



May 9, 2016

Docket ID: **EPA-HQ-OPP-2011-0855**

Environmental Protection Agency
Office of Pesticide Programs (OPP) Docket
EPA Docket Center (28221T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460-0001

Subject: **“Proposed Interim Mitigation Decisions: Paraquat Dichloride”**

The Weed Science Society of America (WSSA) is a non-profit professional society promoting research, education, and awareness of weeds in managed and natural ecosystems. Our members include academic, governmental, and private industry research scientists, students and teachers, extension educators, and federal, state, county, and private land managers. We welcome the opportunity to comment on the EPA's Proposed Interim Mitigation Decisions for Paraquat Dichloride (EPA-HQ-OPP-2011-0855-0034).

Paraquat's Combination of Characteristics is Not Found in Any Other Alternative Herbicide:

Paraquat is a very fast acting, non-selective, broad spectrum, contact herbicide. Paraquat is one of only two herbicides which are classified as photosystem I inhibitors (WSSA Group 22). The other is diquat, which is primarily used as an aquatic herbicide. Photosystem I inhibitor herbicides accept electrons from photosystem I that leads to a self-perpetuating chain reaction of lipid oxidation that destroys the integrity of cell membranes allowing cytoplasm to leak into intercellular spaces which leads to rapid leaf wilting and desiccation. For paraquat, rapid leaf wilting and desiccation begins within several hours of application in full sunlight and complete foliar necrosis occurs within 1-3 days. When applied with a non-ionic surfactant, paraquat is rapidly absorbed into foliage and is rainfast within 15-30 minutes. In addition, paraquat is rapidly and tightly adsorbed to soil and there is no leaching potential. All rotational crops may be planted immediately after an application of paraquat (i.e. 0 day crop rotational interval).

There are three main herbicides used for broad-spectrum burndown treatments prior to planting and in fallow and non-cropland areas: paraquat (WSSA Group 22), glyphosate (WSSA Group 9) and glufosinate (WSSA Group 10). Having the option for three different mechanisms of action (MOA) is important for weed resistance management. Herbicide mixtures utilizing two or more different MOA's applied at the same time are more effective at preventing weed resistance than a rotation of herbicide MOA's where only one MOA is applied at a time.

Besides paraquat's wide scale use as a weed burndown treatment prior to planting and in fallow, its unique combination of herbicidal characteristics (i.e. non-translocated, very fast acting, no leaching potential) make it an important vegetation management tool for the following uses:

- dormant season in established alfalfa, clover, mint, and rhubarb
- between cuttings in established alfalfa
- pre-harvest in drybeans, sunflowers, guar, potatoes, and soybeans
- post-directed in corn, sorghum, soybeans, sugarcane, pineapple, small fruits, cassavas, tanners, yams, pigeon peas, strawberries, trees and vines, guava, hops, tomatoes, and peppers
- pre-harvest desiccation of potatoes, cotton and weed control in rubber and coffee plantations
- control of existing vegetation prior to planting corn, cotton, and soybean without tillage

For vining crops such as grapes, paraquat is used for control of annual weeds once grapes are actively growing. Paraquat is also important for sucker control, such as in coffee, because it is not translocated. Paraquat can also be applied in tree fruit crops for control of weeds beneath the trees; there are few other options during the active growth cycle for trees. In railroad yards, paraquat can be used for quick knockdown of fast growing wheat that drops from railcars. It is important in these types of environments to not allow weed growth, as fires can start from the sparks underneath railcars. In other non-crop areas, paraquat can be used on pavement cracks with little concern for movement off-site or leaching following rainfall compared to other herbicides. Many of these uses of paraquat depend on backpack sprayers and other small scale hand-held equipment.

Paraquat as a Restricted Use Pesticide

The value of paraquat as a weed management tool has to be balanced with the fact that it has high acute toxicity to mammals. As such, paraquat is a Restricted Use Pesticide (RUP) that can only be purchased by certified applicators and applied by individuals under direct supervision of that certified applicator. In addition, there are no paraquat products registered for homeowner use and no products registered for application to residential areas. Paraquat labels specifically forbid this and all have this statement: DO NOT use around home gardens, schools, recreational parks, golf courses or playgrounds.

