



THE BIOLOGICAL PROBLEM

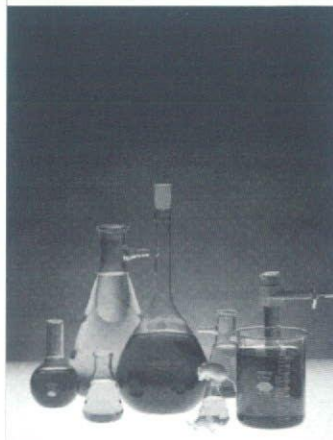
- New diseases have developed which have been difficult to cure – HIV/Aids, CJD, BSE.
- Knowledge of diseases whose incidence has been greatly reduced or totally eradicate is poor – smallpox, plague, anthrax, typhoid, cholera
- The ease of world wide travel allows epidemics to spread rapidly.
- Causative organisms are relatively easy to manufacture and disperse by terrorist groups.



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THE CHEMICAL THREAT



- Nerve Agents
- Blister Agents
- Cyanide
- Pulmonary Agents
- Riot Control Agents

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THE CASUALTIES THREAT

- Contaminated individuals.
- Contaminated groups of individuals.
- Mass casualties arising from a major chemical disaster.
- Mass casualties arising from terrorist action



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FREQUENCY OF CHEMICAL INCIDENTS IN STAFFORDSHIRE

- Average of one incident per month involving a toxic chemical.
- Casualties vary from nil to over 50 evacuated to hospital.
- To date no requirement for large scale decontamination but individual patients have had to be decontaminated.



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PLANNING & TRAINING FOR CHEMICAL INCIDENTS

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ESTABLISHING A SYSTEM WITHIN A HEALTH SERVICE FACILITY TO MEET THE NBC THREAT

GUIDE TO THE ESSENTIALS

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ESTABLISHING A SYSTEM - NBC THREAT – BASIC SYSTEM PRINCIPALS

- Provide a means for rapid evacuation from the contaminated area and airway protection.
- Rapid identification of the contaminant/agent.
- Rapid decontamination with sustaining treatment as close to the incident as possible.
- Immediate advanced treatment following decontamination.
- Triage and evacuation to hospital for specialised definitive treatment.
- System *must* aim to prevent contaminated casualties gaining access to hospital.

Contaminated Area

Identification of Agent

Decontamination

Immediate Treatment

Triage & Evacuation

Hospital Protect Access

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ESTABLISHING A SYSTEM - NBC THREAT – BASIC PRINCIPLES

- Select a team sufficient to provide enough members on duty at any time to take immediate action with the remainder “on call” to provide sufficient expertise to meet the threat.
- Devise a comprehensive training programme for the team and regularly test and adjust the procedures and equipment.
- Provide general training for as many other personnel as possible.
- Liaise closely with other health service facilities and emergency services to ensure common protocols and identification of command, control and communication responsibilities.

FORM THE TEAM

TRAINING & PROCEDURES

GENERAL TRAINING

LIAISON

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ESTABLISHING A SYSTEM - NBC THREAT – THE SERIOUS CASUALTY ACCESS TEAM (SCAT)



- In Staffordshire Ambulance Service a 25 strong paramedic team has been selected and trained which provides 2 ambulances on duty 24 hours a day with a back up of a minimum of 10 paramedics on call.

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ESTABLISHING A SYSTEM - NBC THREAT – THE TRAINING AND PROCEDURES

- Detailed procedures have been written for deployment, wearing protective clothing, the erection and operation of the casualty decontamination centre, decontamination and treatment of patients and evacuation.
- SCAT personnel complete this training over 3 days and receive live refresher training at least once every 3 months.
- All Ambulance Officers have received basic training and completed a one day exercise.



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OBJECTIVES COVERED DURING TRAINING

- Call taking & dispatch procedures
- CDC Operating procedures
- PPE Donning & starting procedures
- Casualty decontamination procedures
- Equipment decontamination procedures
- Personal decontamination procedures
- Equipment preparation for use procedures
- Care & maintenance procedures

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PERSONAL PROTECTIVE EQUIPMENT (PPE)





PERSONAL PROTECTION



Personal Protective Suit

- Suit, respirator and gloves provided in an individual valise.
- Variable sizes.
- Can be stowed easily within the ambulance.
- Put on in minutes.

