A SCOPING METHODOLOGY FOR LEGACY MUNITION ENVIRONMENTAL ASSESSMENTS AND RANGE ENVIRONMENTAL SUSTAINABILITY PROCEDURE

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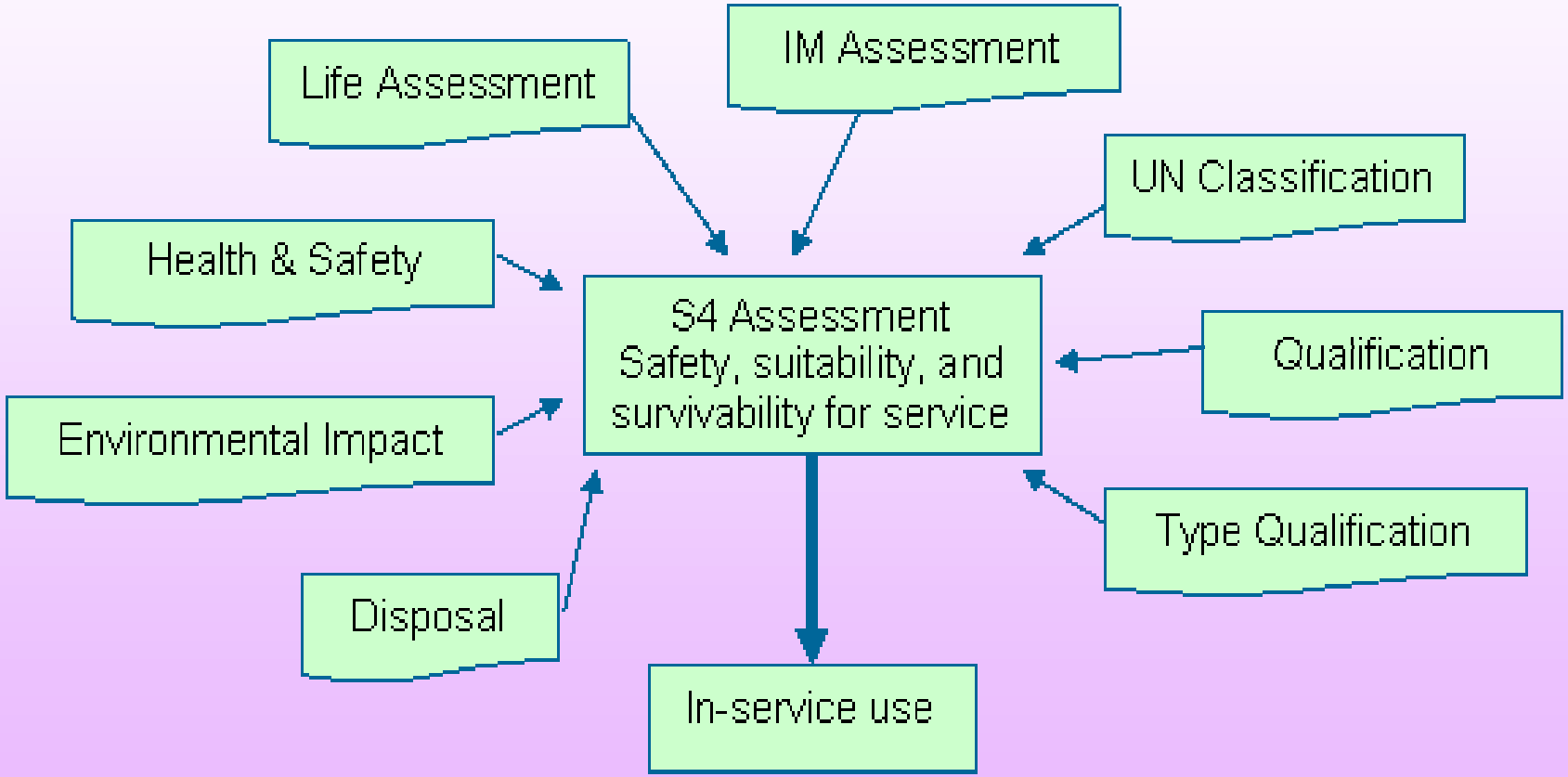
BACKGROUND: Why are we doing the work?

