

Table S2. Indicative instruments for testing ballast water: Approaches and Technologies

Item #	company	tool name	type of variable measured	subcategory of technology	size class range*	output	portability	website
1	Satake	Ballast Eye	FDA staining/metabolism	pulse counting, individual organism fluorescence	10-50 µm, >50 µm	cell counts	carryable case plus accessories	https://satake-group.com/products/analytical_equipment/ballast_water_inspection_equipment/000226.html?
2	LuminUltra	B-QUA	ATP assessment	enzyme-based assay	microorganisms 0.7-2.7 µm, 10-50 µm,	quantitative amount of ATP; qualitative risk	carryable case	https://www.luminultra.com/products/#bqua
3	LuminUltra	GeneCount	E.coli DNA detection & enumeration	PCR	<10 µm (specific indicator organisms)	cells/mL	carryable case	https://www.luminultra.com/products/genecount/
4	Turner Designs	Ballast-Check 2	chlorophyll assessment	PAM, simple fluorescence	10 - 50 µm	cell counts & viability, risk of exceedance	hand-held	https://www.turnerdesigns.com/ballast-check-2
5	MicroWISE	BallastWISE	chlorophyll assessment	imaging, individual cell or colony fluorescence	10- 50 µm	cell counts	carryable case	https://microwise.eu/ballastwise/
6	MicroWise	BallastWISE	motility	imaging, individual organism motility	10-50 µm, >50 µm	cell counts	carryable case	https://microwise.eu/ballastwise/
7	bbe Moldaenke GmbH	10cells	chlorophyll assessment	PAM, individual cells detected	10- 50 µm	cell counts	hand-held	https://www.bbe-moldaenke.de/en/products/chlorophyll/details/10cells
8	Chelsea Technologies	FastBallast	chlorophyll assessment	STAF, single cells or small groups of cells	10- 50 µm	cell counts	carryable case	https://chelsea.co.uk/products/fastballast/
9	Ballast Water Monitoring A/S	bw-monitor	chlorophyll assessment	bulk fluorescence	10- 50 µm	cell counts	installed in ships' plumbing	http://bw-monitor.com/
10	SixSenso	SX-CYT	chlorophyll assessment	cell cytometer with PAM fluorescence	10- 50 µm	not known/not yet on market	handheld	https://www.sixsenso.com/sx-cyt-cytometer
11	SixSenso	SX-CYT	RNA hybridization	cell cytometer with fluorescence detection	<10 µm	not known/not yet on market	handheld, with accessories?	https://www.sixsenso.com/sx-cyt-cytometer
12	Euro Tech	ET 1302, Ballast Water Checker	chlorophyll assessment	PAM, bulk fluorescence	10 - 50 µm	cell counts	hand-held	http://www.euro-tech.com/en/products_detail.asp?id=338&chosen=1
13	OceanTech	P.Counter	chlorophyll assessment	imaging, individual cell or colony fluorescence	10 - 50 µm	cell counts	hand-held	http://www.oceantech.co.kr/EOT/OT_05ser_01_view.php?wr_id=2&page=1; http://www.oceantech.co.kr/EOT/OT_03pro_view.php?wr_id=122&page=1&word=counter
14	Hach	BW680	chlorophyll assessment	PAM, bulk fluorescence	10 - 50 µm	relative risk Pass/Fail	hand-held	https://www.hach.com/bw680-ballast-water-handheld-fluorometer/product?id=15457732842
15	University of Montana Flathead Lake Biological Station	DNA Tracker	DNA detection and quantification	Digital PCR	target species, mainly	presence/absence of target species	carryable case	cody.youngbull@flbs.umt.edu
16	IDEXX	Colilert-18 & Enterolert-E with Quanti-Tray System	E. coli- and enterococci-specific enzyme activity and MPN	18-hr incubation with nutrients and indicative substrates	<10 µm	MPN estimate of cfu/100 mL	heavy (11 kg), carryable instrument, bulky Quanti-Trays. Compact substrate	https://www.idexx.com/en/water/water-products-services/ quanti-tray-system/ and https://123.idexx.com/resource-library/water/ quanti-tray-sealer-plus-manual-en.pdf

*While the < 10 µm size class is not explicitly referenced in the D-2 or US regulations, we include it here since the regulated bacteria belong to this size class.