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PPE - TRAINING



- It is essential that staff are trained in correct dressing and undressing skills.
- Taught to work in pairs - buddy system.
- Taught to decontaminate the PPE and themselves.

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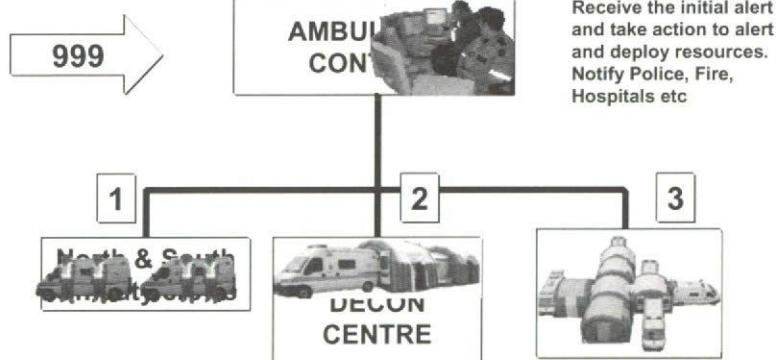
ACTION ON RECEIVING A CHEMICAL ALERT

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ALERT AND DEPLOYMENT



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DEPLOYMENT TO INCIDENT



- The Incident Response Unit and trailer(CDC) is responded to the incident immediately
- On duty SCAT personnel should be dispatched immediately.
- All on call SCAT should be paged to respond.
- All personnel should go directly to the scene holding area and link up.

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ESTABLISH A SAFE HOLDING AREA

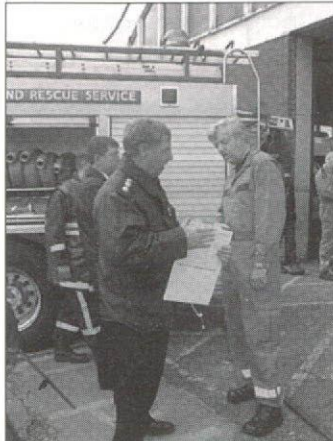
- All vehicles will report to a safe holding area.
- Sited upwind from the incident.
- Ambulance Officer will liaise with Fire Service Officer



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LIAISON WITH FIRE SERVICE OFFICER



- ❑ **Ascertain details of chemical:**
 - ❑ Name ?
 - ❑ Category ?
 - ❑ EN number ?
- **Decontamination method wet or dry ?**

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INITIAL PREPARATIONS

- ❑ Establish with Fire Service area for CDC erection.
- ❑ SCAT Paramedic report to Fire Service BACO to act as triage officer and wear SCBA & chemical protective suit as required.
- ❑ Erect the CDC.
- ❑ Secure water supply for CDC (Fire Service)



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INITIAL PREPARATIONS



- Decontamination personnel don PPE.
- Establish & check communications.
- Carry out CDC decontamination equipment check.
- Brief CDC personnel.
- Pass sitrep to ambulance command and control.

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CLASSIFICATION OF AREAS WITHIN A CHEMICAL INCIDENT

THE ZONES

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THE ZONES

**HOT
ZONE**

- The Hot (Red) Zone is the area where there is a distinct hazard.
- The immediate source of the contamination.
- Normally chemical liquid, droplets or dense gas or fire and/or danger of explosion.
- All personnel operating in this area must wear full chemical protection and breathing apparatus and will be under the control of the Fire Service.

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THE ZONES

HOT ZONE

WIND DIRECTION

**P
L
U
M
E**

Area down wind from Hot Zone is likely to be contaminated.



THE ZONES

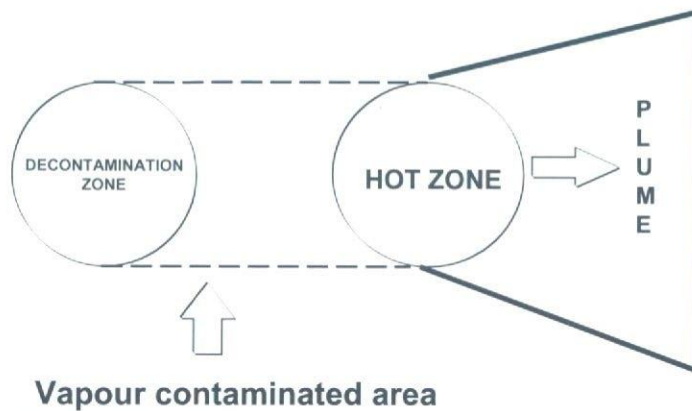


- The “Decontamination Zone” is the corridor between the Hot Zone and the Support Zone.
- It will not be in a contaminated area, however, there will be a vapour hazard from contaminated personnel, clothing, equipment and vehicles.
- Chemical protection and respirators will be required by operators in this area.
- Area will be under the direction of the Fire Service.