- Increasing European environmental legislation
- It is MoD policy to ascertain the effects (positive and negative) of Ordnance, Munitions and Explosives (OME) have on the environment
- It is MoD policy to carry out Environmental Assessments on all munitions

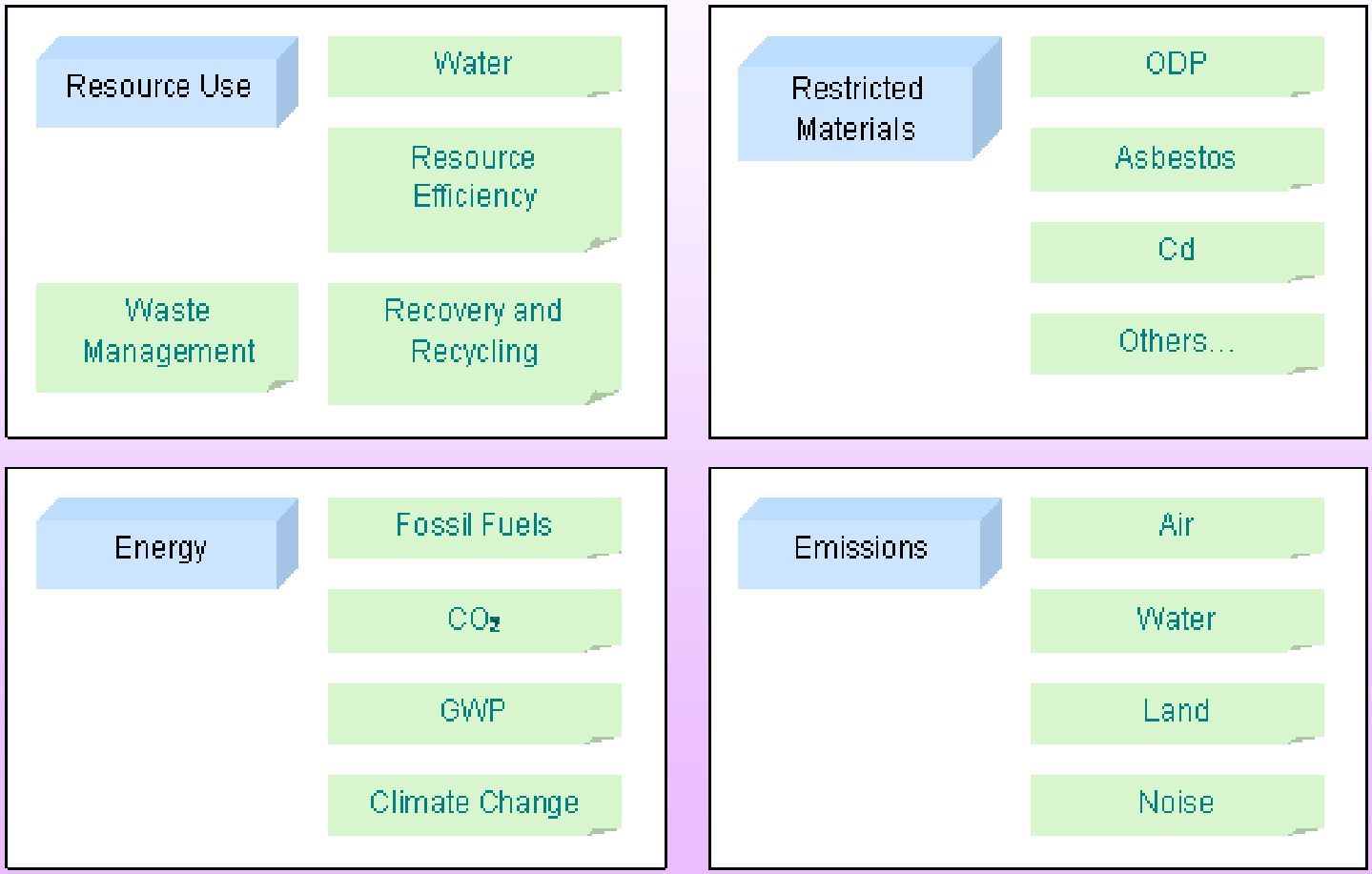
SCOPE OF WORK COVERED IN THE PAPER AND THIS PRESENTATION

