Optimisation Through Research of CHemical Incident Decontamination Systems

ORCHIDS Third Project Meeting and Stakeholder Workshop

1st – 2nd July 2009

Agreement number: 2007203

Vicky Edkins (Health Protection Agency, UK)

Richard Amlôt (Health Protection Agency, UK)

ABSTRACT

The ORCHIDS project aims to strengthen the preparedness of European countries to react to incidents involving the deliberate release of potentially hazardous substances. A programme of applied research will facilitate the enhancement of emergency response capabilities by identifying ways in which mass casualty decontamination processes can be optimised. The project involves biannual meetings between the four associate partners: The Health Protection Agency, UK; the Centre for Research of Army Medical Services, France; the Faculty of Military Health Sciences, University of Defence, Czech Republic and the CBRN Defence and Security Division, Swedish Defence Research Agency, Sweden.

The Third ORCHIDS Project Meeting and Stakeholder Workshop took place on 1st and 2nd July 2009 at the Army Biomedical Research Institute in Grenoble, France. The presence of representatives from both partner and stakeholder countries provided a valuable opportunity for the exchange of information regarding mass casualty decontamination processes and protocols across the EU and beyond. The meeting also enabled partner organisations to share and discuss the progress made towards meeting the objectives of the ORCHIDS project and to consider the onward progress of the project.

With financial support from the European Commission via the Health Threats Strand of the Community Action in the Field of Public Health Work Plan for 2007. With additional support from the UK Department of Health and Home Office.

Emergency Response Department (ERD)
Porton Down, Salisbury, Wiltshire, SP4 0JG

Publication Date: September 2009

EXECUTIVE SUMMARY

This report provides a summary of the Third ORCHIDS Project Meeting and Stakeholder Workshop which was held in Grenoble, France from 1st – 2nd July 2009. The meeting was attended by representatives from each of the four project partner organisations: The Health Protection Agency (HPA), UK, the Centre for Research of Army Medical Services (CRSSA), France; the Faculty of Military Health Sciences, University of Defence (FMH), Czech Republic and the CBRN Defence and Security Division, Swedish Defence Research Agency (FOI), Sweden. In addition, representatives from the project's stakeholder countries attended and contributed to the meeting.

The meeting commenced with an overview of the background to the ORCHIDS project and its principle aims and objectives; this provided an introduction to the ORCHIDS project for the stakeholders and provided them with an insight into how their involvement in the project was beneficial to both the country that they were representing and to the success of the project.

The meeting proceeded with a series of presentations focusing on the progress that has been made in meeting a number of the objectives of the ORCHIDS project. The first of these presentations addressed the work that had been carried out thus far towards a review of EU Member States' mass casualty decontamination provision. An outline was provided of the survey that has been developed by the Health Protection Agency's Emergency Response Department which has been designed to collect this information. This questionnaire has already been circulated to a number of EU Member State countries and several responses have been received. The process of identifying stakeholder contacts in each of these countries and distributing the survey will continue throughout the lifetime of the project and progress made towards the goals of the review will be reported at future project meetings.

The second presentation provided an overview of the work carried out assessing EU provision for the decontamination of minority and vulnerable groups. The survey that is being circulated to EU Member State representatives includes a section which is designed to collect information relating to each country's provision for these groups. To date there is little indication that such provision is specifically incorporated into EU Member States emergency response plans. The distribution of this questionnaire is ongoing however and further results will be reported at subsequent project meetings. Issues relating to the definition of 'vulnerability' and potential problems with the use of such definitions were discussed at the workshop.

Representatives from the HPA, CRSSA and FMH provided updates on the progress that their respective organisations had made towards the laboratory research trials of the ORCHIDS project. All three organisations provided an overview of the work that aims to establish an optimised decontamination showering protocol. In addition, studies carried out by the HPA to assess the effects of disrobing on residual bodily contamination were described. Findings to date indicate that the amount of contaminant removed by disrobing following horizontal (face-on) exposure to chemicals is in close agreement with previous estimates.

The next workshop session enabled project partners and stakeholders to describe work carried out in their respective countries which was of relevance to the ORCHIDS project. Accounts were given of a whole body UV fluorescent imaging technique which has allowed the comparison of decontamination protocols in a human volunteer trial in the UK; the routines and functionality of mass decontamination procedures in Sweden; decontamination exercises that have taken place or will take place in the near future in France and Denmark and a tool for training emergency responders on the psychosocial dimensions of chemical, biological, radiological and nuclear (CBRN) events and threats.

The final component of the ORCHIDS third project meeting was a series of discussion sessions. These provided delegates with an opportunity to discuss and debate a range of issues associated with the ORCHIDS project. The first of these sessions focused on the specific objectives of the project; delegates were particularly encouraged to discuss the stakeholder engagement process and ways in which participation in the project could be increased and more broadly, what the outcomes of the project are likely to be and how the findings should be implemented.

The second discussion session was concerned with ‘people and processes’ and examined how the public should be engaged in the project outcomes. The mechanisms by which this engagement should take place and the processes involved were discussed.

The topics for discussion in the final session were ‘technology, solutions, evidence and policy’. In this session delegates debated how it might be possible to make the outcomes of the ORCHIDS project applicable across the EU and how the outcomes should be communicated to policy members.

The Third ORCHIDS Project Meeting and Stakeholder Workshop provided a useful forum to review the first year’s progress and outcomes of the ORCHIDS project. In addition, the workshop provided an opportunity for the first group of ORCHIDS stakeholders to contribute to the focus and future direction of the project activities. This report details the outcomes of this meeting, which will be re-visited at the interim project workshop due to take place in Umeå, Sweden in the summer of 2010.

CONTENTS

1 INTRODUCTION

1.1 An Overview of the ORCHIDS Project

The purpose of the ORCHIDS project is to strengthen the preparedness of EU Member States via the development of optimal procedures for dealing with incidents involving a large number of contaminated casualties requiring emergency decontamination. This will be achieved through an integrated programme of applied toxicological research, operational research trials, a mass casualty decontamination exercise and simulation modelling. The project aims to produce evidence-based best practice recommendations for EU Member States in the area of emergency decontamination. The provision for minority and vulnerable groups in emergency response decontamination will also be considered and guidelines for best practice will be generated. Recommendations for the procurement of the next generation of mass decontamination response programmes will be made; these recommendations will also be relevant where EU Member States and International Partners are looking to establish these resources for the first time.

The ORCHIDS project involves the work and collaboration of four project partner organisations: The UK Health Protection Agency's Centre for Emergency Preparedness and Response (HPA CEPR), the Centre for Research of Army Medical Services (CRSSA)[1], France; the Faculty of Military Health Sciences, University of Defence (FMH), Czech Republic and the CBRN Defence and Security Division, Swedish Defence Research Agency (FOI), Sweden. The HPA is project lead and is working closely with the other project partners who contribute their expertise at every stage.

1.2 Project Meetings

The project includes a programme of biannual project meetings that involve the project partners. These meetings facilitate the collaboration of the project partners, provide an opportunity for partners to discuss progress that has been made towards the project deliverables and to discuss plans for future activities. Research results are also shared and methodological protocols are discussed and agreed.

1.2.1 ORCHIDS Third Project Meeting and Stakeholder Workshop

The Third ORCHIDS Project Meeting and Stakeholder Workshop took place on 1st and 2nd July 2009 in Grenoble, France. The event was hosted by CRSSA.

Prior to the Stakeholder Workshop, the associate partners assembled at CRSSA on the afternoon of the 30th June. This pre-workshop meeting provided an opportunity for the project partners to share and discuss their findings, with a particular focus on the laboratory research trials conducted to date. In addition, Anne Dempsey (AD) gave a presentation which was concerned with the financial and reporting issues of the ORCHIDS project (please see Appendix A for a copy of AD's presentation slides).

Over the two days of the project meeting and stakeholder workshop a broad range of issues and topics were discussed (please see Appendix B for the full workshop

[1] CRSSA has recently become the Army Biomedical Research Institute (IBRA)

agenda). Following introductions, a welcome from the Director of CRSSA and an overview of the project, the first part of the meeting was largely concerned with progress that has been made in meeting the objectives of ORCHIDS Work Package 4 - a review of mass casualty decontamination provision and processes across all EU Member States; Work Package 9 - a review of EU Member States' provision for vulnerable and minority groups in mass decontamination planning, and Work Package 5 - laboratory trials assessing the optimum parameters for decontamination efficacy. The following session provided project partners and stakeholders with the opportunity to present work that has been carried out in their respective countries, with relevance to the broad objectives of the ORCHIDS project. These presentations provided valuable insights into decontamination processes and the equipment that is used across the EU, emergency preparedness exercises that have been carried out in various countries, techniques that have previously been used to explore the efficacy of decontamination and training tools that have been developed for CBRN incident response.

1.2.2 Third Project Meeting and Stakeholder Workshop Attendees

The project meeting was attended by representatives from each of the four associate partner agencies. All identified project stakeholders at the time of planning the meeting were also invited to the workshop. The details of these stakeholders are captured in the ORCHIDS stakeholder database (Deliverable 4). A full list of attendees at the Third ORCHIDS Project Meeting and Stakeholder Workshop and their affiliations can be found in Appendix C.

