

CBRN Ultra Devices

Technologies for Mankind

A technological initiative taken by Institute of Nuclear Medicine and Allied Sciences, Defence Research and Development Organization to provide comprehensive cost effective one point solution for disinfection of personal articles, sterilization of Personal Protective Equipment, hand sanitization and provisioning of safe air during patient transfer, in rooms / vehicles is referred as 'Ultra Swachh' technology.

In view of impact of COVID-19 on global scale, personal, community and industrial safety becomes paramount. The continuity of health care operations is being considered as requirement of national security. Accordingly, the devices are designed on principle of **"integration of multiple disinfection / curing treatments with respect to compatibility of material being sanitized / disinfected"**. The products are being developed in association with M/s Gel Craft Healthcare (P) Limited'.

Each unit is designed with at least two disinfection systems to manage both existing and future pandemic risks. In addition, it is useful for sterilization of industrial goods too. The optimal integration might increase life cycle of products as realized for multi-use potential of specific PPEs etc.

View details at : <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1628355> Visit us @ www.ultraswachh.in



Sturdy

Corrosion Resistant
Stainless Steel cured to withstand the reactive disinfection systems.



Innovative Design

Innovative
(Indian-Innovative) design of product by 'technological integration approach'



Multi-D

Multiple Disinfection system in single device i.e. Ozone, UV-C, H₂O₂, HoCl, Herbal or Steam etc



Shield

Shield layered safety structure to prevent any release of hazardous disinfection agent



100% Fail Safe

Safety direct cut off ensures 'fail safety' against multiple vulnerabilities



e-Safe

Exhausts (either oxygen or water) are environmentally safe being passed via specific catalytic convertors.



Self Installable Device

Direct installation devices with minimum intervention or maintenance



Value for Money

Low cost with multiple combination options with respect to global or domestic counterparts





TRI NETRA

Personal Protective Equipment (PPE) Disinfection Unit



Next generation triple disinfection technology that disinfect PPEs and other material in least possible time



Tri-Netra technology aid neutralization of microbial growth followed by re-transformation of ozone back to oxygen prior to release back.



50S Treatment

50 Seconds Effective Contact Time to disinfect.



Short Degasing Cycle

Ozone gets degraded to oxygen & removed in least possible time w.r.t H₂O₂ degasing



Shadowing Suppressor Technology

UV-C 360° exposure covers maximum surface area



No support to Fire

Ozonated Space Technology doesn't support any combustion process.



Virucidal Activity

Single Exposure of OS disrupts viral structure completely.



GRAS – Category III Sterilient

Ozone is 'Generally Recognized as Safe' Cat III sterilization system [USFDA-21 CFR 178.1010 (b) (16/3/1977)]



Advance Oxidative Process (AOP)

>1.2 times enhanced oxidative potential than Hydrogen Peroxide, Hypochlorite & other sterilients.



Organic Sterilient Device

Ozone is considered as 'organic' as per [USDA National Organic Program (NOP) 205.605 (b) (20)- pg.437]



Sterility Assurance Level (SAL)

Multi-barrier disruption with Sterility Assurance Level (SAL) of 10⁻⁶.



Ex. CT Value (as per EPA guidance AWWA 1991)

~300 seconds for effective sterilization of robust micro-flora.



High Diffusion Spread ability

Rapidly diffuses in < 2mm lumen opening with least filling time



Ideal for Heat Sensitive Medical Devices

Ozone an ideal sterilizer as per Canadian Licensing Process (2002) and US FDA (2003)





TRI NETRA

Multi Product Sterilization/ Disinfection Unit



Triple Fusion of Radical Dispenser (optional choice); Ozone and Ultra-Violet radiation C to sterilize multi-products



Extreme Oxidative Process (EOP) with no chemical/ toxic residue left, able to neutralize microbial buildup



Extreme Oxidative Process (EOP)

Triyognated or similar radicals dispensed in chamber with ozone followed by UV-C induces Extreme oxidative processes neutralizing microbes



Sterility Assurance Level (SAL)

Multi-barrier disruption with Sterility Assurance Level (SAL) of 10^{-6} .



Organic Sterilient Device

Ozone is considered as 'organic' as per [USDA National Organic Program (NOP) 205.605 (b) (20)- pg.437]



Virucidal Activity

Single Exposure of OS disrupts viral structure completely.



Multi-Utility

Device is designed to screen luggage, household items, office items and especially heat sensitive medical devices that cannot be autoclaved.



