

# NH SOP4: HAZMAT/CBRNE - EDDBA - FULL OVERVIEW

## Generic provisions - overview (these apply to all activities within this SOP)

**Justification for Hazardous Area Response Team (HART) staff deploying in Extended Duration Breathing Apparatus (EDBA), where alternative options are impracticable** (ie: cannot wait for ventilation or for other methods to improve respirable atmosphere)

**Where there is, or suspected to be, an irrespirable atmosphere where other forms of respiratory protection are not sufficient**

- to treat and extricate patients in areas difficult to access safely; delivery of paramedic levels of pre-hospital care
- to triage (including Recognition of Life Extinct - ROLE), as early as practicable
- as medical cover, where practicable, for other emergency responders working in such risk areas **NB:** If another incident occurs which has confirmed patients, this should take priority

**Justification to deploy in Gas Tight Suit (GTS)**

Where in addition to the provisions above for respiratory protection, there may be hazards present which require Personal Protective Equipment (PPE) to add chemical protection

Cannot wait for other methods (eg: containment of hazards, alternative routes to patients) which reduce or eliminate the contamination hazards

**At all times when HART deploy in EDDBA, there must be a HART EDDBA Entry Control established for the entire duration of the HART EDDBA operations**



The reason a HART EDDBA Entry Control is stipulated is to avoid partner agencies to undertake this role. Although it may seem like a sensible approach; the risks of using agencies who aren't trained the same way as HART are considered too great with such a crucial role.

- **This Standard Operating Procedure (SOP) must be read in conjunction with the Generic SOP**
  - Guidance for Emergency Services Personnel Responding To Individual Chemical Exposure (ICE) Events
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## Decision to deploy in EDBA

- Decision is made by nominated HART TL in conjunction with Operational Commander, who will then seek authorisation from their Commander (tactical level)
- Cannot be made by non-HART staff
- Decision may depend on what resources are available from partner agencies in order to maintain a safe system of work (see below), plus the limitations of HART PPE

### Remit for deployment in EDBA:

- An irrespirable or hazardous atmosphere is confirmed or suspected
- Casualties confirmed or information suggests there are
- A requirement for triage, including recognition of death
- A requirement for clinical interventions, in situations where the prior removal of casualties from the risk area by partner agencies, is either not possible, or not practical

**For protracted incidents:** early consideration of the need for relief teams (eg:training teams or mutual aid)



**Suitable partner agencies must be requested to attend where their assistance is required**

**DIM equipment must be considered for all deployments in EDBA; for the patient as well as BA wearers.**


**Max wear time** may alter due to incident:

- Plan for maximum of 40 minutes
- Should not exceed 60 minutes
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**Breaks between wears** may alter due to incident

- Allow sufficient rest breaks and rehydration. Dependant on task undertaken, time committed and conditions encountered by the wearer:
  - Consider psychological factors for wearer as well as physiological
- Due to the high physiological demands on the body EDBA wearers are not permitted to undertake re-entries  where a wearer has completed their task, come into clean air, taken off their set but not changed their cylinder and then re-enters with the same set and cylinder immediately after they have exited the risk area
- All subsequent wears will be deemed as a new entry  If they have come out, received tallies, closed down their set and performed a monthly check
- What may be permitted, however, is for someone still under air to exit the risk area and be re-tasked while still under air – as this counts as the same wear – provided they have sufficient air and are fit and well enough to achieve the new task.
- If HART staff are required to wear EDBA at an incident more than once: suitable and sufficient time to rest and rehydrate must be given.
- Consider relaxing PPE during periods of rest – if safe to do so

**Early consideration of requests for mutual aid/utilisation of training team**

NB: It is permissible to use simple work restraint systems whilst wearing EDBA to eliminate the risk of falling to wearers  **eg: working near water's edge; using Aerial Ladder Platform (ALP)**

HART EDBA is not authorised for use in the following circumstances:

- **Active Fire**  
(but see below for work adjacent to active firefighting)
- HART staff must not enter any area where:
  - the risk of combustion of fire gases cannot be eliminated
  - environments where full structural fire-fighting apparel to EN 469 standard is required
  - environments where there is a known risk of entanglement by fallen cables
- **Underwater use**
- **High Expansion Foam deployed.**  **High expansion foam has serious detrimental effects for both vision and hearing, rendering any such area unsafe for entry by untrained wearers.**
- **Pressurised Workings** (such as tunnels pressurised during constructions)
- **Armed Aircraft, Electronic Explosive Devices: (Damaged or Undamaged Ordnance)** Undamaged ordnance 2 meters, damaged ordnance 8.5 meters.
- **Ballistics risk**
- **Requirement for current SWaH harness and associated equipment to be worn for access**