2 PROCEEDINGS

2.1 Welcome, Introductions and an Overview of the ORCHIDS Project

Project partners and stakeholders were welcomed to the Third ORCHIDS Project Meeting and Stakeholder Workshop by the Director of Centre de Recherche du Service de Santé des Armées (CRSSA). Delegates were provided with a brief overview of the meeting schedule by Richard Amlôt (RA) who then went on to describe how the project was conceived and who the project partners are. An overview of the background and objectives of the ORCHIDS project was outlined, including Exercise Magpie and Exercise Young Neptune; multi-agency field exercises conducted by the HPA alongside the UK emergency services. These exercises involved scenarios requiring the decontamination of large numbers of casualties and highlighted the need for further research into this type of emergency response. RA also described how Exercise Young Neptune, a field exercise involving a large group of young children, highlighted the need to explore how special populations can challenge response plans for CBRN incidents. The ORCHIDS project evolved from considerations of how research could be used to optimise responses to incidents requiring emergency decontamination, and was designed to produce outcomes with a pan-European perspective and relevance (please see Appendix D for a copy of RA's presentation slides).

The objective of the ORCHIDS project is to make recommendations concerning novel techniques to optimise existing decontamination systems, and to make recommendations for the procurement of next-generation provision. The outcomes of ORCHIDS project will be to identify best practice in emergency response, to produce educational tools, to maintain a project website and to establish a database and network of EU stakeholders and experts. RA went on to describe the progress made to date towards the re-launch of the ORCHIDS website: At the time of the meeting the new website was to be launched shortly. The site is intended to serve as a useful communications hub for project partners and stakeholders and it was planned that the new version would include a password-protected area for stakeholders. The web address was highlighted (www.orchidsproject.eu). It was agreed that RA and Vicky Edkins (VE) would notify all stakeholders and partners when the new ORCHIDS website was made live and would provide login information for the password protected area.

RA requested that all stakeholders complete the ORCHIDS Stakeholder Survey and disseminate this widely to national and international colleagues who could contribute to the project. This was in the hope that through the identification of new stakeholders, the ORCHIDS network of stakeholders will grow, and will facilitate the dissemination of the ORCHIDS deliverables. It was agreed that partners and stakeholders would inform RA and VE of any stakeholder nominees and that RA and VE would send all stakeholder attendees the stakeholder survey for dissemination to their colleagues and contacts.

2.2 Review of Progress to Date

2.2.1 EU Mass Casualty Decontamination Provision Review: Preliminary Outcomes

One of the objectives of the ORCHIDS project is to provide a review of EU mass casualty decontamination provision (Work Package 4). Project partners are to review their own country's existing emergency decontamination provision and procedures, as well as those of all other EU Member States. To facilitate the generation of this review a survey has been created by HPA CEPR to collate information on mass civilian decontamination procedures and provision. This questionnaire is to be circulated to representatives from each EU Member State countries (please see Appendix E for the decontamination survey coversheet and questionnaire). These representatives will be individuals with expertise in mass decontamination provision or policy. In exchange for any information that they provide, each respondent will be offered the opportunity to become a stakeholder in the ORCHIDS project. Stakeholders will receive regular updates on project activities and events and will benefit from the dissemination of the ORCHIDS project outputs, guidelines and recommendations.

Rhys Jones (RJ) presented the progress of the review of EU mass casualty decontamination provision. This included preliminary findings from survey returns by existing stakeholders and a summary of the review of related literature (please see Appendix F for the RJ's presentation slides).

Survey results have been received from, Austria, Czech Republic, UK, Finland, France, Hungary, Latvia, Malta, Norway, Scotland, Spain, Sweden and Switzerland. A database is being compiled which will capture survey results. The collation of further survey information is ongoing. RJ provided a description of the general mass decontamination methodology employed by countries from which a response has been obtained, including similarities and key differences. It was agreed that VE will further the progress made against this objective by collating new survey returns and will continue to populate the ORCHIDS stakeholder database (Deliverable 4). A progress report will be provided by VE at the next project meeting in November.

2.2.2 Review of the Provision for Minority and Vulnerable Groups in Emergency Decontamination

RA gave a presentation which began with an outline of the need to review the requirements of special populations and vulnerable groups in CBRN emergencies and particularly in emergency decontamination. No universally accepted definition of what constitutes a 'vulnerable group' exists, however emergency planners have gone some way to defining groups that require special attention in emergencies and disasters, such as children, the elderly and those with physical disabilities. A review of EU countries' mass decontamination provision is being carried out as part of the ORCHIDS project (Work Package 9); as part of this review, specific provision for vulnerable and minority groups is being assessed. There is currently no indication that ORCHIDS' stakeholder countries have any specific protocols for dealing with the decontamination of special populations and vulnerable groups (please see Appendix G for the slides from this presentation).

A discussion ensued regarding the potential problems arising from the use of terms such as ‘vulnerable’ and ‘special’ to describe people who may require different or additional provision in mass decontamination incidents. Such problems largely stem from the unjustifiable generalisation of people’s abilities and requirements that result from their inclusion in a ‘vulnerable group’, such as the elderly or children.

Further discussion focused on the lack of protocol for decontamination of companion animals (e.g. guide dogs for the blind). Such animals allow visually impaired people to live independently; to separate them from their owners in decontamination processes would necessitate a higher level of care and assistance for visually impaired people.

It was agreed that further work would be carried out as part of the ORCHIDS’ stakeholder review process to ensure that any existing information on the decontamination of vulnerable populations was identified. RA and VE agreed to engage with stakeholders to ensure that this information can be included in the review. It was agreed that any progress made would be reported at the next project meeting in the Czech Republic in November.

2.2.3 ORCHIDS Laboratory Trials: Overview and Updates

The ORCHIDS project involves a programme of applied research which will identify optimum formulations and procedures for conducting mass casualty decontamination (Work Package 5). There are two distinct components to this work: The first aims to identify the most effective materials and procedures required to maximise the removal of chemicals from the skin surface. This involves an examination of showering parameters (e.g. water temperature, shower duration, type of detergent and use of physical removal aids) which may influence the removal of chemical agents from the skin. The primary methodology involves the use of a validated in vitro skin diffusion cell system. A small number of confirmatory in vivo studies will also be carried out. The second component of this work involves an investigation of the effects of disrobing prior to decontamination.

Three of the partner agencies are contributing to this work package: HPA, UK; CRSSA, France and FMH, Czech Republic. Representatives from each of these organisations provided an update on the progress that their respective organisation had made towards this aspect of the ORCHIDS project.

Dr Denis Josse (DJ) of CRSSA provided an overview of two broad research topics that were being worked on at CRSSA at the time of the meeting: (i) the development and validation of in vivo and in vitro models for decontamination and (ii) the evaluation of decontamination processes. Reducing both toxicity and cross contamination were described as the primary objectives of decontamination. DJ explained that to date only some of the factors affecting decontamination efficacy have been investigated at CRSSA. (Please see Appendix H for DJ’s presentation slides.)

Dr Kamil Kuca (KK) of the Czech Republic began his presentation with a brief account of the responsibilities and roles of FMH, an overview of the laboratories and staff, recent projects engaged in and the products produced. He then moved on to provide an overview of the in vivo and in vitro studies carried out as part of the ORCHIDS project. (Please see Appendix I for the slides for this presentation.)

Rhys Jones (RJ) of the HPA presented the findings from a study which examined whether clothing can form an effective barrier following chemical exposure. In this presentation RJ described how a mannequin was used to assess the effects of clothing on exposure using fluorescent particles as a simulant agent. Findings indicate that the amount of contaminant removed by disrobing was in close agreement with previous estimates. Plans are underway to carry out further experiments using chemical agents such as chlorine. (See Appendix J for the slides used in this presentation.)

In a final presentation in this section given by Jo Larner (JL) of the HPA, an account was provided of the work that has been carried out at the HPA involving the in vitro assessment of decontamination showering. The research conducted involved the investigation of four independent variables on decontamination: (i) length of shower, (ii) temperature of water, (iii) detergent type and (iv) physical removal method. The potential for research which assesses the effects of water flow rate was also discussed. However, the non-inclusion of this factor in the objectives of the ORCHIDS project and the fact that water flow rate in the UK is a fixed variable was highlighted. (Please see Appendix K for JL's presentation slides.)

2.3 Partner and Stakeholder Presentations

This session provided a valuable opportunity for discussion of what could be learnt from previous work carried out by the ORCHIDS partners and stakeholders and how the findings of such research could be used to inform the ORCHIDS project. This session also provided an opportunity for information to be gathered on some of the similarities and differences between different countries' procedures for mass decontamination. A review of EU Member States' mass decontamination processes is being carried out as part of the ORCHIDS project and the information provided in this session (as well as follow-up communications) will be used to inform this review.

2.3.1 Whole-Body Imaging of a UV Fluorescent Chemical Warfare Simulant for Comparison of Decontamination Protocols – Jo Larner, HPA, UK

Jo Larner (JL) presented the methodology and top line outcomes of the UK Department of Health funded ORCHIS field trial. The use of fluorescent tags to measure decontamination efficacy and the image analysis techniques employed were described. JL explained that the ORCHIS trial was designed to compare five novel decontamination showering protocols in a field trial with 90 human volunteer participants. Baseline, pre- and post-shower UV-illuminated photographs enabled a comparison of mean differences in the removal of the fluorescence between showering conditions.

The efficacy of each showering condition was measured relative to the standard UK protocol (3-minute shower without instructions). A significant increase in decontamination efficacy was observed when a wash cloth was introduced to the standard showering protocol. This simple, low cost recommendation for enhancing mass decontamination showering efficacy provides clear evidence for the value of performing controlled volunteer trials for optimising existing decontamination procedures. (See Appendix L for the slides used in this presentation.)