Shortest Product Sterilization

Shortest Product Sterilization Cycle (with CT value of 100 s) allow sterilization of bags at airports, railways and other places.



GRAS – Category III Sterilient

Ozone is 'Generally Recognized as Safe' Cat III sterilization system [USFDA-21 CFR 178.1010 (b) (16/3/1977)]



Shadow Aversion Penetration

It's impact is not limited to line of path, avert shadows caused by obstacles spreads into every corner of chamber.



Ex. CT Value (as per EPA guidance AWWA 1991)

~300 seconds for effective sterilization of robust micro-flora.



No Support to Fire

Radical Ozonated Space Technology doesn't support any combustion process



Multiple Load Sterilization

Designed to developed multiple load of items with varying size of commercial units available



Radical Dispenser

Used with Triyogani (Fumigant) as default Radical Dispenser, choice available to use any combination



Sterile Pack

Items are packed in 'gas diffusible' packs for ease of sterilization & removal/transfer



Vacuum driven Faster Sterilization

Vacuum driven assembly provides faster and effective results with assured sterilization even for Biological Waste





Radical Ozonated Space (Tri-Netra)

Heat Sensitive Medical Device Disinfection Unit (Ati-Swachh)



Advance compact triple fusion disinfection chamber that disinfect luggage, office / household items & heat sensitive medical devices



Radical Ozonated Space provides humid environment in which ozone radical neutralizes microbes and retransfer back to oxygen by Ultra-Violet C radiation.



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Radical Ozonated Space Technology doesn't support any combustion process



Slender Design

Slender design optimally fits in corners of office, homes & small departments of health clinics



Heat Sensitive Medical Devices

Developed with ozonated space (cold sterilization) ideal for heat sensitive equipment- CDC-US (Other Sterilization) Guidelines



Multi Lumen

Multiple lumen fittings are provided to diffuse ozone directly into < 2mm lumen heat sensitive medical devices



Organic Sterilient Device

Ozone is considered as 'organic' as per [USDA National Organic Program (NOP) 205.605 (b) (20)- pg.437]



Virucidal Activity

Single Exposure of Radical Ozonated Space disrupts virus completely.



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Multi-Utility

Device is designed to screen luggage, household items, office items and especially heat sensitive medical devices that cannot be autoclaved.





Triyogani (Radical Dispenser)

"Triyo₃gani" Organic Multipurpose Sanitizing Solution



Triyo₃gani (त्रियोगनी) : set of multiple formulations aid comprehensive sanitization of confined area, space, equipment, vehicle, fruits and vegetables etc.



Works on principle of "infection control" by neutralizing microbial risk/ threat at the site of origin either itself or by combining effectively with ozone or any another sterilizing or sanitizing medium.



Human-Safe

Human Safe combination blend of natural herbals sync with permissible limits of ozone.



Sterility Assurance Level (Triyogani)

Tested & validated against bacterial spores : *Geobacillus stearothermophilus* - both alone and in combination with ozone.



Syn Ozone

Triyogated Ozone treatment is synergistic and produce additive beneficiary impact.



Multi-Formulated Variants

Triyogani is available as fumigant, hand sanitizer & fruits /veggie wash (liquid / solid) formulations.



Non-Toxic [Child Safe]

Unlike chemical entity, Triyogani (herbal formulation) Is extremely safe for all age groups and have no toxicity.



Travel Compatible

Dilute it to develop personalized hand sanitizer that can be carried while traveling.



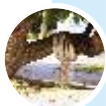
Disinfectant Toxins Free

Alcohol, quaternary ammonium salts, HoCl, NaOCl & Hydrogen Peroxide Free Sanitizing Medium.



Concentrate Pack

Available in concentrated form (to be mixed with water) as cost effective solution for all.



Multi-Platform Support

Compatible with Poorn Swachh, Ultra Swachh, Ati Swachh, Tri-Netra, Samgrah Swachh, Mini Veg Wash & other disinfection units.



Enviro-Friendly

Dispersion in environment as fumigant or using it as hand sanitizer, leaves no environmental toxin.



Old Wisdom Modern Blend

Time proven anti-microbial neem, thyme & lemon grass with additives in pharmacologically effective modern blend.



Limits to Zero

Recurring cost limits to negligible expense in all technologically integrated platforms.