## Decision to deploy in Gas Tight Suit (GTS)

### Reasons for wearing Gas Tight Suits:

GTS, in conjunction with Breathing Apparatus (BA), are worn in known or suspected irrespirable atmospheres where there also exists a risk from:

- a known or suspected and as yet unidentified hazard
- in gas, liquid or solid form
- likely to cause injury to a wearer without this PPE
- EDBA sets are not to be put into gas tight mode unless an external Distress Signal Unit (DSU) is worn
- you have been advised by a partner agency (usually Fire & Rescue Service - FRS) it is the Gold Standard and they can provide a rational why

### Associated PPE issues


- The decision as to what to wear underneath GTS will rest with the appointed HART TL – based on their own DRA as well as any other information gathered, or advice given by partner agencies
- At all times GTS is worn, helmets must also be worn inside the suits.
- Decon adaptor must be attached  to female external supplementary air connector on the gas tight suit before entry (the part is to be found within the live GTS box). NB: Blue end goes into suit

### Decontamination issues

- Where required, decontamination capability should be in attendance prior to deployment
- Decontamination arrangements may range from simple emergency measures to full Ambulance SORT (Special Operations Response Team) deployment.
- Any decision to deploy prior to Decon being established will only be done by the HART TL, subject to a DRA and discussed with National Inter-agency Liaison Officer (NILO)/Tac Advisor and other agencies as appropriate. The decision and justifications must be logged

If decontamination is required, HART Operatives should report to decontamination with a minimum of 120bar left. (Gold Standard) See **Rescue Plan** for alternative options

## Decision NOT to deploy in GTS

- Avoid restricted spaces or locations where there is a risk of tearing the suit
  - Excessive heat, effective fire
  - Consider risks from superchilled/cryogenic sources  (eg: warehouse distribution centres) on integrity of suit
  - Visibility and mobility are further reduced in EDPA/GTS so difficult access, unstable terrain, low visibility risk areas may be unsuitable unless mitigated in some way
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### Set removal;

Staff **must not** enter any location where access requires set removal. (Set removal may only be performed for self-rescue)

### Restricted spaces;

Staff under air:

- must avoid entering restricted spaces, ie: *locations where access is not big enough to allow workers wearing all the necessary equipment to climb in and out easily and provide ready access and exit in an emergency*
- (see also Confined Space SOP)

Oxygen monitoring is compulsory where staff use oxygen for patient care in any confined or poorly ventilated space.

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## Selecting minimum number of HART staff to deploy 1 HART Wearer in EDBA with partner agencies

When HART staff commit to a joint tasking with partner agencies, command responsibility for the nominated HART operative will remain with the Ambulance Service (Operational Commander)

Therefore, the **minimum** number of HART staff required to deploy one HART BA wearer with a partner agency is **three**:

- Appointed HART TL, who must ensure that the activities to be undertaken do not exceed the capabilities of HART PPE and SOP
  - Entry Control Officer (ECO)
  - EDBA Wearer (who will buddy with a partner agency and only work within their PPE and capability limitations)
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## Joint working: understanding, and where necessary, agreeing partner agencies procedures before deployment

- Evacuation plans/signals
- Emergency teams and agreed method for recovery of Wearer in Distress. Consider:
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- Suitable extrication methods/equipment for EDBA wearers
- Rescue plans eg: Lost comms, not returning past Time of Whistle (TOW), activation of Distress Signal Unit (DSU)
- **Decontamination options**

### Partner agencies (FRS) Stages 1 & 2



#### Stage 1:

- HART provide their own staff for emergency rescue team or;
- they ensure their limit of exploitation does not exceed the limitations of our partner agencies

#### Stage 2 :

- HART deploy and an emergency team must be on standby

## Pre-deployment briefing for EDBA

This brief should be delivered to the deploying team including any members from partner agencies;

### Information:

- Situation update

### Intent:

- Specific taskings
- Operational plan for HART

### Method

- Required PPE
- Confirm roles of BA team leader, team communicator, entry control officer, etc...
- How to get there and back
- Role of any partner agencies deploying forward with the HART staff
- HART BA wearers may not enter, leave, or work alone in a risk area

