NBC-protection - a Swedish version for the future

Ola Claesson

Present status – NBC capability

- NBC defence capability built on “heritage” - a low technology level, high demand in manpower
- Unit NBC defence is limited, primarily because of low training levels.
- New materiel has been supplied to a limited extent.
- NBC defence still has a low priority in the armed forces and is often regarded as a logistical question.
- There is, at all levels, a lack of knowledge of the effects on units of NBC threats and incidents.
- The warning and reporting capability is considered inadequate due to insufficient competence and lack of methods at battalion level.
- The armed forces do not meet the capability requirements laid down in STANAG 2150, primarily with regard to organisation and competence.

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YESTERDAY

THREAT

- **Enemy identified**
- **Means and methods “known”**
- **Time and place of CW-attack could be predicted**

MISSION

- **To defend Sweden at home**

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TODAY

ACTIVE THREATS

- Enemy: From states to terrorism
- Means: From advanced WMD to dirty bombs
- Methods: Difficult to predict
- Target of attack: From military units to schools
- Time: When least expected

PASSIVE THREAT

- ROTA

MISSION

- To do anything - anywhere

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SCENARIOS WITH BROADER SCALES

From peace over crisis to war

From few and known agents to a broader spectrum (complexity)

From a ”classical” slow course of events to surprise and speed (time)

NEED

- Capability to support military operations during an NBC-threat or in an hazardous environment

HOWEVER

- NBC-threat one among many other threats that have to be considered in the protection of the unit
- NBC defence to focus on operational needs

NBC-defence concept

The ”tactical” principle is to implement balanced NBC defensive measures on the basis of risk assessments.

The aim is to make defensive measures an optimized balance of mission objectives, risk assessment and protective measures so that risks to personnel and the need to reinstate contaminated materiel are minimized.

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Principles of NBC-defence

- Crucial capabilities:
  - Information
  - Risk management
  - Command and Control
- ”Cost effective” methods (resources)
- Integrated with systems/equipment
- Included in the units tactics
- Passive and active NBC-defence
- A concept based on a combination of the NBC defence capability of ordinary units and the capability provided by special NBC units

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Principle design of NBC-defence concept












Joint operational level

Unit level

NBC has to be embedded not added

REQUIREMENTS

- Meet/manage unpredictable NBC-hazards/attacs
- Operational for long time (weeks to months)
- Minimal reduction of operational capability
- Flexible concept, adaptable to different threat levels (both short and long term)
- Adapted to both national and international operations

DEVELOPMENT PLAN

LONG TERM GOALS:

- **Develop co-operation both with national and international partners (operational and equip/syst)**
- **Continue to develop towards NATO PfP**
- **Develop the NBC Defence Concept to be an integrated part of the Net Centric Warfare Concept**

SHORT TERM GOALS:

- **Develop NBC- concept of the (EU) Nordic Battle Group**
- **Continue the development of the NBC Company**
- **Continue the process to procure a new combat suit and an early warning system**

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NBC-protection for the future soldier

PRE-STUDY

NBC general

Present/future threats

Present/future missions

International operations

Toxicology – challenge levels

Measurement methods

Standards

Working environment laws - consequences

Conditions/specifications

Heat stress - comfort

Interoperability (international)

Integration (MARKUS)

Equipment - existing

Developments - trends

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NBC-protection for the future soldier

IMPORTANT FACTORS

- More agents + B
- Lower permissible limits + zero tolerance
- Integrated + modular + flexible + improveable

CONSEQUENCES

- Protection to be worn at all times (time + protectionfactor)
- Individual dosemeters (N,C,,,B), ”healthmeters”
- Higher protection factors, on individual level (?)
- Better knowledge of limitations -> realistic tests
- Internationally coordinated specifications of requirements
- Internationally coordinated test metods
- Lower physiological burden
- Local (swedish) requirements (wInter) integrated internationally

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NBC-protection for the future soldier

MOST IMPORTANT

- **N + B + C**
- **Testmethodes and tests**
- **Higher protectionfactors**
- **Lower physiological burden**
- **Realistic tests**
- **Integration**
- **Internationalisation**

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NBC-protection for the future soldier

A BALANCED PROTECTION

BUT WHAT BALANCE?

