

# Paraquat: Fact, Fiction, and True Danger



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## Another 'public service announcement.'

My recent e-letter on glyphosate-resistant Palmer pigweeds (Palmer amaranth) makes note of paraquat as a highly effective option. For some of you, the thought of using this herbicide thru your sprayer gives you the heebie-jeebies. Others will take the usage of it far too casually. Here's the reality:

Ingestion (drinking) of paraquat has grown popular in third-world countries as a means of committing suicide—drinking a mere 2 ounces will kill you. But most of you don't drink herbicides. To keep this in perspective, some insecticides would also kill you if you drank 2 ounces. (A very good reason to keep all of these out of the reach of children.)

There is also the issue of skin absorption. Paraquat can be absorbed thru the skin (or eyes), which can make you very sick indeed. Absorption thru the skin is moderate, although if the skin is cut or abraded it will be fairly high. So, as compared to other herbicides, or even Lorsban\* insecticide (worrisome stuff, in my semi-educated view), *it is of much greater importance to wear a face shield and elbow-length rubber gloves when handling or mixing paraquat. If you value your life, you will always, always use this protective gear.* A rubber or latex bib/smock is also wise. If you splash some elsewhere on your skin, immediately wash it off with clean water and soap. If you get a spot on your clothing, shed the clothing immediately—being undressed might be inconvenient, but hospitalization or death is a lot more inconvenient. Get in the habit of carrying spare clothing when handling paraquat.

*This is no Chicken Little false alarm, as Tom Cannon of Blackwell, OK conveys: "A close friend of the family was rather carefree with paraquat a few years ago. Leather boots wet with morning dew and paraquat day after day, combined with an A/C unit on his sprayer broke so [he was] running with windows open. And also he never used rubber gloves. Combined effect all but killed him: ICU for days." Part of the problem is that the symptoms of toxicity may take from a few days to a couple weeks to show up. Symptoms are often abnormalities in fluid intake or excretion, confusion, weakness, fast heart rate, difficulty breathing, or seizures. Failure of the kidneys, liver, or heart. Coma.*

If a pump or something major goes out while spraying paraquat, you might want to let a professional sprayer mechanic deal with it.

What about inhalation hazard? Of course, you will want to run a carbon filter in the sprayer cab if you don't have one already. But what about during mixing? Most paraquat has a stinky ingredient added that's foul enough for a natural tendency to avoid breathing it, but Gramoxone Inteon & SL formulations smell somewhat pleasant almost. And, a person quickly becomes desensitized to smell, and will therefore soon be breathing more of it than you realize. However, paraquat produces a lot less vapor than, for instance, Lorsban. Lung absorption of paraquat fumes is apparently not all that high (surprisingly). Still, I would make a significant effort to avoid breathing a lot of it, since you never know. And yet there was lots of paraquat sprayed in the '70s and '80s on open-station tractors, Spra-Coups without cabs, etc., and people weren't dying or being hospitalized in droves—and this exposure would involve lots of fine spray droplets hitting the skin and eyes, not just vapors. Workers in South American fields use canister or back-pack sprayers with wands to apply paraquat. So there's some leeway, especially if you're not being exposed day after day. But this is certainly a product where you want to err on the side of caution!

Paraquat is broken down and excreted via the kidneys. *Very* low steady exposure doesn't cause poisoning because it's being excreted all the time—there is no tissue accumulation in animals. You have to ingest or absorb a threshold amount over a couple days to become seriously ill from poisoning. However, some effects take up to 7 to 14 days to show up after exposure.

Paraquat doesn't cause any long-term reproductive problems, nor is it cancerous. And it has been studied a lot. This is in stark contrast to organophosphate insecticides and 2,4-D, which appear to have some nasty long-term effects from repeated exposure. So, paraquat would be said to have "acute" effects, or "acute toxicity," meaning that it happens all at once (or within 2 to 3 weeks), as opposed to "chronic," which would be ongoing symptoms and problems for months, years, or a lifetime. Essentially all of the problems with paraquat involve short-term toxicity, and then it is 'clean' beyond that—no lingering effects (assuming you didn't need a kidney transplant). Whereas a lot of other products that you might handle—such as organophosphate insecticides, or even 2,4-D—appear to be correlated (and likely causative, at least in some cases) of certain health problems that don't surface for decades—for those, it's gradual accumulation and total amount of exposure that are the key to problems developing.

Stay safe. Treat these materials with respect. Live long and prosper!

*\* I'm making the comparison here with Lorsban (chlorpyrifos) because it is perhaps the most widely used organophosphate insecticide in grain farming.*