2.3.2 Evaluation of Routines and Functionality of Mobile Decontamination Units in Sweden - Dr Marianne Thunell, FOI, Sweden

Dr Marianne Thunell (MT) gave a presentation which began with a description of the mobile decontamination units used in Sweden and the process by which decontamination takes place in incidents involving large numbers of contaminated casualties. MT then described the outcomes of a field trial that had been carried out in Sweden. It was found that decontamination tents took between 50 minutes and 1 hour to assemble. Each unit had the capacity for 12-14 people (walking) or 4-5 stretchers per hour. The decontamination process lasted a total of 9 minutes for walking casualties or 12 minutes for people on stretchers. A discussion then ensued which focused on the changes and improvements made to decontamination resources in Sweden since this field trial was conducted. (The slides for this presentation can be found in Appendix M.)

2.3.3 Euratox (2005) and Var (2008): European NRBC Exercises - Dr Jean-Marc Sapori, Department of Emergency Preparedness and Response, Health Directorate, France

Dr Jean-Marc Sapori (JMS) described two emergency decontamination exercises that had taken place in France since 2005. Exercise Eurotox took place in Valence in April 2005. A number of countries were involved in this exercise including France, Belgium, Germany and Italy. The exercise involved dealing with the aftermath of a train crash between a passenger train and a train carrying chemicals. There were a total of 700 casualties who were distributed around the train station and the surrounding area. The main contaminant was chlorine (other chemicals were present in small quantities). The exercise involved the transportation of casualties to a medical unit.

Exercise Var was carried out in the South of France in November 2008. The Fire Brigade, the Health Service, physicians and the Police took part in the exercise. Numerous countries were involved, including Germany, Sweden, Portugal, Spain, Italy, Luxembourg, and the Czech Republic. In this trial, a number of the first responders were considered to be casualties who were also required to go through decontamination units.

2.3.4 PriMer, Psychosocial Risk Manager: A Training Tool on the Psychosocial Dimensions of CBRN Events and Threats - Prof Louise Lemyre, University of Ottawa, Canada

Prof Louise Lemyre (LL) provided an overview of some research carried out in Canada which focused on how people are likely to behave in CBRN emergencies, with detailed attention to mass casualty decontamination. LL described how this research demonstrated that people tend to think about others more than themselves in emergency situations and that this leads to a willingness to help others in such situations. This outcome is often overlooked in emergency planning, in favour of worst case scenarios where individuals act selfishly and irrationally. A comprehensive online training tool has been developed, concerning the psychosocial aspects of emergency response. Developments of this work, which could be achieved in collaboration with other countries and agencies, were described. (The slides for this presentation can be found in Appendix O.)

2.3.5 CBRN Training WG/WT4 - Colonel Frederic Dorandeu, CRSSA, France

Colonel Frederic Dorandeu (FD) gave a presentation which provided a preview to a NATO CBRN exercise (Exercise Clean Care) which was to take place in Denmark from August 31st – September 4th 2009.

Decontamination teams from a number of different nations (Austria, the Netherlands, USA, Great Britain and Denmark) would participate in this event, the aim of which is to demonstrate how to effectively deal with a CBRN incident (using a nerve agent/pesticide). FD explained that the participating nations would demonstrate how they would react to the scenario. (See Appendix P for the slides from this presentation.)

2.4 Discussion Sessions

The next part of the meeting schedule comprised a series of discussion sessions, which were chaired by RA. These sessions covered 3 principle topics:

i) ORCHIDS' specific objectives.

ii) Processes and people.

iii) Technology, solutions, evidence and policy.

2.4.1 ORCHIDS' Specific Objectives

Three broad areas were introduced for discussion:

i) Aims and objectives of ORCHIDS – RA invited comments, questions and suggestions.

ii) Stakeholder involvement – a request was made for further stakeholder contacts.

iii) Outputs and implications – what are likely to be the more important outcomes of the ORCHIDS project and how could they be implemented?

During this discussion session, the speed at which resources could be made available in a mass decontamination situation was discussed. The importance of examining alternatives to the traditional methods of decontamination using mobile showering units was also discussed, for example, it may be possible to carry out decontamination effectively using the showers that are available at public swimming pools or showers located in individual homes. The efficacy of such solutions would clearly need to be assessed. RA raised the question of whether it might be possible to examine these eventualities in a field trial. Further discussions centred on the definition of 'mass' in mass casualty decontamination. This definition was seen as an important issue for the ORCHIDS project to consider, particularly at what point the decision to mobilise equipment designed to decontaminate large numbers of casualties should be made, and what effect this would have on the speed with which necessary medical treatment could be provided post-decontamination.

The lack of a distinction between decontamination procedures used in terrorist incidents and accidental chemical release was highlighted. The benefits and potential problems with this approach were considered but the general feeling was that it was preferable to

formulate optimal guidelines for dealing with a family of chemicals in a range of situations, rather than differentiating between scenarios.

A further point raised was the lack of knowledge currently held regarding the level of residual contamination that should be acceptable in order for people to attend hospital. John Jenner (JJ) claimed that the UK Ministry of Defence (MOD) have previously carried out work looking at this but that conducting experiments to define toxicological end points has been extremely difficult. JJ was unsure whether these results would be available to the ORCHIDS project but it was felt that such an extension of scope would be outside of the remit of the project.

Rob Chilcott (RC) provided a further overview of the laboratory-based research trials that are planned as part of ORCHIDS. The way in which the in vitro studies would directly inform and link in to the in vivo studies was also described. With regard to the work to be carried out examining the efficacy of various detergents in decontamination, RC indicated that detergents from the UK, the Czech Republic, France and Spain were now available for testing. A further suggestion was made that it could be possible to use fire-extinguishing foam, of the type currently carried by most EU Member State fire and rescue services, in addition to detergent in decontamination. It is possible however that the foam could react negatively with skin chemicals. There is a need to establish whether this work has been done previously. Each partner country agreed to investigate this issue and try to establish what is currently known about the toxicity of foaming agents.

2.4.2 Processes and People

The second discussion session focused on ‘people and processes’. This covered issues concerning the mechanisms by which the public should be engaged in mass casualty decontamination planning. Three broad areas of focus were introduced:

i. How might it be possible to engage the public in the outcomes of the ORCHIDS project?

ii. Should we engage with the public about mass casualty decontamination?

iii. Is it possible to create guidance on emergency decontamination for the general public?

Denis Josse (DJ) began by highlighting the potential for general education to take place which would teach people what to do if they came into contact with a potentially toxic compound. In order to adopt such a strategy it would be necessary first to examine the education that already exists in schools and other educational institutions. It would also be necessary to ensure that the link between scenarios used in educational settings and those involving mass decontamination was apparent. Mike Hiley (MH) mentioned that a Global Health Security Action Group (GHSAG) meeting due to take place on 29th September 2009 may be a useful source of information about methods for communicating and educating people about what they should do in situations requiring emergency decontamination. The GHSAG meeting may provide an opportunity for the identification of stakeholders for this aspect of the ORCHIDS project. LL highlighted the possibility for education on decontamination processes to be incorporated into the short courses on laboratory safety that already take place in many high schools.

2.4.3 Technology, Solutions, Evidence and Policy

The final discussion session addressed issues concerning how the ORCHIDS project findings should be made available to EU Member States and policy members. Three broad topics for discussion were introduced:

i) What research evidence/decontamination solutions will be generic so that they might be applicable to all EU member states?

ii) How do we make this work more broadly applicable to EU Member States?

iii) How do we communicate the outcomes of the ORCHIDS project to policy leads?

The discussion of these issues focused on the need to involve the Risk Management Working Group and the Health Security Committee; this approach should enable the ORCHIDS project findings to reach a range of EU Member States. MH agreed that he would be responsible for re-engaging with the Health Security Committee. All partners agreed that they would further consider these issues and would provide any suggestions at the next project meeting.

3 MOVING FORWARD

In addition to serving as a useful forum for project partners to share and discuss the progress that they have already during the ORCHIDS project, the Third Project Meeting and Stakeholder Workshop enabled the partners to consider the upcoming activities of the project. Plans or agreed actions were generated for a number of the deliverables of the ORCHIDS project; these are described below in addition to some more general considerations.

3.1 Work Package 4: Review of EU Provision for Mass Casualty Decontamination

A review of provision and procedures for mass casualty decontamination across the EU and beyond is already underway. A questionnaire has been developed which is designed to collect the information necessary to carry out this review (see Appendix C for a copy of the questionnaire). The questionnaire has been sent to a number of individuals and organisations who have been identified as having relevant expertise. This process is ongoing: The HPA is continually seeking to identify new stakeholders and to engage them in the ORCHIDS project.

In an attempt to complement and further the process of stakeholder engagement and the completion of a full review of mass decontamination provision in EU Member State countries, it was agreed that the questionnaire would be distributed to all stakeholders in attendance at the meeting. This would enable them to disseminate it onwards to their colleagues and contacts. Additionally, partners and stakeholders agreed that they would provide details of any stakeholder nominees to the HPA so that attempts can be made to engage with them. An update on the progress made in the collation of the required information and the engagement of stakeholders will be provided at the next project meeting.