There have been multiple regulatory measures since the late 1980s to reduce the occurrence of accidental and intentional ingestion of paraquat, including labeling and the incorporation of dyes, stenching agents, emetics, and gelling agents in the formulation. However, there have been a number of incidents since 2000 where people have died due to accidental ingestion of paraquat. These cases have resulted from paraquat being **illegally transferred** to beverage containers and later mistaken for a drink and consumed.

EPA Proposed Mitigation Measures:

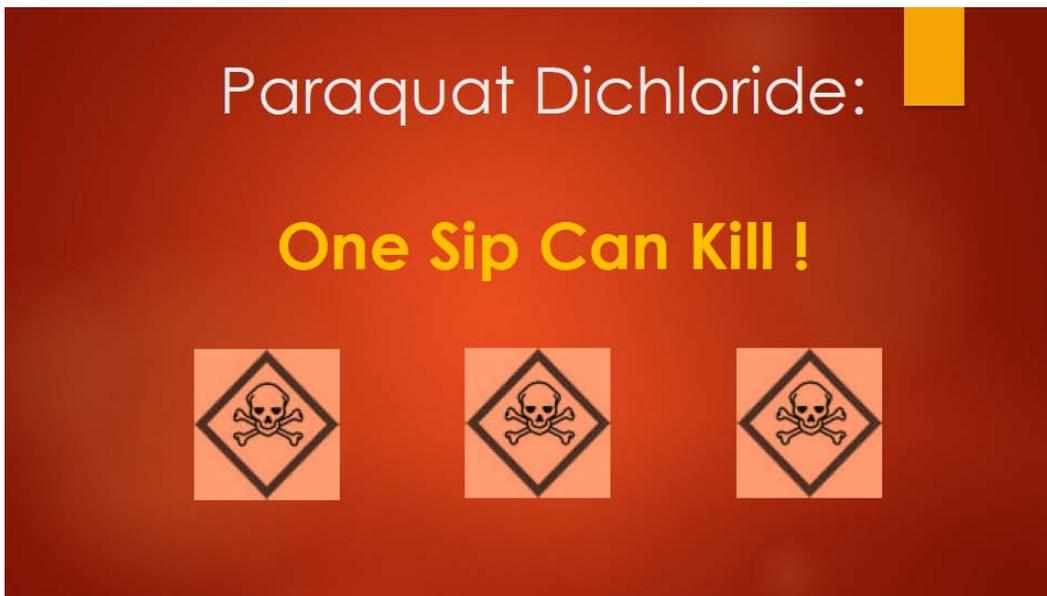
As part of the Registration Review process for paraquat that was initiated in 2011, EPA has proposed the following five additional mitigation measures to minimize human health incidents:

1. Developing paraquat-specific applicator training material that emphasizes that the chemical must not be transferred to or stored in improper containers
2. Changes to the pesticide label and warning materials to highlight the toxicity and risks associated with paraquat
3. Use of a closed-system (similar to the lock-and-load system) for transferring paraquat out of all product containers
4. Restricting the use to certified pesticide applicators only, thus prohibiting application by individuals working under the supervision of a certified applicator.
5. Prohibiting applications from hand-held equipment

WSSA Supports Proposed Mitigation Measures #1 and #2:

1. Developing paraquat-specific applicator training material that emphasizes that the chemical must not be transferred to or stored in improper containers
2. Changes to the pesticide label and warning materials to highlight the toxicity and risks associated with paraquat

