

Laboratory Risk Assessment

Glow (research peptide blend)

Hazards, safe handling, storage and disposal in an in-vitro research setting

Document ref.	RBL-RA-008	Assessment date	23 September 2026
Revision	Rev. 1.0	Next review	September 2027, or on change of process
Scope	Receipt, storage, bench handling and disposal of lyophilised Glow and its aqueous solutions	Basis	COSHH Regulations 2002 (as amended); HSE 5-step approach

Research use only. Glow supplied by Richmond Biolabs is sold strictly for in-vitro laboratory research. It is not a medicine, food, cosmetic or veterinary product. This assessment covers laboratory handling only and makes no reference to, or provision for, administration to humans or animals.

Each peptide has its own risk assessment covering hazards, safe handling, storage and disposal in a laboratory setting.

1 Substance identification

Name	Glow; co-lyophilised blend of GHK-Cu, BPC-157 and TB-500
Components	GHK-Cu (CAS 49557-75-7), BPC-157 (CAS 137525-51-0), TB-500 (CAS 77591-33-4). Component amounts per lot COA
Molecular weight	GHK-Cu: 401.9 · BPC-157: 1419.5 · TB-500: 4963.4 g/mol
Physical form	Blue lyophilised powder in sealed glass vial (colour from GHK-Cu)
Solubility	All components freely soluble in water
Purity (supplied)	≥ 99% by RP-HPLC; identity by mass spectrometry. Batch values on the lot-specific COA

GHK-Cu

1 Gly	2 His	3 Lys	Cu(II)
----------	----------	----------	--------

BPC-157, 15 residues

1 Gly	2 Glu	3 Pro	4 Pro	5 Pro	6 Gly	7 Lys	8 Pro	9 Ala	10 Asp	11 Asp	12 Ala	13 Gly	14 Leu	15 Val
----------	----------	----------	----------	----------	----------	----------	----------	----------	-----------	-----------	-----------	-----------	-----------	-----------

TB-500 (thymosin β4), 43 residues

1 Ac-Ser	2 Asp	3 Lys	4 Pro	5 Asp	6 Met	7 Ala	8 Glu	9 Ile	10 Glu	11 Lys	12 Phe	13 Asp	14 Lys	15 Ser
16 Lys	17 Leu	18 Lys	19 Lys	20 Thr	21 Glu	22 Thr	23 Gln	24 Glu	25 Lys	26 Asn	27 Pro	28 Leu	29 Pro	30 Ser
31 Lys	32 Glu	33 Thr	34 Ile	35 Glu	36 Gln	37 Glu	38 Lys	39 Gln	40 Ala	41 Gly	42 Glu	43 Ser		

Fig. 1 Component sequences (N → C). Shaded: bound copper, BPC-157 proline residues, and TB-500 N-acetyl serine and Met6.

2 Hazards

No component has a harmonised classification under GB CLP and no Workplace Exposure Limit is assigned in HSE EH40. The copper content of GHK-Cu is harmful to aquatic life and sets the disposal and eye-protection controls. The blend is handled as a **potentially biologically active mixture** and dry powder is never handled on an open bench.

Other risks come from the handling process: sharps and glass, the benzyl alcohol preservative in bacteriostatic diluent, cold-chain packaging, and loss of sample integrity. Blend-specific risks are uneven sub-sampling, oxidation of TB-500 and loss of copper from GHK-Cu.

3 Hazard register

Likelihood (L) and severity (S) are each scored 1–5; risk rating $R = L \times S$. Bands: **1–4 low**, **5–9 medium**, **10–15 high**, **16–25 very high**. Residual ratings assume all listed controls are in place.

