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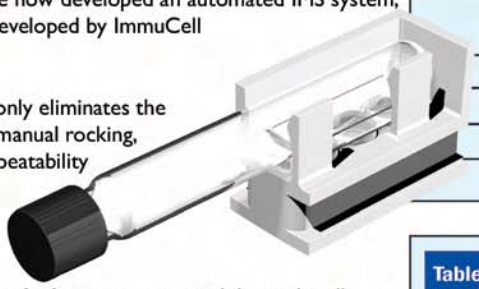
Isolate cryptosporidium

Automated Immunomagnetic Separation (IMS) Test

IMS Innovation

Until recently, the manual IMS procedure was the only step in the approved *Cryptosporidium* method which had not been improved.

TCS Water Sciences have now developed an automated IMS system, which uses an IMS test developed by ImmuCell Corporation, USA.



The ***Isolate*** system not only eliminates the RSI risk associated with manual rocking, but also improves the repeatability of the IMS test by standardising the rocking action.

A further advantage of the ***Isolate*** system is its ability to handle packed pellets up to 2ml, significantly reducing the need for split samples and multiple microscope slides.

In a study comparing the ***Isolate*** system with a manual IMS test, samples from two sources, a treated upland water and a river water, were filtered and concentrated to give known packed pellet volumes. 10 ml aliquots of each concentrate were spiked with 100 flow-sorted *Cryptosporidium* oocysts and processed by IMS. Slides were stained and counted, and the counts were expressed as percentage recoveries.

Table 1.
Percentage recovery of *Cryptosporidium* from an upland treated water

	Manual IMS		Isolate	
Packed Pellet	0.5 ml	1 ml	0.5 ml	1 ml
Mean (n = 10)	49.7	48. 4	83.7	80.4
Range	30 - 82	17 - 91	72 - 92	62 - 89

Table 2.
Percentage recovery of *Cryptosporidium* from a river water

	Manual IMS		Isolate	
Packed Pellet	0.5 ml	1 ml	0.5 ml	1 ml
Mean (n = 10)	54.2	30.0	68.1	75.4
Range	45 - 66	25 - 41	60 - 85	58 - 87

Recovery of *Cryptosporidium* was significantly better using the Isolate system, as seen in Tables 1 and 2.

Isolate yielded more consistent results than the manual test, as evidenced by the narrower data ranges obtained. These results suggest that the manual rocking procedure is sensitive to variations in operator technique. This study also demonstrated that adjustments to the speed, angle and vigour of the automated rocking procedure had significant effects upon *Cryptosporidium* recoveries. Once these factors were optimised, consistency of recovery was enhanced.

Conclusions

The regulation of *Cryptosporidium* testing has been a success, resulting in improved laboratory performance and better standardisation of methodologies. The DWI is now implementing changes to encourage laboratories to evaluate new technology. By doing this, laboratories can expect to benefit from improvements in health & safety, working efficiencies and turnaround times.

Automation has improved several aspects of the *Cryptosporidium* method, including filter washing, sample concentration and detection. Now, by applying automation to IMS, further improvements to both standardisation and *Cryptosporidium* recovery have been achieved.

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