Samgrah Swachh

Fruits & Vegetable Wash



Device developed to provide zero cost solution for fruits, vegetable and flower sanitizing medium



Samgrah Swachh refers to generic term as base sanitizing medium for multiple disinfection processes



Research Device

Device is designed with outlet to fit in nebulizer or ozone dispenser to develop direct ozone or aqua ozone treatment during pre-clinical experiments



Zero

Device has no recurring cost for all standard operations like fruits/veggie sanitization, flower sanitization & research purpose



Quality Control

Quality Control Device for validation of OS Sterile Strips used for multiple Ultra Swachh Devices



Multi-Utility

Multi-utility ozonated water device useful for kitchen, gardens, enhanced cleaning prices & personal dental hygiene



Flower Sanitizer

Prepare a fresh bowl of water with treatment for 5 minutes and spray it immediately on packed bouquet to sanitize flowers



No Support to Fire

Ozone does n't support any combustion process



Handy & Light Weight

Device is small, compact, extremely light weight easily fits into back pack



GRAS – Category III Sterilient

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Shelf Life Enhancer

Increase the shelf life of fruits by dipping it with Samgrah Swachh treated water blended with pack of Triyogani Fruits/Veggie Wash sachet



Organic Sterilient Device

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Mini Veggie Wash

Globally best selling item for washing your fruits and vegetables removing toxins, neutralizing microbes and removing protective layer of fruits.



Human-Safe

Generates ozone in extremely low human safe limits which degrades automatically once escape to environment





Viscoelastic Gel (Tapas Aasan) with Covid Coat⁺

Prevent microbial growth & Covid-19



Extreme cushioning & comfort gel sheet with enhanced Covid-19 & microbial resistance



Designed & developed for Isolated Wards Intensive Care Units, Hot Operation Theatres Hot General Wards, SPAs and Residence.



Single Phase Non-Film

Closed cell polymeric conformation having single phase hydrophobic cells with significant structural integrity requiring no laminated film unlike jelly based gel.



REACH Certified

Non - allergenic & free from any toxicant (compliant with REACH standards), inert in nature & doesn't cause any irritation.



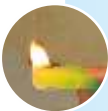
Elastomerism

Able to stretch twice its length or breadth due to elongation strain withstanding ability of $\geq 500\%$ & rebound within fraction of seconds.



COVID COAT⁺

Coated with nano encapsulated biocidal formulation 'Covid Coat' prevent biofouling (tested & validated against Covid-19/ multiple microflora).



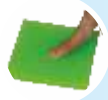
e-SAFE Organogel

Organic Gel of essential oils & stabilizers burns like a candle with non-toxic & odor free soot unlike Polyurethane that burns with toxic soot



Extreme Tensile Strength

Able to withstand 1600 psi or ~2000 pounds (up to 900 Kgs) of weight in vertical direction attributed towards its core tensile strength of $\sim 14 \text{ Kg/cm}^3$.



Cushioning Comfort

Shore A value limits to zero providing extreme cushioning as compared to any counterpart.



All Weather

Able to withstand temperature range of -40°C to $+50^\circ \text{C}$ compatible for use all across the globe.



High Density (Non-Leaking)

Unlike Jelly based film, being continuous phase with $\geq 0.8 \text{ g/cc}$ density, it doesn't leak & has long shelf life.



Water Proof

Hydrophobic structures prevent water absorption and thus complete decontamination is feasible.



Stick on Fabric

Each sheet has non woven material on one side stabilizing sheet on surface with velcro based attachment to fix on beds of isolated wards and Hot OTs.



Multi-Variants

Multiple variants like Hot OT Gel Sheets; Positioning Devices Comatose Beds, Infant / Baby Sheets with common Covid Coat





Covid Coat⁺

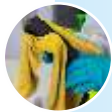
Prevent microbial growth & Covid-19



Extreme cushioning & comfort gel sheet with enhanced Covid-19 & microbial resistance



Designed & developed for Isolated Wards Intensive Care Units, Hot Operation Theatres Hot General Wards, SPAs and Residence.



All Surface Cleaner

Works effectively on both porous and non-porous membrane and an important component of enhanced cleaning/sterilization process



90-Day Protection

Tested and validated for 90-day protection as persistent Anti-Germ product which covalently binds to surface.



Broad Spectrum Anti-M

Bactericidal activity against 12 bacterial strains and Virucidal activity against 09 viral species prevalent in hospitals and general community.



Covid Neutralizer

Tested and validated against Covid-19 (live virus) and prevent its growth on surfaces by contact neutralization.