3.2 Work Package 9: Review of Provision for Minority and Vulnerable Groups

A literature review is being carried out by the HPA, aiming to collate details of the provision for minority and vulnerable groups in mass casualty decontamination response plans. In addition, the questionnaire currently being circulated to EU Member State countries also includes a question designed to address this issue. To date no details have been provided on the provision for vulnerable and minority groups by those countries returning questionnaires. The process of collecting this information is ongoing however and further encouragement will be given to questionnaire respondents to provide this specific information. An update on progress will be provided at the next ORCHIDS project meeting.

3.3 Work Package 5: Laboratory trials

The partner organisations conducting laboratory trials for the ORCHIDS project (HPA, CRSSA and FMH) will continue their work according to the project schedule. In addition, it was agreed that all partners would investigate any evidence regarding the toxicity of foaming agents (such as those used in fire extinguishers). This action arose from the

discussion of the potential to use such foams in addition to detergents in mass decontamination procedures.

3.4 Work Package 2: Dissemination

An important part of the ORCHIDS project involves the dissemination of progress and findings. A project website had been launched providing background information about the project's aims and the research being carried out. A new, improved website, soon to be launched was described. This website will include a range of features including: a password protected area for partners and stakeholders; a subscription function for potential new stakeholders and a news page[1]. It was agreed that partners and stakeholders would be informed when this new website was 'live' and they would be provided with login details for the password protected area.

In addition to the specific issue of information dissemination via the project website, an area of general discussion was the mechanisms by which project outcomes should be disseminated to policy and decision makers in the EU. This discussion led to an agreement that the project team would engage with the Health Security Committee to communicate ORCHIDS project outcomes. It was agreed that progress would be reported at the next project meeting.

3.5 Work Package 1: Co-ordination on the Project

The fourth ORCHIDS project meeting is to take place in the Czech Republic in November 2009. The HPA will co-ordinate this meeting in conjunction with FMH. Details will be forwarded to partners and the EC Project Officer in due course.

[1] The new ORCHIDS project website was launched on 12th August 2009.

4 CONCLUSION

The Third ORCHIDS Project Meeting and Stakeholder Workshop was held in Grenoble, France on 1st and 2nd July 2009. The meeting was attended by representatives from the project's four partner organisations: The Health Protection Agency, UK, the Army Biomedical Research Institute, France; the Faculty of Military Health Sciences, University of Defence, Czech Republic and the CBRN Defence and Security Division, Swedish Defence Research Agency, Sweden. In addition, a number of stakeholders attended and contributed to the event. The stakeholders were all people/representatives of organisations from Europe or beyond with expertise in mass casualty decontamination procedures or protocol.

The meeting and workshop provided a valuable opportunity for project partners to share their progress and findings to date with each other and with the stakeholders. The HPA provided an overview of the work completed to date on the review of mass casualty decontamination provision in EU Member State countries with a further report of these countries' provision for minority and vulnerable groups. In addition to summarising progress made, the plans for completing this work were discussed. All partners involved in carrying out the WP5 laboratory trials (HPA, CRSSA and FMH) delivered updates on their progress and findings so far.

A series of presentations exploring mass decontamination processes, provision and planning across the EU and beyond was also included. These presentations were given by both project partner and stakeholder representatives and facilitated the sharing and discussion of information relating to preparedness in all countries represented at the meeting. Presenters shared information on an HPA whole body imaging technique that enables the comparison of decontamination protocols; the routines and functionality of mass decontamination procedures in Sweden; decontamination exercises that had taken place/were going to take place in France and Denmark; and a tool for training on the psychosocial dimension of CBRN events and threats.

An important and valuable component of the meeting was the dedicated discussion sessions that took place. These provided delegates an opportunity to discuss and debate a range of issues associated with the ORCHIDS project. The discussions that took place can be broadly categorised as relating to three topics: (i) the specific objectives of the ORCHIDS project and the ways that these objectives are being met, (ii) the processes by which the public should be engaged in mass casualty decontamination planning and (iii) the technology, solutions, evidence and policy that should be considered when planning how to make the ORCHIDS project findings available to EU Member States. The discussion of these issues and the ideas that were generated served as a useful tool in planning the way forward for the ORCHIDS project and how its outcomes should be delivered to a pan-European audience.

APPENDIX A

Presentation by Anne Dempsey: ORCHIDS 1 contract and reporting issues for the interim report June 2009 contract meeting

ORCHIDS 1 Contract – Financial and Reporting Issues for the Interim Report June 2009 Contract Meeting

Dr John Simpson: Contract Co-ordinator

Dr Richard Amlot: Project Lead Co-ordination and Exercises

Dr Rob Chilcott: Project Lead Laboratory Work

Mike Hiley: Project Manager

Anne Dempsey: Business Manager

Contract Details Overview

Contract Limit 2,776,273€

- EC Contribution 1,550,000€
- Funding 55.83%

Key Dates

- Contract Duration 36 Months
- Start Date 01 June 2008
- End Date 31 May 2011
- Interim Report 01 June 2008 to 30 November 2009
  (For Submission by 31 January 2010)
- Final Report 31 May 2011
  (For Submission by 31 July 2011)

Contract Details Overview

Contract Between EAHC on behalf of EC and HPA

Names the Co-beneficiaries

Comprises

Special Conditions – Specific to the Grant, Roles of the Beneficiaries

General conditions

- Part A Legal and Administrative Provisions
- Part B Financial Provisions

Annexes I - Technical

II - Budget

III - Reporting

IV - Letters of Mandate

V - Travel

Contract Breakdown by Beneficiary

ORCHIDS Grant 2007203		HPA	CRSSA	FOI	FMH
Direct eligible costs					
E1. Staff	1,250,279	751,239	126,000	201,800	171,240
a. Costs pertaining to public officials	*129,500*	*129,500*	*0*	*0*	*0*
b. Costs not pertaining to public officials	*1,120,779*	*621,739*	*126,000*	*201,800*	*171,240*
E2. Travel costs and subsistence allowances	207,418	53,334	37,074	27,000	90,010
E3. Equipment	182,778	42,264	100,000	3,500	37,014
E4. Consumables & supplies	702,475	432,588	176,000	6,500	87,387
E5. Subcontracting costs	25,700	25,700	0	0	0
E6. Other costs	225,999	168,999	39,000	18,000	0
Total direct eligible costs	**2,594,649**	**1,474,124**	**478,074**	**256,800**	**385,651**
Indirect eligible costs					
E7. Overheads	181,624	103,188	33,465	17,976	26,995
Total - Expenditures	**2,776,273**	**1,577,312**	**511,539**	**274,776**	**412,646**
% of Overheads	7.00%	7.00%	7.00%	7.00%	7.00%
Incomes	**TOTAL**				
I1. Commission funding	1,550,000	875,000	285,000	155,000	235,000
I2. Contribution pertaining to public officials	129,500	129,500	0	0	0
I3. Applicant's financial contribution	1,096,773	572,812	226,539	119,776	177,646
I4. Income generated by the project	0	0	0	0	0
I5. Other external resources	0	0	0	0	0
I6. Other current funding applications	0	0	0	0	0
Total - Incomes	**2,776,273**	**1,577,312**	**511,539**	**274,776**	**412,646**
% of Commission funding	**55.83%**	**55.47%**	**55.71%**	**56.41%**	**56.95%**

Contract at Interim Report stage 1

Interim Report 01 June 2008 to 30 November 2009
(For Submission by 31 January 2010)

Financial Reporting Requirements

- Changes to original budget plan to be reported and agreed by EC
  - Changes to cost breakdown advised to date incorporated in to latest budget
- Variations to plan to be advised to HPA and included in financial interim report
- Partners to provide financial summary of progress to date
- HPA to provide consolidated summary for the contract
- Next advance on acceptance of interim technical and financial summaries

Contract at Interim Report stage 2

Changes to cost breakdown

By way of derogation from Article II.I3, the co-ordinator may, in agreement with the co-beneficiaries, when carrying out the action, adjust the estimated budget by transfers between eligible costs, provided that this adjustment of expenditure does not affect the implementation of the action and the transfer between items does not exceed 20% of the amount of each item of estimated eligible for which the transfer is intended, and without exceeding the total eligible costs indicated in Article I.4.2. The co-ordinator shall inform the Executive Agency in writing.