Interoperability – swedish requirements

High protection factor – low physiological burden

Swedish need of competence – international ”market”

NBC-protection for the future soldier

AREAS OF WORK

- **Continous survey of the market (to follow the progress of the technological limits)**
- **International co-operation (risk spreading, aquire competence, include swedish requirements, standardisation)**
- **Develop measurement methods (real-time measurements, full/better characterisation, TEST SUBSTANCES, B, different conditions)**
- **Get relevant numbers for heat stress when carrying out military type activities in different climatic zones. Include effect of NBC-protection.**
- **Membranes (novel material)**
- **Integration (lots of talk, less action => not much experiences)**
- **Relevant protection factors (effects of sweat, talk, movements, work)**
- **Fogging, correcitve lenses, sweat in the respirator**
- **Better filters**
- **Sealing edge / over pressure ?**

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CA/NL/S trilateral co-operation

GOAL:

To develop a functional field-uniform (demonstrator) that gives the soldier a relevant body-protection against toxic chemicals and B-agents under operational conditions.

AIMS:

- **To identify new materials with potential for the protection of the future.**
- **To develop efficient closures and joints.**
- **To study the effects of balancing protection factors against regional body toxicological sensitivity, function and structured considerations of risks.**
- **To validate the whole-body function of the protection for relevant exposures and environments.**

ADVANTAGES for Sweden

- **Co-ordinated specifications S/CA/NL (testsubstanses, -metods, suit performance)**
- **Efficient splitt of measurements**
- **Possibility to use CA test chamber (mannekin)**
- **Possibility to test new suit concepts in Sweden**
- **Gain experience in suit design (closures, fit, etc)**
- **Possibility to co-ordinate design of test methods for B**
- **Exchange of experiences (challenge levels, limits, operational concepts)**

Novel Materials and Concepts for Low Burden NBC Protective Clothing Systems

UK, Belgien, Finland, Frankrike, Grekland, Italien, Holland, Norge, Spanien, Sverige, Turkiet

GOAL:

To enhance the capability of the Individual Protective Equipment

FACTORS TO BE STUDIED:

- **Changed threat picture**
- **Physiological and psycological strains**
- **New missions**
- **Quantification of the risk**
- **TICs + TIMs**
- **Large span in climatic conditions**

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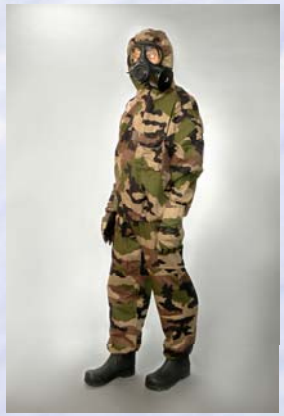
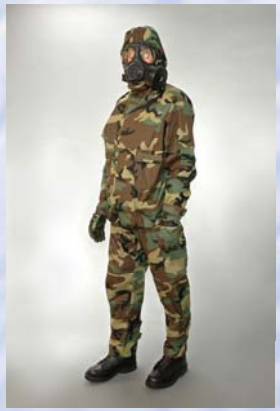
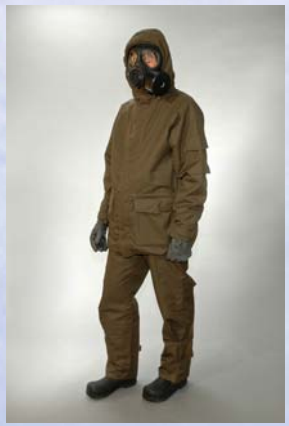
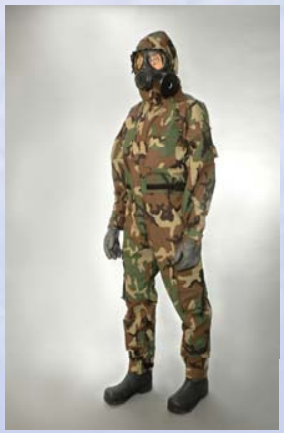
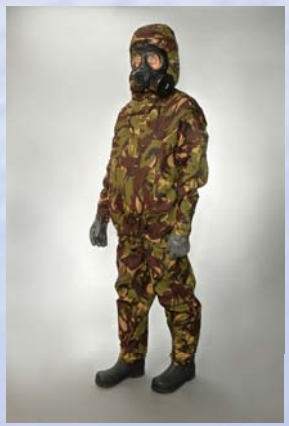
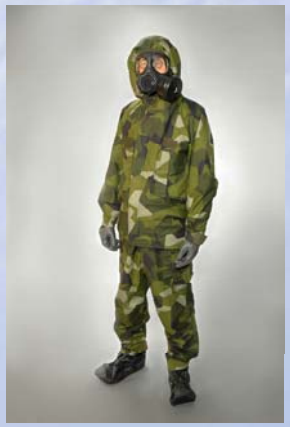
NEW!!!!!

Project : Physical protection

- **Field trials of of the shelf protective clothing.**
- **Complemented by materials testing**
- **Physiological burden**
- **Comfort**

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SUMMING UP

- Internationalisation (NATO PfP, EU)
- NBC-defence as integrated part of operations
- Early warning
- Methods/standards
- Procurement of the shelf