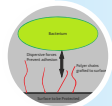
Nano Encapsulation

Nano encapsulated covering on biocidal agents led slow and sustained release of disrupting agents for months to year.



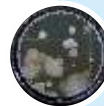
MDR Microbial Killer

Significant killing potential against MDR microbial strains especially methicillin and vancomycin resistant nosocomial pathogens of hospital.



Anti-Adhesion

Silane and Nitrogen based moiety prevent adhesion of microflora due to repulsion & a disruption of membranes by developing unlike charges between surface and microbes.



No Biofouling

Single coat of formulation works for multiple months and prevent biofouling (excessive growth) of microbes on surface



Human Safe

Safe for human as CE and EPA certified active ingredients & completely non-toxic.



Non Sacrificial (multi-utility)

Anti corrosive, VOC (pollutant and odor) neutralizer, UV-protectant, stable coating for Smart Textiles and Isolated Ward / ICU devices / gel beds prolonged protective non sacrificial coatings.



Magnetic Attractant

Attracts microbes to the surface and kills them while preventing them from breeding on commonly used touch points



Multiple Formulations


Multiple formulation like spray for surfaces, fabric anti-microbial protection and specialized coating for viscoelastic gel.





Ozonated Radical

ORCS Sanitization Unit (Poorn Swachh)

 Sanitize your home, office, hotels, rail / metro /ship /air coaches, clinics, cars, ambulance daily by Disinfectant Fog

 First Generation Organic Sterilient Pre-Mix Fog sanitizing Confined Spaces



Durably Portable

Device is durable and portable with auto cut off



Shadow Aversive Penetration

Unlike UV-C, it's impact is not limited to line of path, avert shadows caused by obstacles, penetrate deeply into narrow corners.



Aqua Ozonated Fog

Aqueous fog enriched with ozone spreads to achieve 90-95% humidity in a confined space



Organic Sterilient Device

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360° Spreadability

360° spread in all directions covering 12 X 12 X 10 ft of Confined Space in less than 20 minutes.



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Human-Safe

67% lesser than human permissible values of ozone (0.1 ppm x 8 h) as per OSHA 1999:1000 standard.



Sterility Assurance Level (Ozonated Radical)

Ozonated Radical (Ozonated Triyogani) tested against bacterial spores (*Geobacillus stearothermophilus*)



Enhanced Cleaning Process

Support microbial sanitization in addition to standard cleaning process.



Multi-Utility Non-Heating Process

Mechanical vibration induced Ozonated fog is in sync with optional radical dispenser supporting cold sanitization process.



Vertical Surface Sanitization

Walls / Roof/ Windows Sanitization in Closed Spaces



No support to Fire

Ozonated Space Technology doesn't support any combustion process.





Ozonated Radical

Air Microbial Neutralization (Vayu Swachh)



Ozonated Radical induces microbial neutralization in air for personal space / HVAC.



Clean Technology combined with filtration & ionic sanitization leads to cleaning of air ensuring Indoor Air Quality



Durably Portable

Device is durable and portable unit with auto cut off. Easily transportable across the globe



Slender Design

Sleek and Slender designs are available fits with your office or living room furniture.



Air Sanitization

Independent Air Sanitization Unit deployable at your work or living space



Zero Cost

Device has no recurring cost for all standard operations other than triyogani



HVAC Compatible

Easily fits into existing HVAC units of your clean room, installations, living or work spaces.



Virucidal & Anti-Microbial Activity

Unlike UV-C, its anti-viral/ microbial activity is not restricted to line of path, avert shadows caused by obstacles, penetrate deeply into narrow corners



GRAS – Category III Sterilient

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Organic Sterilient Device

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Multi-Utility

Unlike traditional air purifiers, it filters pollutants, sanitize air and neutralize microbial/ suspended viral particles



Prolonged Protection

Provides continuous protection X 365 days prevent any microbial growth inside the air cooling / filtration unit



No Support to Fire

Ozonated Space Technology doesn't support any combustion process.



Human Safe

Ozone levels are controlled within device thus no exposure of ozone to humans





Uchhvasita

Air Microbial Neutralization-cum-O₂ Concentrator



Ozonated Radical induces microbial neutralization generating medical air followed by oxygen concentration



Dual Technology allows both neutralization and concentration in single Device portable even for your bed room.



Durably Portable

Device is durable and portable unit with auto cut off. Easily transportable across the globe



Slender Design

Sleek and Slender designs are available fits with your office or living room furniture.