- Considers all the S^4 (Safety, Suitability & Sustainability for Service) requirements together.
- Emphasises that 'environmental impact' is just another S^4 requirement.
- Similarities between the newer Environmental and established Safety Management Systems – covered in paper.
- The Why?, How? And What? of the proposed Scoping Methodology (for legacy munitions) explained – main part of the presentation.
- Relationship between the Environmental Effects Assessment Panel and the Ordnance Safety Review Panel – mentioned in this presentation, covered in paper
- Conclusions

ASSESSMENT, SAFETY, SUITABILITY AND SURVIVABILITY (S^4) FOR SERVICE



ENVIRONMENTAL IMPACT AREAS FOR MOD EQUIPMENT



INITIAL SCOPING METHODOLOGY:

How is the ENVIRONMENTAL HAZARD ASSESSMENT EHA Implemented?(1)

Key stakeholders are identified:- IPTs & Ranges

- **The EHA methodology relies on comparing emissions from a munition with regulatory values and comparing them to the Environment Agency's own guidance to determine significance.**
- **A major problem is a lack of scientific data. Need minimum (but justifiable) amount of scientific data to substantiate any conclusions.**
- **To-date we have relied on the set of emissions data generated by the US DoD and Environmental Protection Agency.**

INITIAL SCOPING METHODOLOGY:

How is the ENVIRONMENTAL HAZARD ASSESSMENT EHA Implemented?(2)

- Therefore about 30 ‘fleet leaders’ have been selected based on the categories of the US DAC MIDAS system munitions.
- The toxicity and environmentally harmful properties of these emissions are then assessed together with a review of any restricted materials eg heavy metals to assess the extent, if any, of significant adverse environmental impact.
- Future categorisation of the complete munitions inventory into ~ ‘30’ groups will allow read across.

INITIAL SCOPING METHODOLOGY:

WHAT will be the outputs from the EHA for the IPTs? (3)

- The emissions/restricted materials assessment plus statements on, usage, storage, accident and disposal issues (the In-service & Disposal phases of CADMID cycle) provides the requirements for the IPTs to input into their Munition Environmental and Safety Case Reports for peer review.

- NOTE: The peer review process is covered in the paper - essentially mirrors the UK MoD IM procedure; an Environmental Effects Munitions Assessment Panel (EEMAP) (cf the IMAP) will be formed.

RANGE ENVIRONMENTAL SUSTAINABILITY

- **WHY Consider Ranges?**

- **The purpose behind environmental management is to ensure that damage is minimised to acceptable levels based on assessment of multiple use of many munitions on specific ranges.**
- **Ranges need to be treated individually since they may have a range of meteorological, geological and hydrological conditions.**
- **Ranges may also have differing soil types with different soil chemistries and different climatic conditions with potentially significant variations in rainfall pH.**
- **Potential for damage to aquifers can also vary from range to range.**