### Admin

- Relief staff
- Welfare: drinking water, shade/privacy
- Location of Entry Control
- Decontamination facilities

### Risk

- Specific hazards and Controls eg: Detection, Identification & Monitoring (DIM) to monitor certain environmental hazards and thermal imaging
- Physiological stress
- Emergency actions (eg: separated from team, lost Comms)

### Comms

- Nominated team communicator
- Team call sign
- Radio channel
- Entry control Identification (ID) (if more than one)
- Evacuation plan/signals

### Human Rights

Appropriate medical attention should be given to casualties where resources allow

NB: when taking forward defib/oxygen; consider intrinsic safety

## Equipping a HART emergency team

- Key to turn off alarms on patient's DSU
  - Numbers should match or exceed the team deployed
  - A means of extrication (eg. Multi Integrated Body Splint (MIBS), drag stretcher)
  - Cutting tool for disrobe of GTS (eg. Tuff Cut scissors, seatbelt cutters)
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## Activities for the Breathing Apparatus Entry Control Officer (BAECO) See also Appendix 1

- The Breathing Apparatus Entry Control Officer (BAECO) must be a BA qualified operative
- HART staff are not to act as BAECO for partner agencies
- Whilst acting as HART BAECO the appointed person cannot be assigned any additional duties
- See Appendix 1: Activities of the BAECO for more detail
- The person responsible for the entry control point is responsible for the instigation of emergency procedures and/or the deployment of emergency teams and is therefore also responsible for all other elements of entry control procedures in relation to BA emergency team deployment
- Briefing and debriefing BA emergency team/s
- Maintaining a suitable record of all relevant operational and risk information, decisions made, tasks given to BA emergency teams and any other relevant information.

🔊BA emergency team call signs will identify both the entry control point from which they are deployed and their emergency team status. For example, BA team Alpha Emergency – one, BA team Bravo Emergency – one, etc. Following the deployment of any BA emergency team, arrangements must immediately be made for the provision of replacement BA emergency teams. This deployment should take account of and afford protection to the BA emergency team/s as well as any BA wearers in distress.

NB:Extra keys not to be deployed forward past ECO except with emergency teams

### BA must be donned in safe, clean air, and in sufficient lighting

- Wearers should not charge their sets (by opening the cylinder valve) until told to by the BAECO
- It is essential that all wearers ensure they are dressed correctly before leaving the Entry Control Point (ECP) and entering the risk area
- No bare skin should be exposed
- Prior to donning the EDBA set, all wearers must be correctly dressed (subject to the HART TLs own DRA and brief to staff)
- EDBA set is designed to be worn tightly on the hips, and loose on the shoulders
- Wearers must ensure that the neck strap is hanging directly off the skin on the back of their neck
- When not under-air, the facemask should be worn against the body; (making use of the retaining clip where available)
- The command to go under air will be given by the BAECO
- When going under air it is important wearers 'buddy up' to ensure that each team member is correctly dressed
- Once the facemask is securely on: don the Flash hood if required as part of PPE:
  - All facemask buckles must be inside the Flash hood
- The helmet can then be donned
- A pre-entry face fit and breathe down (with the helmet on and strap fastened) must be performed every time EDBA is worn, and immediately prior to entering a risk area:
  - This must be done wearing the full PPE required for that incident-type (excluding gloves)
- Once this is complete, gloves can then be worn
- EDBA set tallies must have been correctly completed by the wearer prior to being received by the BAECO
- All ancillary equipment must have been tested prior to deployment into the risk area, and where possible prior to donning EDBA – to conserve air
- A communications (comms) check must be undertaken en route from the ECP to the risk area

☞ It is envisaged that HART EDBA wearers will not normally be committed to an incident involving fire. However should circumstances dictate, when the fire has been extinguished and the risk of re-ignition has been reduced to an acceptable level, on the agreement of the partner agency Incident Commander, HART EDBA wearers may be committed to the incident to undertake specific tasks (eg:ROLE)

- Partner agency (usually FRS) must be in-attendance throughout HART deployment
  - HART EDBA teams must have access to thermal imaging (minimum one camera per-team)
  - Confirmation must be received, and logged, from the partner agency Incident Commander, or suitably-appointed representative, via the Sector Commander, that areas in which HART staff are required to operate are deemed safe-enough by them not to require the provision of firefighting media
  - Without the permission of the partner agency Incident Commander, HART staff are not to attempt to ventilate any areas they are working in without their express permission
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**Under no circumstances will HART staff deploy into areas within an incident where active firefighting is in-progress;**