Air Sanitization

Independent Air Sanitization Unit deployable at your work or living space



Zero Cost

Device has no recurring cost for all standard operations other than triyogani



High Purity

Generates medical grade oxygen of extremely higher purity



Virucial / Anti-Microbial Activity

Ozone induced oxidative process kills microbes/ viruses within portable unit generating medical grade air



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Oxygen Concentrator

Medical grade air generated by Vayu Swachh Assembly concentrated to provide medical grade oxygen



Emergency Life Saving Device

Dual use technology aid single switch transformation from Vayu Swachh to Uchhvasita –Life Saver



No Support to Fire

Ozonated Space Technology doesn't support any combustion process.



Human Safe

Ozone levels are controlled within device thus no exposure of ozone to humans





Taaran (Safe Passage) Patient Transfer System



Passing safely with infected patient or via contaminated zones, Wheel Chair that isolates care provider from patient, keeping both safe.



Dual Technology allows neutralization of microbes in exhaled air by UVC exposure & filtration through HEPA Filter.



Robust

SS Wheel chair with foot rest - robust to sustain multiple stresses.



Triage Chair

Chair isolates the patient and provide ease of interaction between doctor and patient to identify suspected or partially confirmed patients.



Elastomeric Seat

100% pressure distribution reduces tiredness of weak patient during health care.



Hospital Safe

Designed for safe transfer within hospital protecting attendant from any plausible infection from infected patient.



2/3 Isolated Coverage

Coverage with plastic curtain allow mixing of fresh air yet sucking out of exhaled air via high power exhaust.



Care for Care Providers

Prevention of health care staff of getting infected" while handling infected victims.



Standard Door Compliance

Limits height such that it can pass through any gate of height of 5.5 ft (Indian buildings).



Resuscitation Mask Protection

Inhaling re-circulated clean air provides safe passage from dirty environment



Space Filter

Combination of UV-C (Space Radiation) and HEPA filtration for neutralization of microbes.



Air Exchange Compliance (AEC)

Support 15 Air Exchanges per hour with 700 cfm as per the requirement of isolation of infected patient.



Air Clean

Neutralization of microbes and filtration of air from hazardous particles.



Dual Fusion Technology

UV-C (1000 mJ/cm²) and HEPA Air Filters ensures safety of both patient and attendant.





TRI NETRA (AQUA)

(Non-Alcoholic Hand Sanitization Unit)



Aqueous ozonated medium fortified with Triyogani Hand Sanitizing Solution keeps your hand safer.



Triple integration of Ozone (primary disinfection tech), Radical Dispenser-Triyogani (secondary sanitizer) coupled with catalytic convertor.



Wash it till sanitize

Venturi based continuous system of dispensing sanitizing medium allows it to wash till it sanitizes.



Just Add Water

Just add water - concept wherein water based hand sanitizing system useful for schools and community centers etc.- connect it to direct water supply & mix Triyogani.



Triyogated Aqua Ozone

Sanitizing water based hand sanitizing medium triyogani working in sync with ozone



Non-Toxic [Child Safe]

Unlike alcohol based sanitization, it is extremely safe for all age groups and have no toxicity.



Alcohol Free Sanitization

No alcohol is added into sanitizing medium as it's aqueous hand sanitizing medium.



Fruits & Veggie Wash

Tap for Fruits and Vegetable Washable sanitizing medium, collect it to use it daily.



2-in-1 Technology

Single unit for both hand sanitization & fruits and vegetables wash.



Special Equipment Wash

Right side of unit (in another variant) is provided with Special Equipment like surgical equipment & hospital accessories etc.



Portable & Wall Mountable

Extremely Portable wall mountable unit and easily installable.



Limits to Zero

Recurring cost of additional Triyogani Solution limits to 0.01 INR per minute of wash.



Dissolved Aqua Ozone

Highly concentrated dissolved ozone in tap water provides non-recurring sanitization.



