

An official website of the United States government.

[Close](#)

We've made some changes to [EPA.gov](#). If the information you are looking for is not here, you may be able to find it on the [EPA Web Archive](#) or the [January 19, 2017 Web Snapshot](#).



Paraquat Dichloride: One Sip Can Kill

[en español](#)



Related Information

[Take the Paraquat Training and View Paraquat Training FAQs](#)

On this page:

- [The Accidental Poisoning Problem](#)
- [Recent Deaths from the Accidental Ingestion of Paraquat](#)
- [Paraquat Use Profile](#)
- [EPA Incident Investigation](#)
- [True Stories](#)
- [EPA Response](#)
- [The Solution is YOU](#)
- [Paraquat Dichloride Information Resources](#)

The Accidental Poisoning Problem

The California Poison Control System and the Central California Children's Hospital reviewed data from 1998-2009 and identified more than 1,400 cases of accidental poisonings caused by storage of non-food substances in soda bottles, unmarked bottles, cups or glasses. Several of the deaths involved the accidental ingestion of pesticides, including paraquat.¹

Recent Deaths from the Accidental Ingestion of Paraquat

In 2013, the California Poison Control System and the American Association of Poison Control Centers (AAPCC) sent letters of concern to EPA regarding a series of deaths from accidental ingestion of the pesticide paraquat in the San Joaquin Valley of California. AAPCC cited 50 deaths from paraquat; at least 12 were from accidental ingestion of paraquat from a beverage container.

This is a major concern to EPA because paraquat is a Restricted Use Pesticide that should not be accessible to the general public and, as with all pesticides, should never be placed into a beverage container. Paraquat is highly toxic to humans; one small accidental sip can be fatal and there is no antidote.

The product labels clearly prohibit pouring paraquat into food or beverage containers with the prominently-placed statements:

- "NEVER PUT INTO FOOD, DRINK OR OTHER CONTAINERS" and
- "DO NOT REMOVE CONTENTS EXCEPT FOR IMMEDIATE USE."

Paraquat Use Profile

Paraquat dichloride, commonly referred to as "paraquat," is an herbicide registered in the United States since 1964 to control weeds in many agricultural and non-agricultural use sites. It is also applied as a pre-harvest desiccant on some crops including cotton.

All paraquat products registered for use in the United States are Restricted Use Pesticides (RUPs), which can only be sold to and used by certified applicators (and applicators under their direct supervision). There are no homeowner uses and no products registered for application in residential areas.

EPA Incident Investigation

The fatalities resulting from paraquat products transferred into beverage containers in California prompted EPA to investigate all reported cases. EPA conducted an investigation of all reports of fatal and high-severity paraquat incidents. EPA identified 27 paraquat fatality reports through 2014 in its Incident Data System (IDS). The IDS database contains all registrant submissions of adverse health effects from pesticide products, as required by federal law (FIFRA §6(a)(2)). More than 80% of all identified paraquat fatality cases reported to IDS were due to ingestion of the product.

At least eight of these 27 deaths were due to the accidental ingestion of paraquat. All eight of these accidental deaths involved transfer of paraquat into a beverage container. Several of these cases have occurred recently. A review of the SENSOR-Pesticides data identified additional ingestion cases, including the fatal case of an 8-year-old child who drank the paraquat out of a soda bottle.

True Stories

- In 2013, a 70-year-old female ingested some contents of a re-used iced tea bottle that contained paraquat, unknown to her. She went to the hospital awake and alert with persistent vomiting. Over the course of a 16-day admission, she evolved the classic picture of paraquat ingestion: corrosive gastrointestinal injury plus kidney and respiratory failure leading to death.
- In 2010, a 44-year-old male mistakenly drank paraquat, which he thought was fruit juice. He developed difficulty breathing and vomited blood. He was admitted to the hospital intensive care unit where he died after 20 days of aggressive treatment.
- In 2008, an 8-year-old boy drank paraquat that had been put in a Dr. Pepper bottle, which he found on a window sill in the garage. He died in the hospital 16 days later. His older brother had used the product on weeds around the house and put it in the bottle in the garage. The older brother obtained the product from a family friend who is a certified Restricted Use Pesticide applicator.
- In 2003, a 49-year-old male took a sip from his coffee cup in which he had poured paraquat because the product's bottle was deteriorating. He realized his mistake and went to the Emergency Department. At that time, he was vomiting, cold and sweating profusely. Doses of activated charcoal were administered and his stomach was pumped; morphine was provided for esophageal pain; and he was intubated to support breathing function on the fourth day. Aggressive supportive care continued until he died on the tenth day.
- In 2000, a 15-month-old boy ingested paraquat that had been transferred into a Gatorade container and stored inappropriately. The boy survived in the hospital for 13 days after the ingestion and received aggressive treatment but died after suffering acute kidney and liver failure.
- In 2000, an 18-month-old boy ingested an unknown amount of paraquat solution from a bottle found in his father's landscaping truck. He received multiple-dose activated charcoal treatment two hours after the ingestion. He suffered from lack of oxygen during the first 24 hours followed by progressive liver, kidney, and cardio-pulmonary dysfunction. The boy died 11 days after the ingestion.

EPA Response

See EPA Actions to adopt measures to prevent poisoning and protect workers from paraquat. EPA has warned the applicator community about the high toxicity of paraquat.

As required by EPA's Paraquat Dichloride Human Health Mitigation Decision certified applicators must successfully complete an EPA-approved training program before mixing, loading, and/or applying paraquat. See the training module and paraquat training FAQs.

It is the responsibility of pesticide applicators to ensure that RUP products are used safely and appropriately, including never transferring any pesticide product, including paraquat, into a beverage container.

The Solution is YOU

ONE SIP CAN KILL!

To prevent the severe injury and/or death from paraquat ingestion, a paraquat product must:

- Be used only by a certified applicator or under the direct supervision of a certified applicator. Per new EPA-approved labels (which should begin appearing on products in 2019), paraquat may be used only by a certified applicator.
- Never be transferred to a food, drink or any other container.
- Always be kept secured to prevent access by children and/or other unauthorized persons.
- Never be stored in or around residential dwellings.
- Never be used around home gardens, schools, recreational parks, golf courses or playgrounds.

Paraquat Dichloride Information Resources

- EPA's [Paraquat Dichloride Registration Review Docket, EPA-HQ-OPP-2011-0855](#), for information on EPA's current re-evaluation of paraquat. This docket includes a letter from Dr. Gellar (California Poison Control System), the EPA response, and the AAPCC letter.
- Syngenta's Paraquat Information Center: www.paraquat.com/en/safety EXIT
- [PDF version of this fact sheet.](#)

¹Epidemiology of Accidental Poisoning Caused by Storage of Non-Food Substances in Food Containers and unmarked Bottles/Containers. Geller RJ, Kezirian R, Bangar P, Strong D, Carlson T. Children's Hospital Central California; California Poison Control System (CPCS). Found online at: <https://www.tandfonline.com/doi/pdf/10.1080/15563650903076924>. EXIT

LAST UPDATED ON MAY 6, 2020