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THE ZONES



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THE ZONES

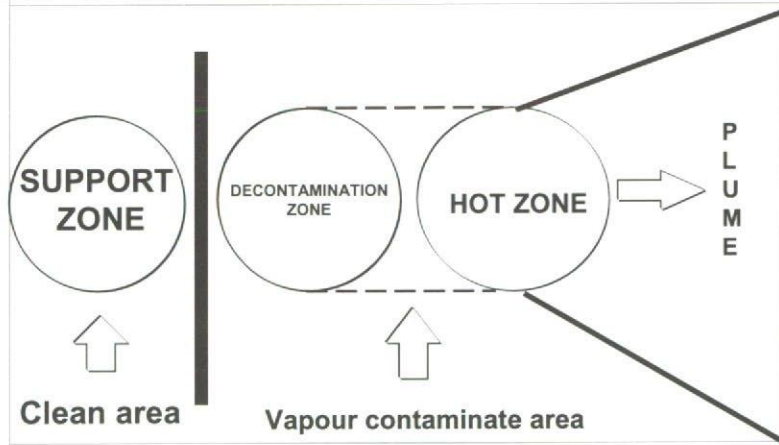


- The Support Zone must be in a clean and uncontaminated area.
- It should be as close to the decontamination area as possible.

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THE ZONES



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PRE - HOSPITAL MANAGEMENT OF CHEMICAL INCIDENTS

ACTION IN THE HOT ZONE

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PRE-HOSPITAL MANAGEMENT - HOT ZONE

- **The route and extent of exposure are important in determining the potential for secondary contamination.**
- **Victims who were exposed only to gas or vapours are not likely to carry significant amounts of the chemical beyond the Hot Zone, and so are not likely to pose a risk to personnel outside the Hot Zone.**
- **However, victims whose skin or clothing is grossly contaminated with solid or liquid chemical (including condensed vapour) may contaminate personnel by direct contact or by off-gassing vapour.**
- **Victims who have ingested a toxic chemical may expose others through vomitus.**

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BASIC AIRWAY, BREATHING, AND CIRCULATORY SUPPORT (ABCs) - HOT ZONE



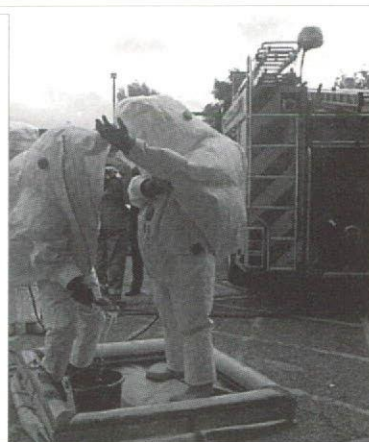
- Little patient care can be performed by a paramedic when wearing SCBA.
- Rescuers often can perform only simple manoeuvres e.g.:
 - Ensure a patent airway,
 - apply a cervical collar,
 - brush off gross contaminants or use fullers earth to absorb chemical
 - apply direct pressure to contain arterial bleeding.

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VICTIM REMOVAL - HOT ZONE

- Victims should be removed from the Hot Zone to the Decontamination or Support Zone, as appropriate, in the safest and quickest way possible.
- If victims can walk, they can be led out of the Hot Zone.
- If they are unable to walk, they can be removed on a spinal board or stretcher.
- If no practical means of transport is available, the victim may be carried or dragged out