Ref	Hazard / activity	Affects	L	S	R	Control measures	L	S	R
H01	Inhalation of lyophilised powder Opening vials, weighing, transfer of dry material	Personnel	2	3	6	Open and weigh in a Class II MSC or ventilated balance enclosure. Allow vial to reach room temperature unopened. Tap cake down before decrimping.	1	3	3
H02	Skin or eye contact Reconstitution, pipetting, aliquoting	Personnel	3	3	9	Nitrile gloves, safety glasses to EN 166, buttoned lab coat. Eyewash within 10 s travel.	1	2	2
H03	Sharps and broken glass Needle transfer through septa, crimp removal, dropped vials	Personnel	3	3	9	Use decrimper, not pliers. Sharps bin at point of use; no recapping. Blunt-fill needles where practical.	2	2	4
H04	Benzyl alcohol in bacteriostatic water (0.9%) Use as diluent	Personnel	2	2	4	Handle as mild irritant. Keep capped; refer to diluent SDS. Use sterile water where preservative is not required by the assay.	1	2	2
H05	Microbial contamination of stock Repeated septum puncture, non-sterile diluent	Sample	3	3	9	Aseptic technique in MSC. Sterile diluent, 0.22 µm PES filtration of stock. Swab septum with 70% IPA before each entry.	1	3	3
H06	Thermal degradation and freeze-thaw loss Storage outside range, repeated thawing	Sample	4	3	12	Store at –20 °C in a logged freezer. Aliquot on first reconstitution; one thaw per aliquot. Record time out of storage.	2	2	4
H07	Moisture uptake by lyophilisate Opening cold vials, humid rooms	Sample	3	2	6	Equilibrate to room temperature before opening. Reseal promptly; hold opened material in a desiccator.	1	2	2
H08	Mislabelling or cross-contamination Several peptides handled in one session	Sample	2	4	8	One compound on the bench at a time. Label every aliquot with lot no., concentration, date, initials. Single-use filter tips.	1	3	3
H09	Cold burns; CO₂ build-up where dry ice is used Unpacking cold-chain shipments, freezer access	Personnel	2	3	6	Cryo gloves for dry ice. Unpack in a ventilated area, never a cold room. Do not seal dry ice in airtight containers.	1	2	2
H10	Spill of solution or powder Bench work, dropped vial	Personnel	3	2	6	Spill kit on bench. Damp-wipe powder (no dry sweeping). Clean with detergent then 70% ethanol.	1	2	2
H11	Release of copper complex to drain Disposal of residues and consumables	Environment	2	4	8	Copper compounds are harmful to aquatic life. Collect all liquid and solid waste for chemical incineration via licensed contractor. No drain disposal.	1	2	2
H12	Loss of copper from complex Contact with chelators, reducing agents or phosphate	Sample	3	3	9	Reconstitute in water or low-phosphate buffer. Keep EDTA, DTT and ascorbate off the bench. Discard if the blue colour fades or a precipitate forms.	1	2	2
H13	Oxidation of methionine residue Air exposure of solutions, repeated opening	Sample	3	2	6	Use freshly opened or degassed diluent, keep headspace small, and limit vial openings. Aliquot rather than re-enter the stock vial.	1	2	2
H14	Blend inhomogeneity Sub-sampling dry blended material	Sample	2	3	6	Reconstitute the whole vial; do not weigh portions of dry blend. Check stated component amounts against the lot COA.	1	2	2

14

hazards assessed

1 → 0

high-rated hazards

7.4 → 2.5

mean risk score

4

highest residual (low)

4 Risk profile

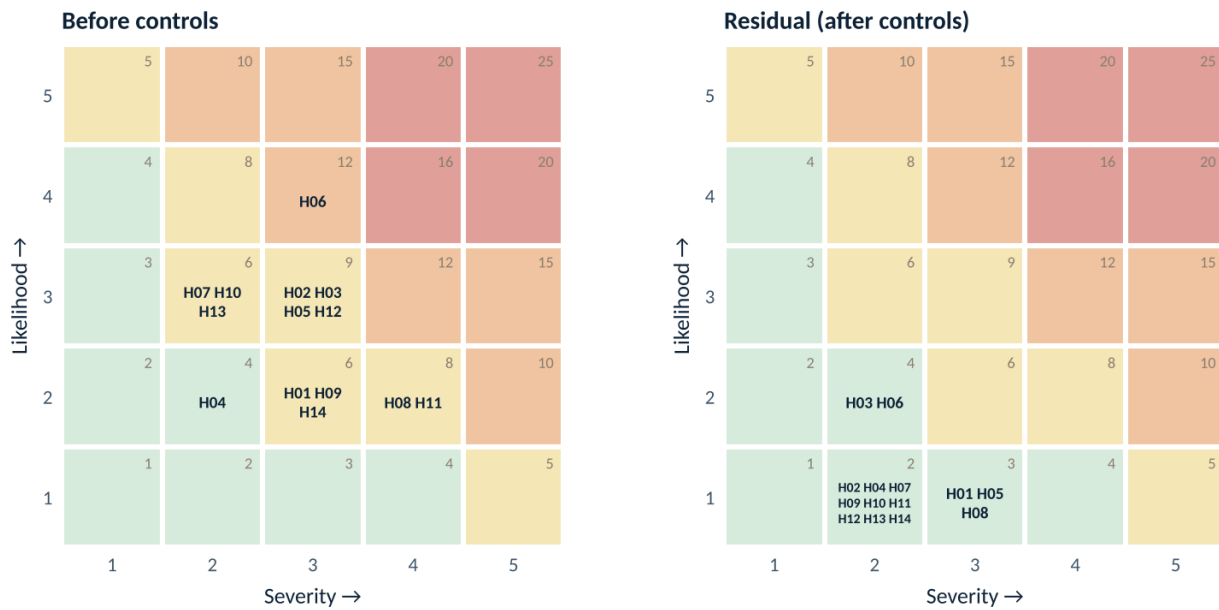


Fig. 2 Position of each hazard on the 5 × 5 matrix before and after controls. No hazard remains above the low band once controls are applied.

