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READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

USE ONLY IN ACCORDANCE WITH INSTRUCTIONS.

KEEP OUT OF REACH OF CHILDREN

RAZE 20 SL



INGREDIENTS

Paraquat20%
Other ingredients80%

RAZE 20 SL is a quaternary nitrogen herbicide widely used for broadleaf weed control. It is a quick-acting, nonselective compound, that destroys green plant tissue on contact and by translocation within the plant. It has been employed for killing marijuana in the U.S. and in Mexico. It is also used as a crop desiccant and defoliant, and as an aquatic herbicide.

Trade Names Of Other Firms: Trade names for products containing paraquat include Spray Seed, Tryquat, Gramoxone and Nuqua.

What is RAZE 20 SL and how does it work?

RAZE 20 SL is a quaternary nitrogen herbicide widely used for broadleaf weed control. It is a quick-acting, nonselective compound, that destroys green plant tissue on contact and by translocation within the plant.

Key Benefits of RAZE SL:

1. Quick effective weed control
2. Highly effective against broadleaf weeds
3. Available in other formulations for application flexibility

PRECAUTIONS

Harmful if swallowed, inhaled or absorbed through skin. Causes eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing dust or vapor. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. Keep children or pets away from treated area until dry.

SYMPTOMS OF POISONING

Signs and symptoms of paraquat poisoning include:

Eyes

Spots on the surface of the eye

Skin

Irritation, spots and blistering

From inhalation

Sore throat and coughing

From ingestion

Nausea, vomiting and diarrhoea, then in later stages spots forming in the mouth and on the lips

MEDICAL TREATMENT

Treatment is symptomatic.

FIRST AID

If skin contacts, remove all contaminated clothing at once; thoroughly wash affected areas with soap and water. If eyes contact, flush for 15 minutes with large amount of water. If inhaled, remove patient to fresh air. In all cases, notify a physician and present this label. Ingestion: Do not induce vomiting or administer liquids. Vomiting should be induced only under professional supervision. Keep patient prone and quiet. Get medical aid. **ONLY A PHYSICIAN** should induce vomiting as first aid for this slightly toxic substance due to increased risk of chemical pneumonia or pulmonary edema caused by aspiration of the hydrocarbon solvent.

DIRECTIONS OF USE

Crop	Application	Dosage
Sugarcane	Application in post -	0.2-0.6
Avocado	annual emergency of	kg ai/ha
Rice	the monocotyledons	
Cocoa	and dicotyledons,	
Coffee plant	except P.	
Cane	hysterophorus L (bitter	
Citrus	broom). In forest in	
Forest	breeding grounds.	
Ornamentals	Preparation of areas	
Banana	during the preparation	
	of the ground for	
	application of residual	
	herbicides. In sugar	
	cane of form directed	

Sugarcane	in pre-planting and pre-sowing. Bermuda grass, small grass, broadleaf weeds.	0.47 – 0.93 lb/acre
	Apply as a directed treatment and add nonionic surfactant. Application to the row middles in late June desiccates bermudagrass regrowth. Herbicide contact to young sugarcane tillers can cause significant injury. Application can reduce the amount of bermudagrass transported with seed cane.	

DISPOSAL METHODS

Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

STORAGE CONDITION

Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Store in a locked room or place away from children, animals, flood, feedstuffs, seed and fertilizers. Triple or preferably pressure rinse containers before disposal. Add rinsing to spray tank.