- If HART BA wearers, during the course of their operations, are confronted; either with fire, or active firefighting; they are to withdraw immediately and report to BAECO for a welfare check and to update the appointed HART TL
- HART staff may deploy in EDBA into areas adjacent to active fire/active firefighting, subject to a stringent Joint Hazard Assessment (JHA): by both the appointed HART TL and /or Operational Commander and partner agencies

**Unless otherwise informed by the partner agency Incident Commander, HART staff are not to attempt to ventilate any areas they are working in without their express permission**

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- Due to the many and varied incident-types that may be present within the scope of Maritime Operations, it may be necessary for the appointed HART TL to refer, at any point, to some or all of the activities covered within this SOP
  - Any activity which may cause, or risks causing, an Operative to fall into water whilst wearing EDBA (whether under-air or not) is strictly prohibited and every effort must be made to prevent this from happening
  - HART staff will not deploy onto ships or other water-borne vessels without relevant partner agency support
  - Although the Captain of the ship retains responsibility for all activities on their vessel: HART staff will always remain under the control of the appointed HART TL/Operational Commander
  - HART staff may deploy onto water-borne vessels to act in advisory capacity to the ship's own rescue/medical staff, but this must be done in-conjunction with each Trusts' own tactical/medical advisors
  - Decisions as to how to transport EDBA and associated equipment onto a vessel must be taken with reference to the relevant equipment data sheets
  - Depending on the environment or location of any patients, reference may need to be made to Confined Space NH SOP6
  - Ships alongside (not at sea) come under the jurisdiction of the HSE with regards to Confined Space and SWaH and therefore these SOPs will need to be referred to in such incidents
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See Confined Space SOP

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## Operating in EDBA from Bridgeheads or staging areas

- HART staff may operate and be deployed from bridgeheads or staging areas
  - The siting of bridgeheads or staging areas will remain the responsibility of a partner agency (usually FRS)
  - Therefore, a partner agency (usually FRS) must be in-attendance throughout HART operations from bridgeheads or staging areas
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- **HART staff will take no part in the following guideline-related activities:**
    - Laying guidelines
    - HART BAECO will not tie-off a guideline outside an Entry Point
  - The guideline is only to be used by HART staff as a route to the scene of operations
  - Partner agency (usually FRS) must be in-attendance throughout HART operations on guidelines
  - HART staff will not routinely search off guidelines however, search procedures may be deployed to negotiate objects within the risk area
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- Operatives should only use equipment they are trained and competent to use
  - However, if any requirement to utilise hospital/medical facility-based equipment exists (and in the event that no one from the hospital is able to deploy into the risk area with yourselves) this must only be done under the guidance of someone from that hospital, and who is trained to use the equipment and can instruct you in its use
  - Magnetic Resonance Imaging (MRI) – the following will apply to any area in which live MRI equipment is in-operation:
    - Under no circumstances is EDBA to be worn
    - Thermal Imaging Cameras (TICs) are not to be taken in
    - Radios or other means of communication are not to be taken in
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## EDBA Operations at incidents involving radiation

- If wearing GTS: ensure the Electronic Personal Dosimeter (EPD) is situated INSIDE the suit
  - BAECO to ensure that, prior to deployment, the reading of each wearers' EPD is logged on the back of that individual's BA tally
  - On exiting the risk area: the EPD reading of each wearer is to be logged on the back of the individual's BA tally. This information must also be formally logged in the incident log book for that incident – to ensure it is available for future reference.
  - Neither BAECO or the EDBA wearers should wipe this information from their BA tallies without prior agreement from the HART TL.
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After ROLE, HART staff may assist with the transferral of a body into a gas-tight body bag subject to a discussion with:

- Partner agencies (usually police) regarding forensic and criminal issues
- If DIM dictates
- Appropriate scientific advice (eg: from Public Health England - PHE) regarding safe use of Powered Respirator Protective Suit (PRPS) filters on body bags

**These incidents will be left to the discretion of the Incident Commander, in conjunction with partner agencies (usually Police)**

**NB:** It is not the role of HART to undertake recovery of evidence or body recovery; partner agencies (usually local police authorities) have this responsibility. There may be exceptions to this (eg; body within public view)

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## EDBA Emergency or Distress to Wearer incident


- See **Rescue Plan** (which includes impounding of equipment and further procedures)
  - NB: even if incident happens to partner agency staff be aware that our BA board may also be impounded
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This is in addition to the 'Clinical Operations' activity within the Generic Procedures SOP