Updated Contract Breakdown by Beneficiary

C. Budget by Beneficiary

		HPA	CRSSA	FOI	FMH
	Status	Public	Public	Public	Public
Expenditures	**TOTAL**				
Direct eligible costs					
E1. Staff	1,179,899.00	680,859.00	126,000.00	201,800.00	171,240.00
a. Costs pertaining to public officials	*75,284.00*	*75,284.00*	*0.00*	*0.00*	*0.00*
b. Costs not pertaining to public officials	*1,104,615.00*	*605,575.00*	*126,000.00*	*201,800.00*	*171,240.00*
E2. Travel costs and subsistence allowances	207,418.00	53,334.00	37,074.00	27,000.00	90,010.00
E3. Equipment	173,525.00	33,011.00	100,000.00	3,500.00	37,014.00
E4. Consumables & supplies directly linked to the project	342,299.00	72,412.00	176,000.00	6,500.00	87,387.00
E5. Subcontracting costs	489,710.00	489,710.00	0.00	0.00	0.00
E6. Other costs	201,798.00	144,798.00	39,000.00	18,000.00	0.00
Total direct eligible costs	**2,594,649.00**	**1,474,124.00**	**478,074.00**	**256,800.00**	**385,651.00**
Indirect eligible costs					
E7. Overheads	181,624.00	103,188.00	33,465.00	17,976.00	26,995.00
Total - Expenditures	**2,776,273.00**	**1,577,312.00**	**511,539.00**	**274,776.00**	**412,646.00**
% of Overheads	7.00%	7.00%	7.00%	7.00%	7.00%
Incomes	**TOTAL**				
I1. Commission funding	1,550,000.00	875,000.00	285,000.00	155,000.00	235,000.00
I2. Contribution pertaining to public officials	75,284.00	75,284.00	0.00	0.00	0.00
I3. Applicant's financial contribution	1,150,989.00	627,028.00	226,539.00	119,776.00	177,646.00
I4. Income generated by the project	0.00	0.00	0.00	0.00	0.00
I5. Other external resources	0.00	0.00	0.00	0.00	0.00
I6. Other current funding applications	0.00	0.00	0.00	0.00	0.00
Total - Incomes	**2,776,273.00**	**1,577,312.00**	**511,539.00**	**274,776.00**	**412,646.00**

Contract at Interim Report stage 2

Reporting requirements

1. INTERIM IMPLEMENTATION REPORT(S)

The interim technical implementation report(s) will describe the work carried out and the results obtained during the period indicated in article I.6 of this grant agreement and state in particular:

- the results obtained to date and an indication of any deviation from the initial work programme set out in annex I to the grant agreement that has occurred or is likely to occur[1];
- the work programme planned for the following period;
- copies of any publications, products or other relevant outputs or deliverables of the project to date.

The interim financial implementation report(s) will compare the expenditure incurred during the reporting period with the foreseen budget stated in Annex II of this grant agreement. The budget implemented in the interim financial report should follow the same structure as the estimated budget in Annex II.
The interim implementation report(s) and any other documents referred to, must be sent to the Executive Agency before the date indicated in article I.6.

Contract at Interim Report stage 2

Reporting requirements

2.2. Financial report

The beneficiaries should respect the following rules:

- Their final financial report must follow the same structure as the estimated budget in Annex II.
- The financial report must be certified according to the provisions of the Article 180, paragraph 1a of the Implementing Rules[3] and signed.
- The payment request (dated and signed) must be jointed to this report.

IMPORTANT: The absence of complete, clear and structured information and data as described in this annex will be a reason for non acceptance of the activity report.

Key Contract Points Financial Rules

ARTICLE II.14 – ELIGIBLE COSTS

II.14.1 To be considered as eligible costs of the action, costs must satisfy the following general criteria:

- they are incurred during the duration of the action as specified in Article I.2.2 of the agreement, with the exception of costs relating to final reports and certificates on the action's financial statements and underlying accounts;
- they are connected with the subject of the agreement and they must be indicated in the estimated budget annexed to it;
- they are necessary for the implementation of the action which is the subject of the grant;
- they are identifiable and verifiable, in particular being recorded in the accounting records of a beneficiary and determined according to the applicable accounting standards of the country where the beneficiary is established and according to the usual cost-accounting practices of the beneficiary;
- they comply with the requirements of applicable tax and social legislation;
- they are reasonable, justified, and comply with the requirements of sound financial management, in particular regarding economy and efficiency.

The beneficiaries' internal accounting and auditing procedures must permit direct reconciliation of the costs and revenue declared in respect of the action with the corresponding accounting statements and supporting documents.

Key Contract Points Financial Rules

- the cost of staff assigned to the action, comprising actual salaries plus social security charges and other statutory costs included in the remuneration, provided that this does not exceed the average rates corresponding to the beneficiary's usual policy on remuneration;

  The corresponding salary costs of personnel of national administrations are eligible to the extent that they relate to the cost of activities which the relevant public authority would not carry out if the project concerned were
- travel and subsistence allowances for staff taking part in the action, provided that they are in line with the beneficiary's usual practices on travel costs or do not exceed the scales approved annually by the Commission;
- the purchase cost of equipment (new or second-hand), provided that it is written off in accordance with the tax and accounting rules applicable to the beneficiary and generally accepted for items of the same kind. Only the portion of the equipment's depreciation corresponding to the duration of the action and the rate of actual use for the purposes of the action may be taken into account by the Executive Agency, except where the nature and/or the context of its use justifies different treatment by the Executive Agency;
- costs of consumables and supplies, provided that they are identifiable and assigned to the action;
- costs entailed by other contracts awarded by a beneficiary for the purposes of carrying out the action, provided that the conditions laid down in Article II.9 are met;

Key Contract Points Report – Information requirements Staff Costs

ANNEX II
B. DETAILED BUDGET (in EUR)

2007 203 - ORCHIDS

E1. Staff
a. Costs pertaining to public officials

Partner reference	Function	Name	Number of person days	Daily cost (€ per day)	Cost (€)
HPA	Project Co-ordinator / Scientist	To be appointed	660	276,00	182.160,00
HPA	Administrator	To be allocated	80	224,00	17.920,00
HPA	Senior Scientist (WP5 Lab trials)	To be allocated	15	276,00	4.140,00
HPA	PhD Student (WP5 Lab trials)	To be appointed	660	189,00	124.740,00

- the cost of staff assigned to the action, comprising actual salaries plus social security charges and other statutory costs included in the remuneration, provided that this does not exceed the average rates corresponding to the beneficiary's usual policy on remuneration;

  The corresponding salary costs of personnel of national administrations are eligible to the extent that they relate to the cost of activities which the relevant public authority would not carry out if the project concerned were not undertaken;

Completion of Contract Time Records

TIME SHEET

Organisation

Project: CIE Toolkit Grant No 2007205
Year
Month
Name of the Staff

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Week 1								0.00
Week 2								0.00
Week 3								0.00
Week 4								0.00
Week 5								0.00

Grand Total 0.00

Date	Signature of the Staff	Date	Signature of the Responsible

Instructions: To fill in from the first day of the month

The value to fill in per day is a proportion of a full day work starting from 0 to a maximum 1 (for example: 0.2 for one fifth of a day's work. If you work 7.5 hours a day on average, this 0.2 proportion represents 1.5 hour.)

Key Contract Points
Report – Information requirements

2.1.2. Manpower for the execution of the activities

This section of the report should present a complete list of all the persons who have participated in the execution of the project and, for each of them, the man/days of work, the professional level or category and the corresponding unit and total cost. In order to conciliate the man/days of work with the expenditure, the portion of time of each individual carrying out the action must be recorded.
In the case of partner organisations or external bodies, the organisation to which each person belongs should be clearly identified. The activities conducted by each person involved will be described and it will be explained how they relate to the various activities and objectives of the project.
It must be shown how the data requested for Annex II compares with the corresponding information provided with the proposal. It should naturally also correspond to the details provided in the financial report.

Report Contract Time by Work Package

Work Package Planned Resource Allocation

WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	WP9	TOTAL
Co-ordination	Dissemination	Evaluation	Systematic Review	Laboratory Research	Operational Trials	Exercises	Modelling	Vulnerable Groups	All Work packages Days
198	110	110	206	2638	608	212	418	160	4660
177,363 €	57,624 €	50,913 €	74,571 €	1,622,330 €	368,643 €	222,235 €	145,124 €	57,470 €	2,776,273 €

Report Contract Time by Work Package

Staff name
Grade
Organisation

Work Package Summary By Person

Week	Week commencing	WP1 Co-ordination	WP2 Dissemination	WP3 Evaluation	WP4 Toolkit	WP5 Manual	WP6 Cards	WP7 Epid Follow up	WP8 Risk Communication	WP9 Psycho-social effects	WP10 Exercise Guidelines	TOTAL All Work packages Days
1	31 March 2008											0.00
2	07 April 2008											0.00
3	14 April 2008											0.00
4	21 April 2008											0.00
5	28 April 2008											0.00
6	05 May 2008											0.00
7	12 May 2008											0.00
8	19 May 2008											0.00
9	26 May 2008											0.00
10	02 June 2008											0.00
62	01 June 2009											0.00
63	08 June 2009											0.00
64	15 June 2009											0.00
65	22 June 2009											0.00
66	29 June 2009											0.00
67	06 July 2009											0.00
68	13 July 2009											0.00
69	20 July 2009											0.00
70	27 July 2009											0.00
71	03 August 2009											0.00
72	10 August 2009											0.00
73	17 August 2009											0.00
74	24 August 2009											0.00
75	31 August 2009											0.00
76	07 September 2009											0.00
77	14 September 2009											0.00
78	21 September 2009											0.00
79	28 September 2009											0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Key Contract Points
Report – Information requirements
Travel and Subsistence

E2. Travel costs and Subsistence allowances

Travel costs

Partner reference	Purpose	Means of transport	Place of departure	Destination	Number of persons	Cost
HPA	Project Meeting 4 (WP1 Coordination)	Air / Rail / Road	UK	Czech Republic	5	3.000,00
HPA	Project Meeting 5 & Workshop (WP1 Coordination)	Air / Rail / Road	UK	Sweden	5	3.000,00
HPA	Project Meeting 6 (WP1 Coordination)	Air / Rail / Road	UK	France	5	3.000,00

Subsistence allowances

Partner reference	Purpose	Place	Number of days	Daily rate	Number of persons	Cost
HPA	Project Meeting 3 (WP1 Coordination)	France	2	245,00	5	2.450,00
HPA	Project Meeting 4 (WP1 Coordination)	Czech Republic	2	230,00	5	2.300,00
HPA	Project Meeting 5 & Workshop (WP1 Coordination)	Sweden	2	257,00	5	2.570,00

- travel and subsistence allowances for staff taking part in the action, provided that they are in line with the beneficiary's usual practices on travel costs or do not exceed the scales approved annually by the Commission;

Key Contract Points
Travel and Subsistence

INSTRUCTIONS
CONCERNING THE ELIGIBILITY OF TRAVEL AND SUBSISTENCE EXPENSES
[IF COMMISSION'S RULES APPLY]

1. **Flat-rate subsistence allowances** cover all subsistence expenses during missions, including hotels, restaurants and local transport (taxis and/or public transport). They apply in respect of each day of a mission at a minimum distance of 100 km from the normal place of work. The subsistence allowance varies depending on the country in which the mission is carried out. The daily rates will correspond to the sum of the daily allowance and the maximum hotel price set out in Council Decision 166/2006 dated 27/06/2006.

