

trophon: maximising safety by minimising chemical exposure

- Chemistry supplied sealed and ready to use
- Minimal vapour emitted
- Minimal residuals on probe
- No requirement for eye wash stations
- Environmentally neutral waste products

Risk of chemical exposure from bulk liquid disinfection

trophon: the POC solution for ultrasound



trophon[®] EPR: minimising chemical exposure for safety at point of care (POC)

trophon[®] is a state of the art point of care (POC) high level disinfection (HLD) device for ultrasound probes. Ultrasound probes are often high level disinfected in a centralised location in the hospital setting outside of the patient examination room. This is partly attributed to the chemical exposure risks associated with disinfection using bulk liquid disinfectants, such as glutaraldehyde (GTA) and *ortho*-phthalaldehyde (OPA).

Risk of chemical exposure from manual wiping and soaking

Disinfection with bulk liquid chemicals such as aldehydes are toxic and reprocessing rooms require installation of ventilation, eye wash stations and sinks limiting their POC use.

Additionally disinfection with manual wipes can potentially expose staff and patients to toxic chemicals.

Toxicity is possible from both direct contact with the chemical and vapour inhalation. There have been several reports of anaphylaxis in patients following cystoscopy where the medical device was reprocessed using OPA.^{1,2} Bronchial asthma and dermatitis can also be triggered by occupational OPA exposure.³ OPA exposure has been shown to

have detrimental effects on embryo development during toxicity testing for *in vitro* fertilisation programs.⁴ One study found a 39% increased risk of spontaneous abortion with occupational exposure to sterilising agents like GTA and formaldehyde.⁵

The risk of chemical exposure during manual disinfection is high from preparation of the chemical, to reprocessing of the probe through to waste disposal once the chemistry expires. The manual nature of this workflow increases the likelihood of direct contact and vapour inhalation by reprocessing staff.

trophon: maximising safety by minimising chemical exposure

trophon is a POC alternative to centralised ultrasound probe

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disinfection with bulk liquid disinfectants. trophon has been tested and validated with safety and design features to ensure patients and staff are at minimal risk of chemical exposure.

- **Chemistry supplied sealed and ready to use**

trophon does not require mixing or dilution of disinfectant chemicals. The 35% hydrogen peroxide is ready for use and sealed inside a chemically resistant cartridge (NanoNebulant®). The cartridge is punctured only when correctly inserted and sealed inside trophon. There is no user interaction with the cartridge until the bottle is empty and needs to be replaced.

- **Minimal vapour emitted**

trophon is a closed disinfection system and there is minimal risk of hazardous exposure to hydrogen peroxide vapour during or after the disinfection cycle. Extensive leak testing has been performed in various conditions as well as risk assessments to demonstrate the operator and patient are at minimal risk of unsafe hydrogen peroxide vapour exposures defined by Safe Work Australia.^{6,7}

- **Minimal residuals on probe**

A large range of both surface and intracavity probes have been tested for hydrogen peroxide residuals after the trophon disinfection cycle using an

internally validated test methodology.⁸ This testing is conducted to ensure the probe is safe for use on patients without putting them at risk of chemical exposure during an examination. For an extra margin of safety, the trophon IFU specifies wiping the probe with a low lint cloth after each cycle.



- **No requirement for eye wash stations**

Eye wash stations are not required for trophon at POC. Institutional policy may however require that eye wash stations be installed. trophon is designed to ensure the patient and sonographer are not at risk

of chemical exposure. The sealed NanoNebulant® cartridge and overall closed disinfection design ensures there is minimal risk of chemical splashing. System checkpoints ensure the disinfection cycle does not commence until the NanoNebulant® is inserted correctly and the chamber is sealed.

- **Environmentally neutral waste products**

trophon produces water and oxygen gas as by-products and the liquid waste is collected in the waste drawer located inside the device. The operator is notified when the waste drawer needs to be emptied. This is easily done by donning gloves, removing the drawer and emptying the contents

into any sink. The waste drawer has minimal volume and the operator is not at risk of injury or chemical exposure commonly associated with disposal of large volumes of bulk liquid disinfectants.

Australian guidelines

The joint Australasian College for Infection Prevention and Control (ACIPC) and Australasian Society for Ultrasound in Medicine (ASUM) Guidelines for Reprocessing Ultrasound Transducers indicate reprocessing can be performed at the POC.⁹ If conducted at POC, the products used must be safe to use in that setting.

trophon: the POC solution for ultrasound

trophon has been engineered with POC use in mind to provide a workflow solution for sonographers managing the time and resource constraints of centralised reprocessing with bulk liquid disinfectants. The ability of trophon to minimise the risk of chemical exposure forms an integral part of its engineering to ensure compatibility with and safety at POC.

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References: **1.** Sokol WN. Nine episodes of anaphylaxis following cystoscopy caused by Cidex OPA (*ortho*-phthalaldehyde) high-level disinfectant in 4 patients after cystoscopy. *The Journal of Allergy and Clinical Immunology*. 2004;114(2):392-7. **2.** Cooper DE, White AA, Werkema AN, Auge BK. Anaphylaxis following cystoscopy with equipment sterilized with Cidex OPA (*ortho*-phthalaldehyde): a review of two cases. *Journal of Endourology / Endourological Society*. 2008;22(9):2181-4. **3.** Fujita H, Ogawa M, Endo Y. A case of occupational bronchial asthma and contact dermatitis caused by *ortho*-phthalaldehyde exposure in a medical worker. *Journal of Occupational Health*. 2006;48(6):413-6. **4.** Ackerman SB, Stokes GL, Swanson RJ, Taylor SP, Fenwick L. Toxicity testing for human *in vitro* fertilization programs. *Journal of In Vitro Fertilization and Embryo Transfer: IVF*. 1985;2(3):132-7. **5.** Lawson CC, Rocheleau CM, Whelan EA, Lividoti Hibert EN, Grajewski B, Spiegelman D, *et al.* Occupational exposures among nurses and risk of spontaneous abortion. *American Journal of Obstetrics & Gynecology*. 2012;206(4):327 e1-8. **6.** Safe Work Australia. Exposure Standard Documentation (Hydrogen Peroxide). Updated 2017. Available at: <http://hcis.safeworkaustralia.gov.au/ExposureStandards/Document?exposureStandardID=325>. **7.** Internal leak test reports. **8.** Internal hydrogen peroxide residual reports. **9.** Australasian College of Infection Prevention and Control (ACIPC) and Australasian Society for Ultrasound in Medicine (ASUM). Guidelines for Reprocessing Ultrasound Transducers. *Australasian Journal of Ultrasound in Medicine*. 2017;20(1):30-40.