### Triage:

- Toxic Triage will be used when working in PPE to deal with mass casualties, where it is not possible to reliably assess the pulse or respiratory rate. See Appendix ???waiting to be added

### Clinical Management:

- Utilise the CBRN Quick Look CRESS (Conscious, Respiration, Eyes, Secretions, Skin) tool as a useful guide to enable appropriate clinical management  This tool isolates signs, symptoms and toxidromes for various substances as the clinical presentation post exposure to chemical and biological varies depending on the agent
- See local clinical procedure for clinical management
- If there are adequate clinicians v patients, Advanced Life Support (ALS) should be commenced and only ceased if full process is completed (as per JRCALAC) or instructed to by the appointed HART TL who has been informed to do so by the Medical Incident Advisor

### Decontamination:

- Seek specialist advice to determine most appropriate form of patient decontamination
- In the first instance, the patient should have been asked to apply the REMOVE, REMOVE, REMOVE principles during the Initial Operational Response (IOR) phase. If this is not the case, cut patients clothes off to remove most of the contamination

## Exiting via entry control

- Consider whether you must first go through Decontamination
  - At the conclusion of the incident: BAECO must seek authority from a suitably appointed person (eg: appointed HART TL) prior to erasing any information from the BA Entry Control Board (ECB)
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### Key Definitions:

**Accident in BA:** where a wearer becomes injured due to factors not affecting or relating to the BA set (e.g., twisting an ankle whilst wearing BA)

**BA Accident:** any injury or illness to a wearer directly attributed to a malfunction of the BA set, or by damage to the set causing potential or actual exposure to an irrespirable atmosphere.

### BA Incidents Reportable Under RIDDOR

*"Any incident in which breathing apparatus malfunctions while in use, or during testing immediately prior to use in such a way that had the malfunction occurred while the apparatus was in use it would have posed a danger to the health or safety of the user"* (RIDDOR 2013, Schedule 2 Dangerous Occurrences, Part 1, section 12)

- Any discovered or occurring during actual use in a contaminated atmosphere.
- Any discovered or occurring during checking when use in a contaminated atmosphere is imminent, i.e.:

1. During HART operations
2. During training where entry to a contaminated atmosphere is planned.

- Any occurring or discovered while equipment is still being worn after leaving the contaminated atmosphere in 2(a) and 2(b) above.
- Any discovered during any immediate check or during maintenance of equipment after use in 2(a) or 2(b) above.
- Any occurring during use either in fresh air or in a contaminated atmosphere where, due to restriction on the wearer's ability to operate the controls of the apparatus or remove the mask, there is an actual or potential deprivation of oxygen to the wearer.

**NB:** use in cosmetic smoke is not regarded as use in a contaminated atmosphere.

### Exclusions to this rule:

- "BA sets being used in a mine
  - BA sets being maintained or tested as part of a routine maintenance procedure"
1. Any discovered during routine checking of equipment at the start of the working day.
  2. Any discovered during checking when use for training, other than in a contaminated atmosphere, or confined space, is imminent
  3. Any occurring during or immediately after training at (2) above.
  4. Any discovered during routine tests or maintenance, including periodic inspections.

**Note:** use in cosmetic smoke is not regarded as use in a contaminated atmosphere.

**Any BA set involved in an incident that would trigger a report to RIDDOR must be impounded, and the following procedure followed:**

- Priority initially is for the health, safety and welfare of the wearer involved
- Remove set from operational use
- Document in the logbook the exact cylinder contents gauge reading (do not round this number down)
- Witness to count number of full turns to shut the cylinder valve off and document in the logbook
- Write up the problem in the logbook
- Turn the logbook back on itself so that it displays the sign "DEFECTIVE SET: DO NOT USE"
- All parts of the BA set must remain connected
- To prevent potential exposure to contamination: the facemask should be stored in a separate suitable bag for protection but without disconnecting from the rest of the set
- Transport the set so that it can be formally impounded back on base
- Notify HSE and your Trust via your HART Operational or Training Manager
- They must complete a F2508 as the 'responsible person' in accordance with RIDDOR
- Until further advice is received from the HSE (or other recognised external authority): the set must remain non-operational, and secured in a location where it cannot be accessed, tampered with, or dismantled by unauthorised individuals, or be exposed to additional damage
- Any and all BA incidents that are formally reported via RIDDOR must also be reported through the NARU Safety Notification System (via the Proclus Dashboard).