   Missions in countries other than EU 27, Acceding and Applicant countries and EFTA-EEA countries shall be subject to the prior agreement of the Commission departments. This agreement shall be related to the objectives of the mission, its costs and the reasons therefore.

(1) **Travel expenses** are eligible under the following conditions:

- travel by the most direct and most economic route;
- distance of at least 100 km between the place of the meeting and the normal place of work;
- travel by rail: first class;
- travel by air: economy class, unless a cheaper fare can be used (e.g. Apex); air travel is allowed only for return journeys of more than 800 km;
- travel by car: reimbursed on the basis of the equivalent first class rail fare.

Report Travel and Subsistence Costs

Travel									
Organisation	Date	Event	Name of person travelling	Means of transport	Place of departure	Destination	Local Currency Cost	Euro Cost	Rate
HPA	29/06/2009	Stakeholder Workshop	Anne Dempsey	Flight	Chilton Oxon	Grenoble france	£270.00	303.37 €	0.89
HPA	29/06/2009	Stakeholder Workshop	Jo	Flight	Porton Wilts	Grenoble france	£270.00	303.37 €	0.89
HPA	29/06/2009	Stakeholder Workshop	Rhys	Flight	Porton Wilts	Grenoble france	£270.00	303.37 €	0.89
HPA	29/06/2009	Stakeholder Workshop	Richard Amlot	Flight	Porton Wilts	Grenoble france	£270.00	303.37 €	0.89
HPA	29/06/2009	Stakeholder Workshop	Mike Hiley	Flight	Porton Wilts	Grenoble france	£270.00	303.37 €	0.89
HPA	29/06/2009	Stakeholder Workshop	Rob Chilcott	Flight	Porton Wilts	Grenoble france	£270.00	303.37 €	0.89

Subsistence									
Organisation	Dates	Event	Place	Number of persons	Total Number of days (Days* persons)	Daily rate €	Actual Claim Local Currency	Actual Claim Euro	Rate
HPA	29/06/2009	Stakeholder Workshop	CRSSA Grenoble	6	11		107.00 €	107 €	
HPA	29/06/2009	Taxi to airport	Heathrow	5			£50.00	£56.18	0.89

Key Contract Points Report – Information requirements – Equipment

ANNEX II
B. DETAILED BUDGET (in EUR)
2007 203 - ORCHIDS

E3. Equipment

Partner reference	Description	Cost
HPA	IT Equipment for Project Co-ordinator - Computer, Monitor, Printer etc. (WP1 coordination)	2.000,00
HPA	diffusion cells (WP5 Lab trials)	6.406,00
HPA	manifold and stirrer plates (WP5 Lab trials)	2.847,00
HPA	stratumcorpus exposure chamber (WP5 Lab trials)	17.995,00
HPA	UV lamps, camera equipment and image analysis software (WP6 OR trials)	6.100,00
HPA	Statistical Analysis Software - SPSS (WP6 OR Trials)	5.116,00
HPA	IT Equipment for Mathematical Modeller - Computer, Monitor, Printer etc. (WP8 Modelling)	2.000,00
Sub-Total Equipment	*HPA*	*43.264,00*

- the purchase cost of equipment (new or second-hand), provided that it is written off in accordance with the tax and accounting rules applicable to the beneficiary and generally accepted for items of the same kind. Only the portion of the equipment's depreciation corresponding to the duration of the action and the rate of actual use for the purposes of the action may be taken into account by the Executive Agency, except where the nature and/or the context of its use justifies different treatment by the Executive Agency;

Key Contract Points Report – Information requirements Consumables

ANNEX II
B. DETAILED BUDGET (in EUR)
2007 203 - ORCHIDS

E4. Consumables and supplies directly linked to the project

Partner reference	Description	Cost
HPA	Supplies for co-ordination and meetings: stationary - CDs, paper, pens, folders etc. (WP1 coordination)	5.000,00
HPA	Supplies for survey activities: postage, envelopes, surveys, pamphlets, etc. (WP4 Review)	3.800,00
HPA	solvent dispenser (WP5 Lab trials)	450,00
HPA	LSC fluid (WP5 Lab trials)	623,01
HPA	glass vials (20 ml) (WP5 Lab trials)	178,01
HPA	glass vials (3ml) (WP5 Lab trials)	303,01
HPA	solvens (WP5 Lab trials)	7.474,01
HPA	tubing (WP5 Lab trials)	107,01
HPA		6.000,01

- costs of consumables and supplies, provided that they are identifiable and assigned to the action;

Key Contract Points Report – Information requirements Subcontracts

ANNEX II
B. DETAILED BUDGET (in EUR)
2007 203 - ORCHIDS

E5. Subcontracting costs

Partner reference	Description	Cost
HPA	Project website set up costs (WP2 Dissemination)	7.500,00
HPA	Exercise filming costs, Exercise training DVD production (WP7 Exercise)	18.200,00
Sub-Total Sub-Contracting Costs	*HPA*	*25.700,00*

- costs entailed by other contracts awarded by a beneficiary for the purposes of carrying out the action, provided that the conditions laid down in Article II.9 are met;

Key Contract Points Report – Subcontracts

ARTICLE II.9 – AWARD OF CONTRACTS

II.9.1 If the beneficiaries have to conclude contracts in order to carry out the action and they constitute costs of the action under an item of eligible direct costs in the estimated budget, they shall seek competitive tenders from potential contractors and award the contract to the bid offering best value for money, in doing so they shall observe the principles of transparency and equal treatment of potential contractors and shall take care to avoid any conflict of interests.

II.9.2 Contracts as referred to in paragraph 1 may be awarded only in the following cases:

a) they may only cover the execution of a limited part of the action;

b) recourse to the award of contracts must be justified having regard to the nature of the action and what is necessary for its implementation;

c) the tasks concerned must be set out in Annex I and the corresponding estimated costs must be set out in detail in the budget in Annex II;

d) any recourse to the award of contracts while the action is under way, if not provided for in the initial grant application, shall be subject to prior written authorisation by the Executive Agency;

e) the beneficiaries shall retain sole responsibility for carrying out the action and for compliance with the provisions of the agreement. The beneficiaries must undertake to make the necessary arrangements to ensure that the contractor waives all rights in respect of the Executive Agency under the agreement;

f) the beneficiaries must undertake to ensure that the conditions applicable to them under Articles II.1, II.2, II.3, II.4, II.5, II.6, II.10 and II.20 of the agreement are also applicable to the contractor.

Key Contract Points Report – Information requirements Other Costs

ANNEX II
B. DETAILED BUDGET (in EUR)
2007 203 - ORCHIDS

E6. Other costs

Partner reference	Description	Cost
HPA	Collaborating partner travel - 7 x international collaborators (1 x UK), 3 x meetings (UK workshop, SE	13.200,00
HPA	Collaborating partner subsistence - 7 x international collaborators (1 x UK), 2 days x 3 meetings (UK	5.920,00
HPA	Supplies for dissemination: brochures, pamphlets, posters, certificates etc. (WP2 Dissemination)	8.000,00
HPA	Costs for teleconference meetings for organisational, update and review purposes (WP3 Evaluation)	1.500,00
HPA	animal husbandry (WP5 Lab trials)	24.201,00
HPA	Decontamination unit hire - 1 x Fire & Rescue Unit, 1 day x 3 trials (WP6 OR trials)	18.000,00
HPA	Volunteer participant recruitment and payment costs (WP6 OR Trials)	1.000,00
HPA	Volunteer staff recruitment costs (WP6 OR Trials)	1.000,00

Contract Interim Report – Outline timetable

June to September 2009

Annual technical and financial progress partner appraisal

October 2009

Financial statement to templates to be sent to partners

December 2009

Partners to complete financial statements by 20 December 2009

Covering period of action 1 June 2008 to 30 November 2009

January 2010

HPA to consolidate partner financial statements and prepare interim financial contract report

March 2010.

Estimated date of next interim payment, subject to report EC acceptance of technical report and financial statement

Contract Interim Report – Special note regarding next advance payment

1.5.2 Further pre-financing payments:

Pre-financing may be paid in several instalments.

In that case, payment of each further instalment to the co-ordinator may not be made until at least 30% of the previous pre-financing payment has been used up. Where the consumption of the previous pre-financing is less than 70%, the amount of the new pre-financing payment shall be reduced by the unused amounts of the previous pre-financing

The new pre-financing instalment shall be reduced by the amount corresponding to the difference between the 70% threshold and the amount that was actually consumed.
(Example: previous prefinancing 300 of which 100 «70%) was consumed; calculation: 210 (70% threshold of 300) – 100 consumed = deduction of 110 from following pre-financing instalment).. .