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PRE - HOSPITAL MANAGEMENT OF CHEMICAL INCIDENTS

ACTION IN THE DECONTAMINATION ZONE

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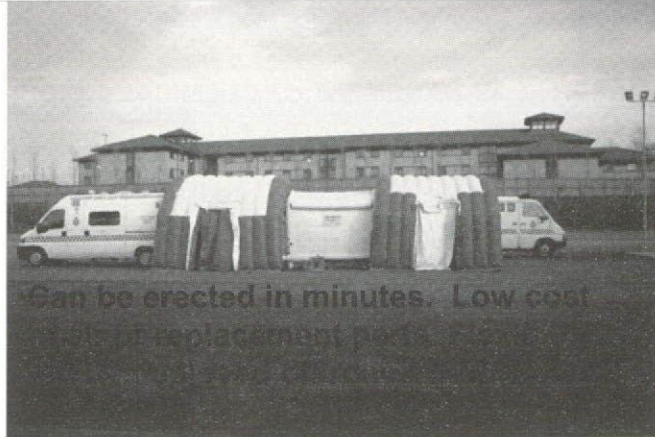
THE EQUIPMENT



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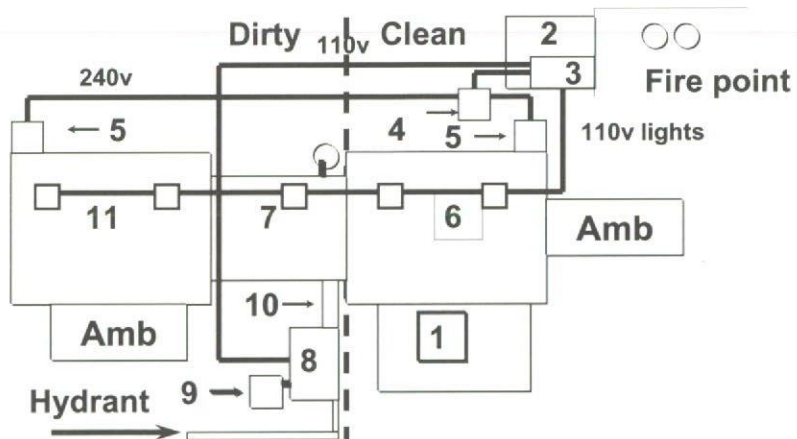
THE ADVANTAGES



Can be erected in minutes. Low cost
with replacement parts

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CDC LAYOUT - OVERVIEW



- | | | | |
|--------------|------------------|----------------------|-----------------|
| 1. Control | 4. 240v junction | 7. Shower & comp air | 10. Heater hose |
| 2. Lugger | 5. Blowers | 8. Heater | 11. Reception |
| 3. Generator | 6. Evacuation | 9. Fuel | |



PRINCIPLES

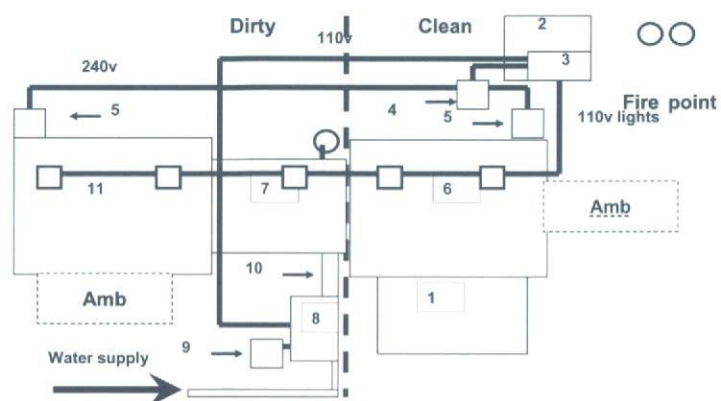
SUSPENSION - Fullers earth & clothing removal

DILUTION - Dilution with water, RINSE - WASH - RINSE



•DISPERSAL - Drying to remove vapour

RECEPTION PAGODA



- | | | | |
|--------------|------------------|----------------------|-----------------|
| 1. Control | 4. 240v junction | 7. Shower & comp air | 10. Heater hose |
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RECEPTION PAGODA



INITIAL DECONTAMINATION & TREATMENT

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INITIAL CASUALTY DECONTAMINATION PROCESS

- Aim is to remove contaminated clothing and any contamination on skin, hair or in wounds.
- Decontamination is provided by a team of 4 and one paramedic to provide any necessary medical treatment.
- All team wear full protective clothing. No part of the body should be exposed.
- All the casualties clothing is thoroughly powdered with fullers earth to soak up contaminant and then cut away and removed.



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