For More Details including effects on environment email contact@ivorychem.com with Subject "RAZE 20 SL DETAILS"

More Details:

TOXICOLOGICAL EFFECTS

- **Acute toxicity:** Paraquat is highly toxic via ingestion, with reported oral LD50 values of 110 to 150 mg/kg in rats, 50 mg/kg in monkeys, 48 mg/kg in cats, and 50 to 70 mg/kg in cows [8,87]. The toxic effects of paraquat are due to the cation,

and the halogen anions have little toxic effects [87]. The dermal LD50 in rabbits is 236 to 325 mg/kg, indicating moderate toxicity by this route [58,87]. The 4-hour inhalation LC50 is greater than 20 mg/L for the technical grade of the compound [87]. It causes skin and eye irritation in rabbits (severe for some of the formulated products) and also has caused skin sensitization in guinea pigs in some formulations [87]. Effects due to high acute exposure to paraquat may include excitability and lung congestion, which in some cases leads to convulsions, incoordination, and death by respiratory failure [87]. If swallowed, burning of the mouth and throat often occurs, followed by gastrointestinal tract irritation, resulting in abdominal pain, loss of appetite, nausea, vomiting, and diarrhea [8]. Other toxic effects include thirst, shortness of breath, rapid heart rate, kidney failure, lung sores, and liver injury [32]. Some symptoms may not occur until days after exposure. Persons with lung problems may be at increased risk from exposure. Many cases of illness and/or death have been reported in humans. The estimated lethal dose (via ingestion) for paraquat in humans is 35 mg/kg [8]. A maximum of 3.5 mg/hour could be absorbed through the dermal or respiratory route without damage [32].

- **Chronic toxicity:** As indicated above, repeated exposures may cause skin irritation, sensitization, or ulcerations on contact [58,87]. In animal studies, rats showed no effects after being exposed for 2 years to paraquat at doses of 1.25 mg/kg/day [8]. Dogs, however, developed lung problems after being exposed for 2 years at high doses (above 34 mg/kg/day) [8]. In a study of 30 workers spraying paraquat over a 12-week period, approximately one-half had minor irritation of the eyes and nose [8]. Of 296 spray operators with gross and prolonged skin exposure, 55 had damaged fingernails as indicated by discoloration, nail deformities, or loss of nails [8].
- **Reproductive effects:** In a long-term rat study at doses up to 5 mg/kg/day, no adverse reproductive effects were reported [111]. However, paraquat dichloride injected intraperitoneally at 3 mg/kg/day on days 8 to 16 of gestation increased fetal mortality in rats [8]. Hens given high levels of paraquat in their drinking water for 14 days produced an increased percentage of abnormal eggs [8]. It is unlikely to cause reproductive effects in humans at expected exposure

levels.

- **Teratogenic effects:** Offspring of mice dosed with high doses of paraquat during the organ-forming period of pregnancy had less complete bone development than the mice given lower doses [111]. Offspring of rats given similar treatment showed no developmental defects at any dose, but fetal and maternal body weights were lower than normal [111]. Other studies of paraquat using rabbits and mice have shown no teratogenic effects [8]. The weight of evidence suggests that paraquat does not cause birth defects at doses which might reasonably be encountered.
- **Mutagenic effects:** Paraquat has been shown to be mutagenic in microorganism tests and mouse cell assays [8]. It was unclear what levels of exposure are necessary to produce these effects.
- **Carcinogenic effects:** Mice fed paraquat dichloride for 99 weeks at high levels did not show cancerous growths [112]. Rats fed high doses for 113 (male) or 124 weeks (female) developed lung, thyroid, skin, and adrenal tumors [111]. Thus, the evidence regarding carcinogenic effects of paraquat is inconclusive.
- **Organ toxicity:** Paraquat affects the lungs, heart, liver, kidneys, cornea, adrenal glands, skin, and digestive system.
- **Fate in humans and animals:** Paraquat is not readily absorbed from the stomach, and is even more slowly absorbed across the skin. Oral doses of paraquat in rats are excreted mainly in the feces, while paraquat injected into the abdomen leaves through urine [8]. In the stomach and gastrointestinal tract, paraquat metabolites may be more readily absorbed than the parent compound, but their identities and toxicities are unknown [111]. Paraquat may concentrate in lung tissue, where it can be transformed to highly reactive and potentially toxic forms [87]. In one study, farm animals excreted over 90% of the administered paraquat within a few days. It was slightly absorbed and metabolized in the gastrointestinal tract. Milk and eggs contained small amounts of two paraquat metabolites [58].