Non-Drying

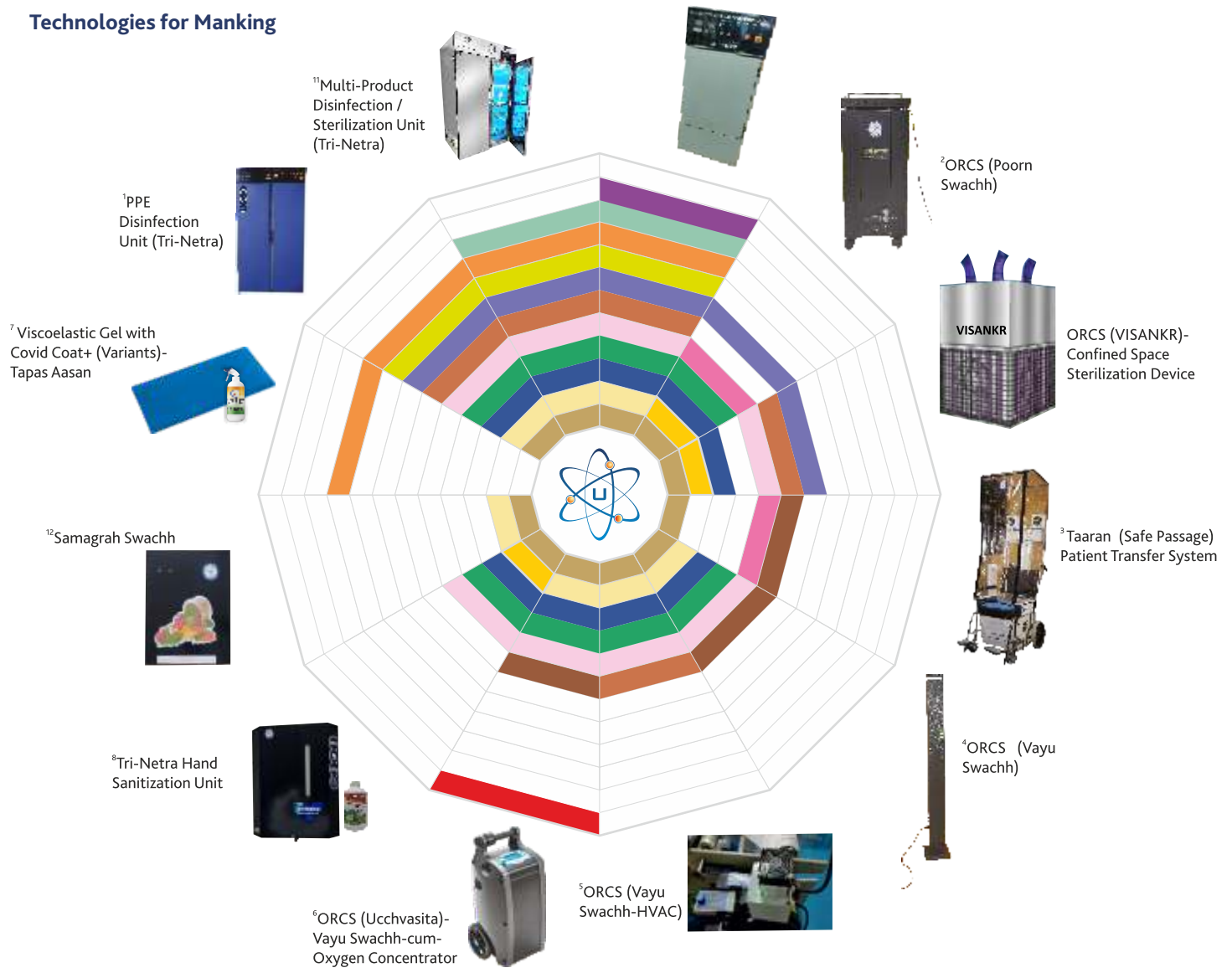
Unlike Alcohol based sanitizer, it doesn't cause any drying of skin or prolonged use side effects.





CBRN Ultra Devices

Technologies for Manking



Colour Scale : Assemblies /Processes

- Ozone Generation Assembly
- Radical Dispenser Assembly
- Aqueous Ozone Mixing Assembly
- Humidity Control Assembly
- UV-C Light (SPACE) Assembly
- SPACE Filter Assembly
- Exhaust Assembly
- Catalytic Convertor Vacuum Device Assembly
- Die based polymeric Gel Development
- Surface coating with persistent Covid Coat+ Kit
- Ozone Resilient Gel Sealent Fixation
- Vacuum Device Assembly with Compression Pumps
- Pipes and Back Pressure Management
- Oxygen Concentrator Assembly



Technology Partner of Ultraswachh Technology

GEL CRAFT HEALTHCARE PVT. LTD.

WHO GMP Certified & QCI Approved Manufacturing Facility

ISO 9001 : 2015 & ISO 13485 : 2016

Technology Partner of DRDO (CBRN Ultra Devices)

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