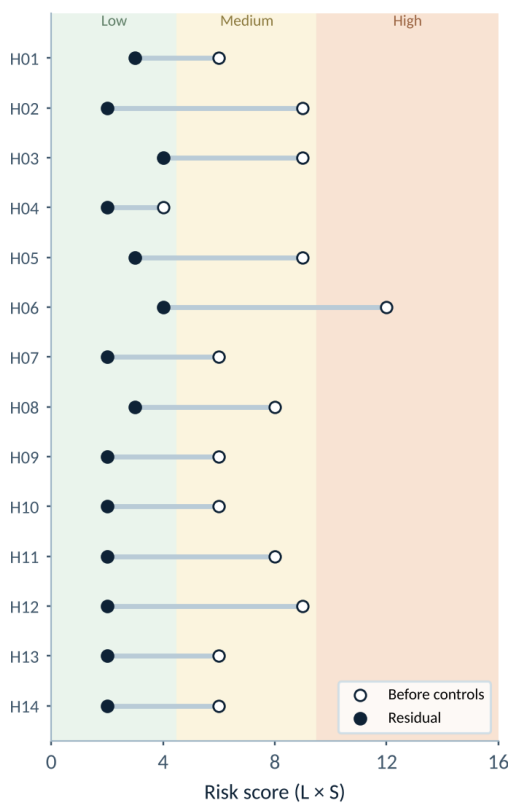


Fig. 3 Risk score per hazard before (open) and after (filled) controls.

Where the controls do most work

The largest reduction is for **H06, thermal degradation and freeze-thaw loss** (12 → 4). Store at -20 °C in a logged freezer.

H02 skin or eye contact (9), **H03** sharps and broken glass (9) and **H05** microbial contamination of stock (9) are also brought into the low band, mainly through containment, technique and aseptic working rather than additional PPE.

H03 and H06 keep a residual of 4. That is acceptable, but should be checked at each review against near-miss records and freezer temperature logs.

5 Safe handling and storage

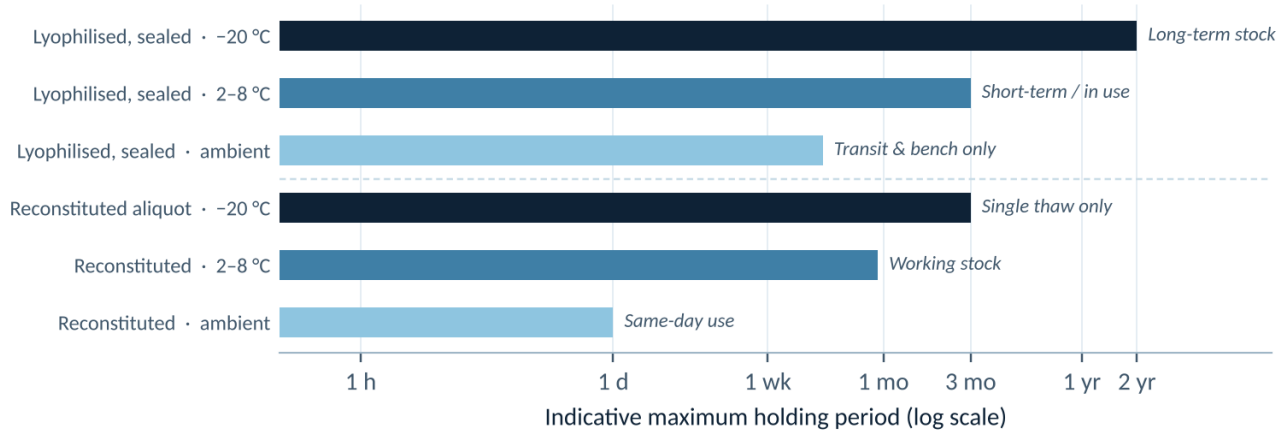


Fig. 4 Indicative holding periods based on general practice for lyophilised research peptides. These are planning limits, not product-specific stability data. Always defer to the lot COA and any in-house stability results.

Store	Sealed vials at -20 °C, protected from light, in a monitored freezer. 2-8 °C acceptable for material in active use.
Open	Let the vial reach room temperature (about 20 min) before opening, to stop condensation forming on the cake.
Reconstitute	Add diluent slowly down the vial wall; swirl, do not vortex or shake. Record diluent, volume, concentration and time.
Aliquot	Split into single-use volumes in low-protein-binding tubes on the day of reconstitution.
Record	Lot number, date opened, and every removal from the freezer, in the sample log.
Glow	Reconstitute the whole vial. Keep chelators and reducing agents away; a fading blue colour indicates copper loss.

6 Spills, accidental exposure and disposal

Powder spill	Do not dry-sweep. Cover with damp absorbent, wipe inwards, clean with detergent then 70% ethanol. Bag as chemical waste.
Solution spill	Absorb with spill pads, clean as above. Report spills over 10 mL to the lab supervisor.
Eye contact	Irrigate at the eyewash for at least 15 minutes, holding lids open. Report and record.
Skin contact	Remove contaminated gloves, wash with soap and water. Report and record.
Needlestick	Encourage bleeding, wash under running water, do not suck the wound. Report immediately to the supervisor.
Disposal	Vials, tips and residual solutions to the chemical/clinical waste stream for incineration by a licensed contractor. Sharps to UN-rated sharps bins. Nothing to drain. Label waste as containing copper.

Minimum PPE: nitrile gloves, safety glasses (EN 166), lab coat. Cryogenic gloves and face shield when handling dry ice.

7 Review

Reviewed by	Signature	Last updated
Richmond Biolabs		23 September 2026