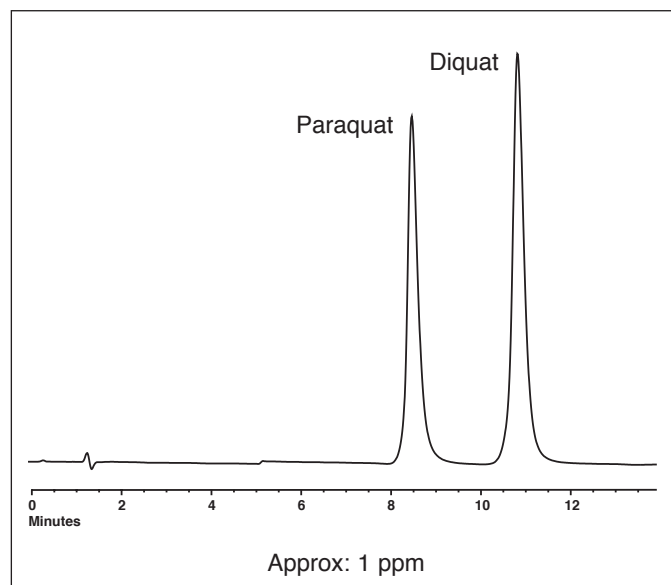




Paraquat and Diquat in Water

Paraquat and Diquat are widely used in agriculture and industry. They are employed as contact herbicides, as harvest aids, for pasture renovation and for aquatic weed control. Their environmental persistence allows for contamination of water supplies; wells, lakes, rivers, etc. Since Paraquat is a Class I Toxin and Diquat is a Class II Toxin, water resources must be monitored for the presence of these herbicides.

This method employs ion exchange chromatography so filtration is the only sample preparation necessary. Also, since both Paraquat and Diquat have a fixed +2 charge, 2 mL can be injected without peak degradation. Post-column derivitization improves sensitivity and greatly improves selectivity by shifting the detection to longer wavelengths.



Direct Injection Method

METHOD

Analytical Conditions

COLUMN: ALKION™ column 4 x 150mm,
Catalog No. 9410917,
Guard column 3 x 20mm, Catalog No. 9493020
TEMPERATURE: 50 °C
FLOW RATE: 0.8 mL/min
MOBILE PHASE: K01, Potassium buffer
K02, Potassium titrant
K03, Potassium ionic strength adjuster
IPA, ISO propyl alcohol

Post-column Conditions

POST-COLUMN SYSTEM: Pinnacle PCX or Vector PCX
REACTION DWELL: 0.15 mL
TEMPERATURE: 35 °C
REAGENT: 300 mg/L Sodium Dithionite in
0.3 M Sodium Hydroxide
FLOW RATE: 0.3 mL/min
DETECTION: 395 nm for Paraquat and 378 nm for Diquat
Without post-column derivitization:
257 nm for Paraquat and 308 nm for Diquat

Time [min]	K01 [%]	K02 [%]	K03 [%]	IPA [%]
0	31.5	53.5	0	15
10	28	47	10	15
15	28	47	10	15
15.1	0	85	10	5
17	0	85	10	5
17.1	31.5	53.5	0	15