolerances, the Agency must consider, among other things, aggregate risks from non-occupational sources of pesticide exposure, whether there is increased susceptibility to infants and children, and the cumulative effects of pesticides with a common mechanism of toxicity. The tolerances are considered reassessed once the safety finding has been made or a revocation occurs. A Reregistration Eligibility Decision (RED) for diquat dibromide was completed in July 1995, prior to FQPA enactment; therefore, it needed to be updated to consider the provisions of the Act.

The Agency's TRED for diquat dibromide includes a review of dietary exposure, including food and drinking water sources. The report indicates that diquat dibromide, by itself, poses no risk concerns within the limits of the existing tolerances; therefore, no risk mitigation is needed, and no further actions are warranted at this time. The 44 tolerances for diquat dibromide in/on raw agricultural commodities are now considered reassessed as safe under section 408(q) of the FFDCA. This fact sheet summarizes the information contained in the TRED and related documents for reregistration case 0288, diquat dibromide.

Uses

- Diquat dibromide is a non-selective contact algicide, defoliant, desiccant and herbicide. As a herbicide/algicide it is used to control broadleaf and grassy weeds in non-crop (including residential) and aquatic areas. As a desiccant/defoliant, it is used on seed crops and potatoes. Its largest terrestrial use is as a desiccant on potato crops, while other food applications include use as a desiccant on crops grown for seed that are used for feed.
- Diquat dibromide may be applied pre-harvest and post-harvest at a maximum application rate of 4.0 lbs diquat cation/A (up to 12 lbs diquat cation/surface acre for certain Special Local Need (SLN) labels when application is to water 12 ft. in depth).
- On average, less than 500,000 lbs of active ingredient (a.i.) are applied annually.

Health Effects

- Diquat dibromide exhibits low acute toxicity via the oral and inhalation routes of exposure, but exhibits moderate to severe acute toxicity via the dermal route of exposure. Diquat dibromide is not an acute skin irritant, nor a dermal sensitizer, but it is considered a moderate to severe eye irritant.
- The mutagenicity database for diquat dibromide indicates that this chemical has no mutagenic or genotoxicity activity and it is not a carcinogen.
- There is no evidence of endocrine disruption upon exposure to diquat dibromide.

Risks

- **Acute Dietary (food and water) Risks:** The acute dietary analysis for diquat dibromide was conducted using a conservative model to estimate potential acute exposures different population sub-groups may have to diquat dibromide. The acute dietary exposure analysis is based on the Dietary Exposure Evaluation Model (DEEM™) analysis and evaluated individual food consumption and accumulated exposure to the chemical for drinking water and each food commodity. Acute dietary risks are well below the Agency's level of concern for all population sub-groups.
- **Chronic Dietary (food and water) Risks:** The chronic dietary analysis for diquat dibromide was conducted using a conservative model to estimate potential chronic exposures different population sub-groups may have to diquat dibromide. The chronic dietary exposure analysis is based on DEEM™ and evaluated a three-day average of consumption for each population sub-group, combined with tolerance level residues in commodities, to determine average exposures in mg/kg/day. Chronic dietary risk is not of concern for any population sub-group.
- **Acute and Chronic Drinking Water Risks:** Exposures from diquat dibromide to surface or ground water sources for both terrestrial and aquatic uses are not of concern to the Agency. Diquat dibromide is essentially immobile in the environment, indicating that it will most likely be associated with the soil and sediment instead of water. Significant residues of diquat dibromide are not expected to reach ground or surface water. Therefore, no risk mitigation measures are necessary to address drinking water risks from diquat dibromide use.
- **Residential Risks:** Diquat dibromide is currently registered for general weed control on turf (spot treatment only), in backyard ponds, on garden sites, and landscapes. This assessment evaluates both residential handlers who can mix, load and apply diquat dibromide, and postapplication exposures to adults and children who may come in contact with treated turf or 3 water bodies. Post-application recreational risks to golfers and swimmers in treated lakes were found to be not of concern, as well.
- **Aggregate Risk:** The Agency must also consider aggregate risk, which examines the combined risk from exposure through food, drinking water and non-occupational residential uses. The short term and chronic aggregate risks for adults and children are considered highly conservative and not of concern to the Agency.

Tolerance Reassessment Decisions

Tolerances are established for residues of diquat dibromide [6,7-Dihydropyrido(1,2-a:2',1'-c)pyrazinedium dibromide] in/on raw agricultural commodities as defined in 40 CFR 180.226. Based on the residue data submitted, proposed tolerances are as follows:

- Established tolerances for diquat dibromide in cattle, goats, hogs, horses, poultry and sheep (fat, meat by products, meat), eggs and milk remain unchanged at 0.02 ppm.
- Tolerances will be established for alfalfa seed (3.0 ppm), clover seed (2.0 ppm), sorghum grain (2.0 ppm), soybean hulls (0.6 ppm) and soybean seed (0.2 ppm).
- Tolerance changes from 0.02 ppm include avocados (0.2 ppm), cottonseed (0.2 ppm), citrus fruits (0.05 ppm), small fruits (0.05 ppm), hops (0.2 ppm), fruiting vegetables (0.05 ppm), leafy vegetables (0.05 ppm) and seed/pod vegetables (0.05 ppm).
- Tolerance changes from 0.1 ppm include fish (2.0 ppm), forage grasses (0.2 ppm), forage legumes (0.2 ppm), shellfish (20 ppm).
- Other tolerance changes include processed potatoes (from 0.5, now 1.0 ppm) and a revocation of tolerances for potable water and sugarcane.

Next Steps

- A Notice of Availability of this tolerance reassessment decision document for diquat dibromide was published in the Federal Register on May 12, 2002. A copy of the 1995 diquat dibromide

RED, the 2002 TRED and supporting documents are available on the Agency's website at <http://www.epa.gov/pesticides/reregistration/diquat>.

- At the request of the technical registrant, the Agency also reevaluated potential exposures for residential broadcast spray uses, as well as possible modifications to the Personal Protective Equipment (PPE) requirements of the 1995 RED based on the submission of additional data. The results for the residential broadcast spray use assessment and any changes to PPE requirements will be addressed separately, as an amendment to the 1995 RED.