Proposed Payment Schedule

ORCHIDS Grant Agreement 2007203		HPA	CRSSA	FOI	FMH
Income	**TOTAL €**				
Contract Funding	**2,776,273**	**1,577,312**	**511,539**	**274,776**	**412,646**
Applicant contribution 44.17%	1,226,273	702,312	226,539	119,776	177,646
Commission funding 55.83%	**1,550,000**	**875,000**	**285,000**	**155,000**	**235,000**
Initial Advance 40%	620,000	350,000	114,000	62,000	94,000
Interim Advance 30%	465,000	262,500	85,500	46,500	70,500
Maximum Final Balancing Payment	465,000	262,500	85,500	46,500	70,500
Sum of Payments	**1,550,000**	**875,000**	**285,000**	**155,000**	**235,000**

Contract Interim Report

Any Questions?

APPENDIX B

Third ORCHIDS Project Meeting and Stakeholder Workshop agenda

ORCHIDS Project

Third Project Meeting and Stakeholder Workshop

Wednesday 1 & Thursday 2 July 2009

CRSSA, Grenoble, France

PROGRAMME OF EVENTS

DAY 0 – Tuesday 30th June 2009

14:00	**Project partners only meet at CRSSA**
14:15 – 15:30	CRSSA Lab visit hosted by Denis Josse
15:30 – 16:30	Project and lab trials (WP5) discussion, including in vitro lab work
16:30 – 17:30	Project administration and financial management *Anne Dempsey, HPA*

19:00 Dinner in Grenoble

DAY 1 – Wednesday 1st July 2009

10:00 – 10:30	**Registration**
10:30 – 13:00	Introduction to CRSSA and the ORCHIDS meeting *Denis Josse, CRSSA* 1. ORCHIDS project overview presentation (10:35 -11:00) *Richard Amlôt, HPA* 2. EU MCD review – approach and preliminary outcomes (11:00 – 11:15) *Rhys Jones, HPA* 3. MCD review – vulnerable groups review (11:15 – 11:30) *Richard Amlôt, HPA*
11:30 – 11:50	**Break**
11:50 – 13:00	ORCHIDS Laboratory trials overview and updates (WP5) 1. *Rob Chilcott, Rhys Jones, Jo Larner, HPA* (11:45 – 12:15) 2. *Kuca Kamil*, *FMH* (12:15 – 12:45) 3. *Denis Josse, CRSSA* (12:45 – 13:00)
13:00 – 14:00	**Lunch**

DAY 1 – Wednesday 1st July 2009 (continued)

14:00 – 15:20 Partner & Stakeholder presentations

1. ORCHIS volunteer trial methodology and outcomes (14:00 – 14:20)
Jo Larner, HPA

2. Evaluation of routines and functionality of mobile decontamination units in Sweden (14:20 – 14:40)
Marianne Thunell, FOI, Sweden

3. Euratox (2005) and Var (2008): European NRBC exercises (14:40 – 15:00)
Dr Jean-Marc Sapori, Department of Emergency Preparedness and Response. Health General Directorate, France

4. PRiMer, Psychosocial Risk Manager: A Training Tool on the Psychosocial Dimensions of CBRN Events and Threats (15:00 – 15:20)
Professor Louise Lemyre, University of Ottawa, Canada

15:20 – 15:40 **Break**

15:40 – 17:00 Workshop discussions

1. ORCHIDS project aims and objectives, stakeholder involvement, outputs and implications (15:40 – 16:20)

2. Processes and people: MCD and the public (16:20 – 17:00)

19:30 Project dinner

DAY 2– Thursday 2nd July 2009

9:30 – 12:30 Workshop discussions and project planning meeting

1. Processes and people: MCD and the public – *continued* (9:30 – 10:30)

2. Project planning meeting - WP5 Laboratory studies (10:30 – 11:30)

3. Discussion - technology, solutions, evidence and policy (11:30 – 12:30)

12:30 – 13:00 **Meeting closed & lunch**

14:00 Social event

Historical tour of Grenoble

APPENDIX C

Workshop attendees and apologies

C1 ATTENDEES

Dr Richard Amlôt (RA)	ERD, Health Protection Agency, UK
Dr Alexandre Bazire	IBRA/CRSSA, France
Roselyne Bifarella	IBRA/CRSSA, France
Prof Jiri Cabal (JC)	FMH, University of Defence, Czech Republic
Dr Gudrun Cassell (GC)	FOI, Sweden
Lt. Col. Emmanuel Clavaud	Ecole Nationale Supérieure des Officiers de Sapeurs Pompiers, France
Dr Rob Chilcott (RC)	CHaPD, Health Protection Agency, UK
Catherine Cruz	IBRA/CRSSA, France
Anne Dempsey (AD)	CRCE, Health Protection Agency, UK
Col Frederic Dorandeu	IRBA/CRSSA, France
Dr Vicky Edkins (VE)	ERD, Health Protection Agency, UK
Christophe Gay	SDIS 73, France
Lt. Col. Samuel Gesret	Direction de la Sécurité Civile, France
Dr Olivier Hersan	BSPP, Paris
Mike Hiley	ERD, Health Protection Agency, UK
Lt. Col. Nicolas Jal	SDIS 38 (Service Départe mental D'incendie et de Secours)
Dr John Jenner (JJ)	Biomedical Sciences Department, DSTL, UK
Rhys Jones (RJ)	CHaPD, Health Protection Agency, UK
Dr Denis Josse (DJ)	IBRA/CRSSA, France
Ksoury Zakaria	IBRA/CRSSA, France
Dr Kamil Kuca (KK)	FMH, University of Defence, Czech Republic
Dr Lionel Lachenaud	Secretariat general de la defense nationale, France
Jo Larner (JL)	CHaPD, Health Protection Agency, UK

Professor Louise Lemyre	University of Ottawa, Canada
Tomas Marek	Decomkov Praha s.r.o, Czech Republic
Jan Misik FMH,	University of Defence, Czech Republic
Ola Nerf SPC,	Sweden
Goran Nordin	Järven AB, Sweden
Dr Ladislav Novotny	FMH, University of Defence, Czech Republic
Ruzena Pavlikova	FMH, University of Defence, Czech Republic
Lt. Col. Samuel	Moselle FRS, France
Dr. Jean-Marc Sapori	Ministere de la Sante et des sports, France
Dr Marianne Tunell (MT)	FOI, Sweden
Lt. Laurent Verneuil	Ecole Nationale Supérieure des Officiers de Sapeurs Pompiers, France

C2 APOLOGIES

Ola Claesson FOI,	Sweden
Dr Olivier Hersan	BSPP, France
Jurgita Kaminskaite	Project Officer, EU EAHC, Luxembourg
Dr Lionel Lachenaud	SGDN, France
Howard Nimmo	London Fire Brigade, UK

APPENDIX D

Presentation by Dr Richard Amlôt: ORCHIDS project overview

ORCHIDS project overview

Optimisation through Research of CHemical Incident Decontamination Systems

28 September 2009

ORCHIDS partners

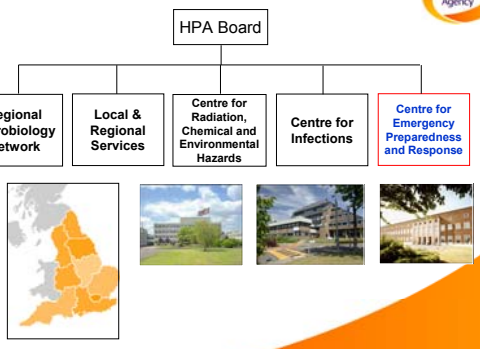
Health Protection Agency (HPA)
United Kingdom

Centre for Research of Army Medical Services (CRSSA)
France

Faculty of Military Health Sciences
University of Defence (FMH)
Czech Republic

CBRN Defence and Security
Swedish Defence Research Agency (FOI)
Sweden

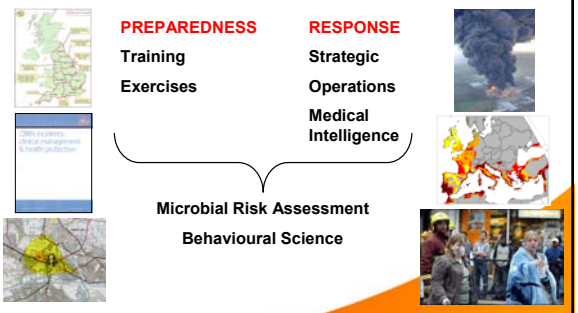
Health Protection Agency



Centre for Emergency Preparedness and Response (CEPR)

- Emergency preparedness and response to potential healthcare emergencies
- Basic and applied research into understanding infectious diseases
- Manufacture of vaccines and therapeutics, e.g. Anthrax vaccine
- Analysis of new and emerging diseases

Emergency Response Department (ERD)



PREPAREDNESS
Training
Exercises

RESPONSE
Strategic
Operations
Medical Intelligence

Microbial Risk Assessment
Behavioural Science

ERD Exercise programme

Desktop exercises

Field exercises

Exercise Magpie

Exercise Young Neptune

ORCHIDS project

Aim: to deliver quantitative evidence on the optimum techniques for dealing with a range of potential contaminants and scenarios requiring emergency decontamination.