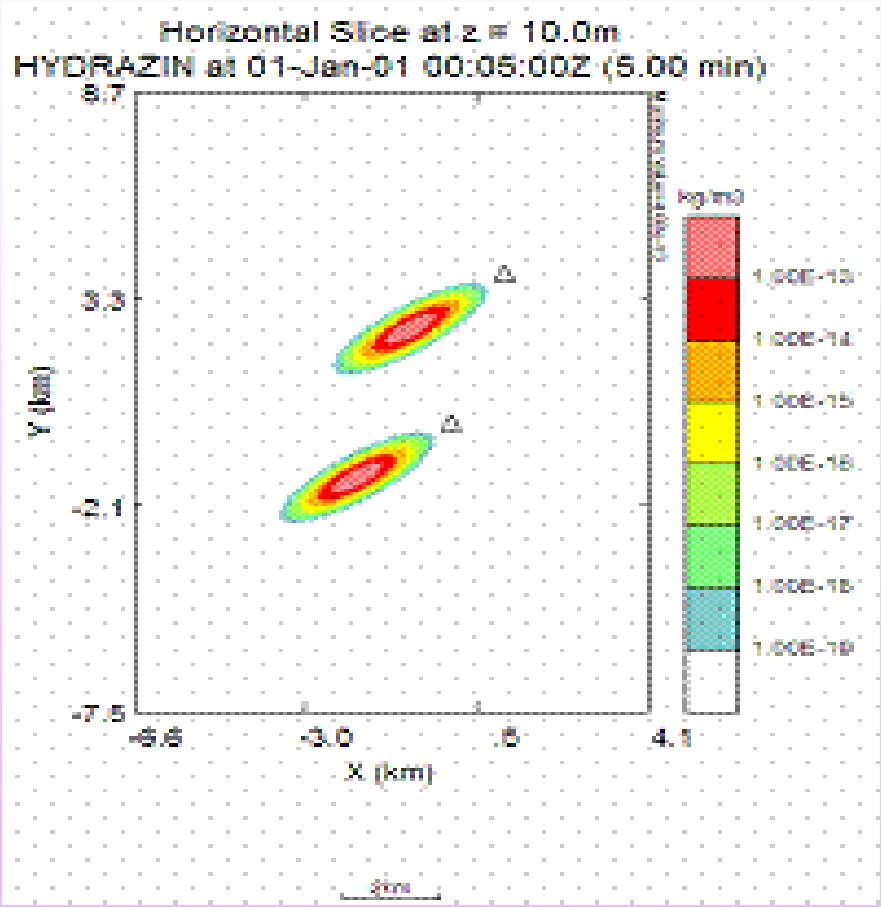
RANGE ENVIRONMENTAL SUSTAINABILITY

HOW do we address the range issues?

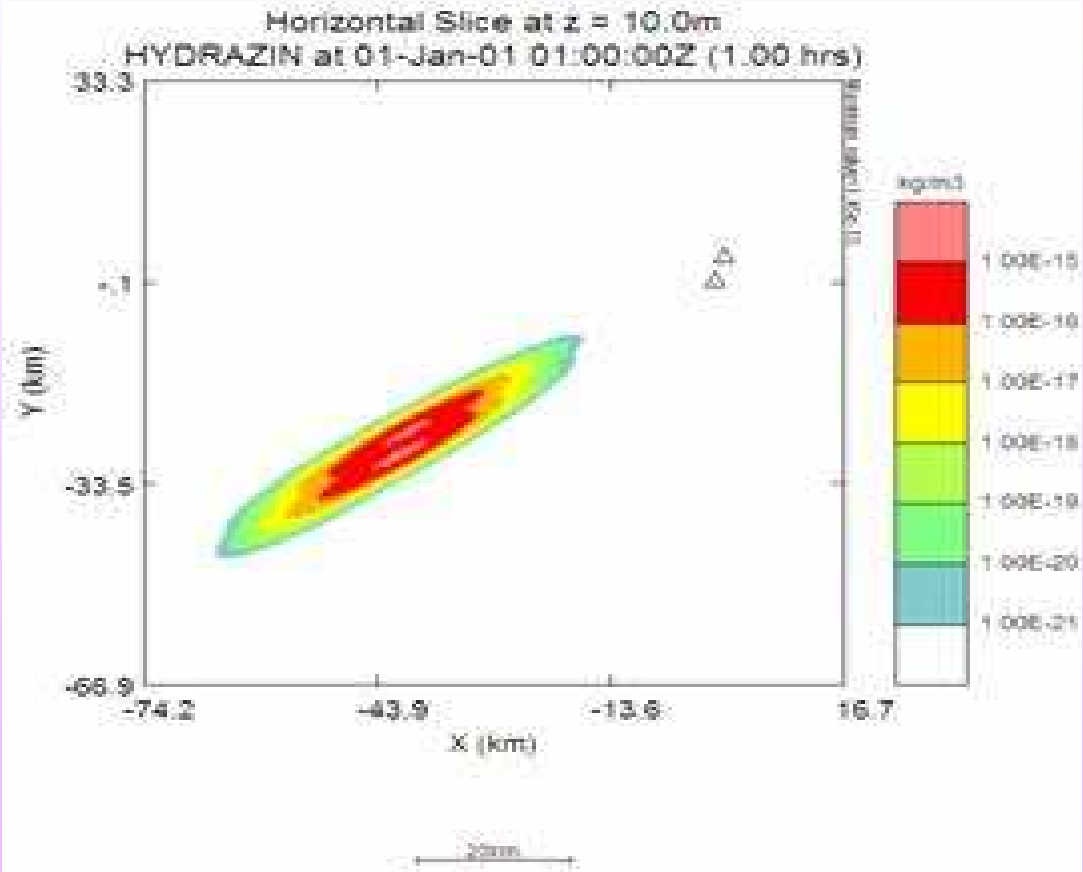
The EHA has to provide sufficient information to allow:

- **Site environmental managers to assess the effects of a munition.**
- **The accumulative effects of emissions to be assessed.**
- **The use of appropriate air dispersion models allow airborne emissions to be mapped across the range and areas of potential high risk (environmental footprint) to be identified.**
- **Once the emissions are understood it then becomes possible to offer implementation of range sustainability models.**

EXAMPLE FROM AN AIR DISPERSION MODEL FOR HYDRAZINE EMITTED FROM A DOUBLE DETONATION
10 m above ground after 5 mins



EXAMPLE FROM AN AIR DISPERSION MODEL FOR HYDRAZINE EMITTED FROM A DOUBLE DETONATION
10 m above ground after 1 hour



WHAT are the advantages of the EHA DATA?

The EHA seeks to generate quantitative data that:

- **Allows an assessment of the potential significance of emissions**
- **Generates information which proves useful to key stakeholders, IPTs & Range Safety Officers**
- **Prevents duplication of effort by maximising use of data**
- **The same emissions data can also be applied to the assessment of human health adding weight to the need for an efficient management system which allows multiple use of a single data set**

SUMMARY SHEET

What are the Environmental Hazard Assessment outputs for the stakeholders?

Now: 1 – 2 years

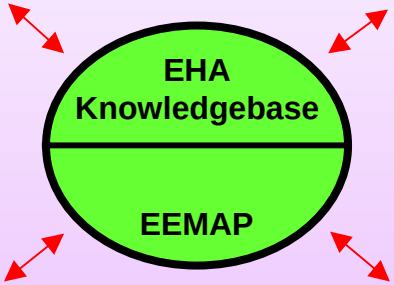
IPTs

- Agreed I/Ps into the Munition Environmental Safety Case.
- Initial (substantiated) conclusions.
- Emphasise: environmental impact of single munition not going to be significant.

Ranges

- Start to develop Range Environmental Sustainability Tool (REST).
- Start to determine emissions/impacts (inc scientific monitoring/testing) from use of multiple munitions on ranges.
- Start to develop environmental footprint of ranges.

Central Co-ordination



2 – 5 years

IPTs

- Agreed inputs into the Munition Environmental Safety Case.
- Feedback from REST.
- Potential for reviewing build standard of munition (green energetics/munitions culture).
- Sound substantiated conclusions.

Ranges

- Continued development of REST.
- Confirmation of environmental footprint of ranges.
- Develop improvements in Range management/sustainability.
- Show how the MoD is on top of the problem of environmental effects of OME eg by reduced carbon emissions.

WHAT are the CONCLUSIONS from the presentation?:

The need for a centrally developed knowledge base has been identified.

- The need to consider all S^4 requirements together is considered the most cost effective way ahead.
- The outputs from the EHA can be used by key stakeholders: IPTS & Range Staff.
- Any environmental concerns for munitions need to be addressed at site specific locations eg ranges.
- The recommended EHA procedure is considered a way of proving that the MoD is on top of the problem of tackling the effects of OME on the environment in a pragmatic and justifiable way.