The WSSA commends EPA for taking steps outlined in mitigation measures #1 and #2. Given paraquat's high acute toxicity to mammals and the problems with applicators illegally transferring paraquat to beverage containers, we support further education and awareness activities both on the label and through training. The paraquat-specific training materials for applicators should consist of information highlighting paraquat toxicity and the risks associated with the use and misuse of paraquat in addition to appropriate handling, storage, disposal, and Personal Protective Equipment (PPE) requirements and instructions. This includes warnings such as in EPA-HQ-OPP-2011-0855-0033, pg 1:



and EPA-HQ-OPP-2011-0855-0033, pg 7:



The WSSA also strongly supports that all paraquat product labels clearly and prominently prohibit pouring paraquat into food or beverage containers via the statements "NEVER PUT INTO FOOD, DRINK OR OTHER CONTAINERS" and "DO NOT REMOVE CONTENTS EXCEPT FOR IMMEDIATE USE."

In addition, all paraquat end-use product labels should further minimize any potential for exposure to residential areas such as lawns by requiring that for "Sensitive Areas - Paraquat must only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas)."

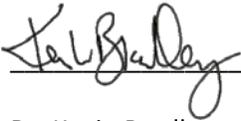
WSSA Concerns with Proposed Mitigation Measures #3, #4, and #5:

3. Use of a closed-system (similar to the lock-and-load system) for transferring paraquat out of all product containers
 4. Restricting the use to certified pesticide applicators only, thus prohibiting application by individuals working under the supervision of a certified applicator.
 5. Prohibiting applications from hand-held equipment
- The concept of a closed lock-and-load system sounds good on paper, but unfortunately even the best closed systems will still be accessed by someone if they want to. A closed system will certainly make it more difficult for someone to decant paraquat into non-approved containers such as beverage bottles. The estimated cost for such a system is estimated to be \$500-\$700 per unit (EPA-HQ-OPP-2011-0855-0030, pg 3). The Agency views this only as a one-time cost to growers which does not reflect the normal depreciation of farm application equipment over time. The costs of such a system will potentially eliminate the ability to use paraquat for those who cannot afford it thereby reducing an alternative herbicide mechanism of action for some would-be users.
 - Restricting paraquat's application to certified pesticide applicators only will significantly increase the costs and requirements to growers to the extent that certified applicators have a higher opportunity cost of time or charge more for application services than those who currently apply paraquat under their supervision. The Agency estimated this would cost \$1,278,000 annually, which is basically an estimate in the difference in wages between certified applicators and those under their direct supervision (EPA-HQ-OPP-2011-0855-0030, pg 6-7).
 - There are many areas of the country where a large percentage of the acres are sprayed by custom applicators, typically working at retail input suppliers. At many of these commercial facilities, one individual (sales manager, agronomist, etc.) maintains a certified applicator license while those individuals who do the actual mixing and application of pesticides are considered operators who work under the certified applicator license. In many instances it is the operators and not the applicators who actually handle and apply the pesticides to thousands of acres each season. It is difficult to believe that requiring operators (many of whom have years of experience) to become licensed applicators will reduce the number of accidental poisonings from paraquat. The more likely scenario that will develop should this restriction become law is that many commercial retail facilities with custom application services will simply elect to not apply paraquat.
 - WSSA's greatest concern is that prohibiting paraquat applications from hand-held equipment would essentially eliminate the weed science community's ability to do small plot research with paraquat. If the Agency decides to adopt this prohibition, the **WSSA strongly recommends there be an exemption for weed research work with paraquat.** For this particular weed science research

exemption, the WSSA would support that anyone who applies paraquat with handheld or backpack sprayer equipment must possess a certified pesticide applicators license. Many of the research discoveries that result in practices integrated into use by the farming community begin with small plot research.

The WSSA appreciates the opportunity to provide comments on EPA's proposed interim mitigation decisions for paraquat. We strongly support further education and awareness activities both on the label and through training. However, we do have concerns about mitigation measures that would significantly increase the costs and the requirements to the operator, applicator, or owner that would essentially eliminate a unique weed control tool from the toolbox and put undue pressure on other broad-spectrum burndown treatments. The WSSA looks forward to working with the Agency on this important topic.

Sincerely,



Dr. Kevin Bradley
President
Weed Science Society of America