ECOLOGICAL EFFECTS

- **Effects on birds:** The compound is moderately toxic to birds, with reported acute oral LD50 values of 981 mg/kg and 970 mg/kg in bobwhite and Japanese quail, respectively [58]. The

reported 5- to 8-day dietary LC50 value for the compound is 4048 ppm in mallards [58].

- **Effects on aquatic organisms:** Paraquat is slightly to moderately toxic to many species of aquatic life, including rainbow trout, bluegill, and channel catfish [58,8]. The reported 96-hour LC50 for paraquat is 32 mg/L in rainbow trout, and 13 mg/L in brown trout [58]. The LC50 for the aquatic invertebrate *Daphnia pulex* is 1.2 to 4.0 mg/L [8]. In rainbow trout exposed for 7 days to paraquat, the chemical was detected in the gut and liver, but not in the meat of the fish. Aquatic weeds may bioaccumulate the compound. In one study, 4 days after paraquat was applied as an aquatic herbicide, weeds sampled showed significant residue levels [87]. At high levels, paraquat inhibits the photosynthesis of some algae in stream waters [87].
- **Effects on other organisms:** Paraquat is nontoxic to honey bees [112].

ENVIRONMENTAL FATE

- **Breakdown in soil and groundwater:** Paraquat is highly persistent in the soil environment, with reported field half-lives of greater than 1000 days [11,58]. The reported half-life for paraquat in one study ranged from 16 months (aerobic laboratory conditions) to 13 years (field study) [113]. Ultraviolet light, sunlight, and soil microorganisms can degrade paraquat to products which are less toxic than the parent compound. The strong affinity for adsorption by soil particles and organic matter may limit the bioavailability of paraquat to plants, earthworms, and microorganisms [11,58]. The bound residues may persist indefinitely and can be transported in runoff with the sediment. Paraquat is not significantly mobile in most soils [8]. That which does not become associated with soil particles can be decomposed to a nontoxic end product by soil bacteria [32]. Thus, paraquat does not present a high risk of groundwater contamination. Of 721 groundwater samples analyzed, only one contained paraquat, at a concentration of 20 mg/L [111].
- **Breakdown in water:** Paraquat will be bound to suspended or precipitated sediment in the aquatic environment, and may be even more highly persistent than on land due to limited availability of oxygen. It had a half-life in

a laboratory stream water column of 13.1 hours [114]. In another study, paraquat dichloride was stable for up to 30 days [111]. In a third study of low levels in water, paraquat had a half-life of 23 weeks [111].

- **Breakdown in vegetation:** Paraquat dichloride droplets decompose when exposed to light after being applied to maize, tomato, and broad-bean plants. Small amounts of residues were found in potatoes treated with paraquat as a desiccant, and boiling the potatoes did not reduce the residue [8].

PHYSICAL PROPERTIES AND GUIDELINES

Physical Properties:

- **Appearance:** Paraquat salts are colorless, white, or pale yellow crystalline solids, which are hygroscopic and odorless [1].
- **Chemical Name:** 1,1'-dimethyl-4,4'-bipyridinium [1]
- **CAS Number:** 1910-42-5
- **Molecular Weight:** 257.20
- **Water Solubility:** 700,000 mg/L @ 20 C [1]
- **Solubility in Other Solvents:** Dichloride salt is sparingly soluble in lower alcohols [1]
- **Melting Point:** Decomposes @ 300 C [1]
- **Vapor Pressure:** Negligible @ room temperature (paraquat dichloride) [1]
- **Partition Coefficient:** 4.4683 [58]
- **Adsorption Coefficient:** 1,000,000 (estimated) [11]



IVORYCHEM PTE LIMITED
15 Beach Road #02-09
Beach Centre
Singapore 189677
Tel: +65 63377765
Fax: +65 63377730
contact@ivorychem.com
www.ivorychem.com

Company Registration No 200405572W

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