



TOXIC CHEMICAL THREATS



CBRN FORCES FIRST CHOICE

FOR CHEMICAL NEUTRALISATION / ADSORPTION

**(Disaster Response Forces, Defence (CBRN) Services,
Police & Paramilitary Force, Fire & Emergency Service)**

APPLICATION AREAS

1. The chemical warfare agents if used in govt buildings or metros or any other places
2. To neutralise toxic fumes of fire
3. Chlorine and Ammonia leak threats are neutralised
4. All unknown toxic vapour and chemical threats

TESTED AND CERTIFIED BY

1. TNO Laboratories, Netherlands;
2. Battelle Memorial Institute Columbus, OH, USA
3. The Edgewood Chemical Biological Center (ECBC), Aberdeen Proving Ground, MD, USA
4. Toxicology Unit, School of Medical Sciences, RMIT, Australia
5. NATO approved personal decontamination kit

FAST ACT USPs

1. Real time, on-site neutralisation of chemical threats.
2. Effective against vapours, fumes, aerosols and liquids
3. Safe, non toxic, non corrosive
4. Ready to use formulation - no mixing, no water required
5. Wide spectrum toxicity management
6. No residual hazard - easy disposal

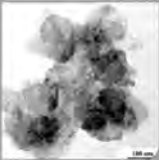
EXISTING USERS

Karnataka State Fire and Emergency Services , NDRF, NFSC , NCDC

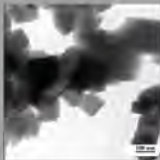


TECHNOLOGY

FAST ACT is a combination of common metal oxides (MgO + TiO₂) with a unique morphology. It has nanomaterial properties with a final particle size of nearly 5 µm. The production process creates an altered, non-toxic molecular structure with a large increase in porosity and surface area



Standard MgO
30 sqm/gm



FAST ACT MgO
230 sqm/gm



20 grams of Nano Active FAST ACT has a surface area equivalent to a football field

HOW DOES IT NEUTRALISE TOXIC CHEMICALS INCLUDING VAPOUR?

Nanomaterials by nature want to agglomerate and because the molecular structure of FAST-ACT is incomplete, it binds to any reactive substance using "ionic bonding". It uses the targeted chemical's ions to try and complete its own structure, as a result many hazardous chemicals are neutralised through a process now known as "destructive adsorption"

The large surface area with numerous corners and edges containing many unsaturated ions makes it effective on liquids and vapours of hazardous compounds.

FAST-ACT literally binds and destroys the contacted chemical with a resultant non-hazardous, neutralised by-product.

HCl is converted to MgCl₂ + H₂O

HF is converted to MgF₂ + H₂O

SUMMARY OF EFFECTIVENESS DATA

NEUTRALISATION		ADSORPTION	NOT EFFECTIVE	
CORROSIVE MATERIALS	VAPOUR HAZARDS	LIQUID SOLVANT SPILL		
ACIDS Inorganic and Organic Hydrochloric Acid Hydrofluoric Acid Nitric Acid Phosphoric Acid Sulfuric Acid Acetic Acid Methanesulfonic Acid Ethanesulfonic Acid Benzenesulfonic Acid Toluenesulfonic Acid PHOSPHORUS Pesticides DimethylmethylPhosphonate Paraoxon Parathion SULFUR 2-Chloroethyl Ethyl Sulfide Methyl Mercaptan PHENOLS Nitrophenols Chlorophenols CARBONYL COMPOUNDS Aldehydes Ketones Carboxylic Acids	NITROGEN COMPOUNDS Acetonitrile Sodium Cyanide (aq) 4-vinylpyridine HALOGENS/HALIDES Acetyl Chloride Chloroacetyl Chloride Chlorine Chloroform Hydrogen Bromide Cyanogen Chloride Methylene Chloride Carbon Tetrachloride TCE, PCE BIS-(2-CHLOROETHYL) SULFIDE PINACOLYL METHYLPHOSPHONOFLUORIDATE O-ETHYL S-(2-DIISOPROPYLAMINOETHYL)-METHYLPHOSPHONOTHIOATE CHEMICAL WARFARE AGENTS Sulphur Mustard (HD) Tabun (GA) Sarin (GA) Soman (GD) VX	ACIDIC AND CAUSTIC-GASES Hydrogen Chloride Hydrogen Fluoride Hydrogen Bromide Nox/N2O4 Sulfur Dioxide Hydrogen Sulfide Diborane Hydrogen Selenide Phosphine Ammonia Anhydrous Ammonia Carbonyl Sulfide Hydrogen Cyanide HALOGENS Chlorine Bromine Iodine VOLATILE ORGANICS Methyl Mercaptan Ethylene Oxide Formaldehyde Phosgene Arsine CHLORINATED ORGANICS Acetyl Chloride Chloroacetyl Chloride Chloroform Methylene Chloride	ALCOHOLS/PHENOLS Ethanol Methanol Allyl Alcohol Nitrophenols Chlorophenols CAUSTICS Metal Hydroxides (aq) PETROCHEMICALS Diesel Gasoline Oils OTHERS Acrylonitrile Benzene Hydrazine Toluene Acrolein Methylhydrazine* Methylisocyanate*	BIOLOGICALS Bacteria Viruses Spores NUCLEAR RADIOLOGICAL HEAVY METALS SOLID WASTE
LIQUID & VAPOUR CHEMICAL SPILLS AND RELEASES				
<p>Note: Depending on the amount of Fast-Act used, various chemicals may undergo a combination of neutralisation, adsorption, and/or containment.</p> <p style="text-align: center;">IN USE BY NATO AND US FORCES</p>				