- to provide evidence-based recommendations on the optimum techniques for effective decontamination
- to provide best practice guidelines to EU and international stakeholders
- to provide recommendations for the procurement of new or second generation mass casualty decontamination response programmes

ORCHIDS: specific objectives

SO1 Systematically review existing decontamination provision and practices in the EU and develop a database of stakeholders (WP4, WP9)

SO2 Identify optimum formulation and procedures for conducting mass casualty decontamination through laboratory analysis (WP5)

SO3 Quantify the efficacy of optimised decontamination techniques using human participants in a series of field-based operational research trials (WP6)

SO4 Quantify the operational processes and capacities of decontamination facilities in exercises using large-scale mass casualty scenarios (WP7)

SO5 Evaluate mass casualty decontamination using simulations based on data obtained during exercising and laboratory trials (WP8)

SO6 Systematically review the provision for minority and vulnerable groups and generate best-practice guidelines (WP9)

SO7 Disseminate the project outcomes to EU stakeholders, including guidelines for best practice and second generation equipment procurement and exercising (Horizontal WP1,2,3)

ORCHIDS: work packages

WP1-3 Horizontal work packages – 1. Coordination, 2. Dissemination & 3. Evaluation (HPA, all partners)

WP4 Systematic review and survey of current mass casualty decontamination provision in EU Member States (HPA, CRSSA, FMH, FOI, Stakeholders)

WP5 Laboratory-based research trials examining the efficacy of decontamination methods (HPA, CRSSA, FOI)

WP6 Operational research trials with human participants (HPA, CRSSA, FOI)

WP7 Mass casualty decontamination exercise (HPA, all partners)

WP8 Mathematical modelling of emergency decontamination procedures (HPA, all partners)

WP9 Provision for vulnerable and minority groups (HPA, all partners)

Laboratory-based research trials:

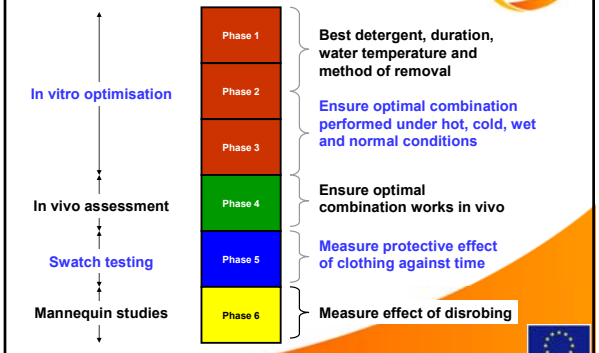
examining the efficacy of decontamination methods

Methylsalicylate, sulphur mustard and chlorine
Health Protection Agency (HPA)
United Kingdom

Fluorescent particles and soman
Centre for Research of Army Medical Services (CRSSA)
France

Toxic industrial chemicals and VX
Faculty of Military Health Sciences
University of Defence (FMH)
Czech Republic

Laboratory-based research trials:
examining the efficacy of decontamination methods



Operational research trials
(HPA, CRSSA, FOI)

Aims:

- Evaluate the efficacy of optimum decontamination techniques identified in WP5 + other measures (e.g. instructions / temperature / showering cycle)
- Approximately 10 to 50 volunteer participants
- Research trial conditions – including ethical considerations: informed consent, health & safety risk assessments, CRB checks for staff
- Approx. 3 x trials per participating partner – 9 trials in total
- Quantitative measures of decontamination efficacy

ORCHIS PROJECT June 08 – May 09

AIMS:

1. **To evaluate decontamination showering efficacy in children and adults**
2. **To explore the use of pictorial instructions, wash cloths and cycle duration on the effectiveness of decontamination showering for children and adults**
3. **To quantify the efficacy of decontamination showering using a controlled research design and full-body image analysis**

Mobile Imaging Analysis Unit (MIAU) - a low-cost method for conducting this quantitative method

Mass casualty decontamination exercise

Aims:

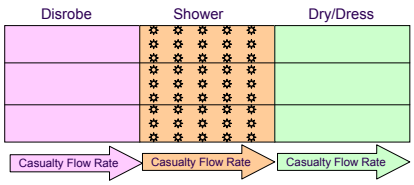
- Evaluate the efficacy of optimum decontamination techniques in a large-scale mass casualty decontamination scenario
- Collect data on processing times, operational capacity and efficiency to inform modelling
- Explore challenges to operational efficacy: environmental factors, breaches of hot zone, need for repeated decontamination

ORCHIDS modelling: simplified schematic(s)

"Engineering" + Casualties + "Flows"

WP7 : Mass casualty decontamination exercising involving optimum decontamination techniques

- **Design of model**
- **Parameterisation**
- **"Validation" of models/parameters**



Individual-based (Stochastic) Model & Parameters

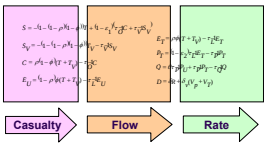
Read instruction	**Number of Shower Nozzles**	**Air Flow**
Remove clothes	**Nozzle type**	**Temperature**
Bag clothes	**Decontaminant Type**	**Drying rate**
Dependence on:	**Flow rate**	**Time to Dress**
Age, Infirmity	**Temperature**	**Dependence on:**
Etc.	**Active "Scrubbing"**	**Age, Infirmity**
	Etc.	**Etc.**

Staffing & Resource levels - Shift patterns

ORCHIDS modelling: virtual simulator

Run:

- **Different Scenarios**
  - **Casualties**
    - **Number**
    - **Degrees of injury**
    - **Degrees of contamination**
    - **Nature of contaminant**
    - **Age distribution (elderly, young)**
    - **Pre-existing mobility problems**
    - **Religious/ethnic customs**
    - **Etc.**
  - **Response services available**
  - **Staffing levels**
  - **Available "kit"**
  - **Available resources**
- **Investigate different types of operational usage**
- **Investigate different design modifications**



Collect results:
- Identify critical pinch points
- +/- Modifications for existing kit
- Optimise casualty flows (?)
- Guidelines for Use
- Guidelines Next Generation

Expected results

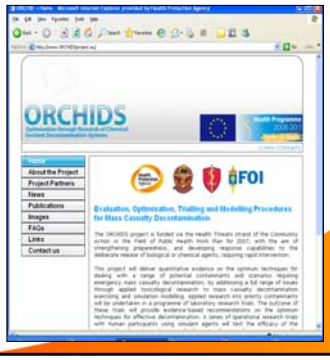
1. **Stakeholder database: network of expertise**
2. **Review of current MCD provision: identifying current best practice**
3. **A project website: key resource portal**
4. **Technical reports:**
   a. **Quantitative evidence on the optimum techniques for dealing with a range of contaminants and scenarios**
   b. **Best-practice guidelines and novel methodologies to optimise MCD procedures**
   c. **A review of provision for minority and vulnerable groups**
   d. **Recommendations for future provision / adaptations to existing protocols**
5. **Leaflets and educational tools for stakeholders and the general public**

Dissemination of the results

- ORCHIDS website
- Workshops
- Circulation of reports
- Peer-reviewed publication
- Conference presentations
- 'Public-facing' materials: leaflets & educational tools
- Trial and exercise DVDs
- Expert database – consultation opportunities

www.ORCHIDSproject.eu

Executive summary
About the project
Project partners
News
Publications
Images
FAQs
Links
Contact us
Password protected area
(under construction)



www.ORCHIDSproject.eu
Website re-launch

Review Activities
ORCHIDS Stakeholder Survey

ORCHIDS Stakeholders

- **Government organisations**
- **Health Ministries**
- **European Commission (e.g. DG SANCO, DG JLS, DG TRANS)**
- **DG SANCO Health Security Committee**
- **World Health Organisation**
- **EU Member State hospitals and emergency services**
- **The military and relevant industries**
- **Government and non-governmental organisations**
- **Strategic, tactical and operational stakeholders in each EU Member State**

ORCHIDS outcomes

"…a significant, new contribution to the optimisation of mass casualty decontamination at a European level."

"The ORCHIDS project will provide practical solutions for optimising mass casualty decontamination response, and will communicate these solutions to a broad audience, with the aim of promoting individual, community and systems resilience across the EU."

Thank you

28 September 2009

APPENDIX E

Stakeholder survey coversheet and questionnaire

With financial support from the European Commission via the
Health Threats strand of the Community Action
in the Field of Public Health Work Plan for 2007

ORCHIDS Project

Evaluation, optimisation, trialling and modelling procedures for mass casualty decontamination

Mass Casualty Decontamination Questionnaire

The aim of the ORCHIDS project is to deliver quantitative evidence on the optimum techniques for dealing with a range of potential contaminants and emergency scenarios requiring the decontamination of large numbers of contaminated casualties. This will be achieved through a programme of applied toxicological research, operational research trials with human volunteers, a mass casualty decontamination exercise and simulation modelling. The approach adopted in the ORCHIDS project marks the first attempt to explore mass casualty decontamination from 'first principles'. Evidence-based best practice guidelines on mass decontamination procedures will be produced and recommendations for the procurement of second generation mass decontamination response programmes will be generated.

ORCHIDS is an EU-funded project which involves the collaboration of four EU Member State countries: The UK, France, the Czech Republic and Sweden. The project's partner agencies are: (i) the Health Protection Agency (HPA), UK, (ii) the Centre for Research of Army Medical Services (CRSSA), France, (iii) the Faculty of Military Health Sciences, University of Defence (FMH), Czech Republic and (iv) the CBRN Defence and Security Division, Swedish Defence Research Agency (FOI), Sweden. The project also aims to build a network of stakeholder countries within the EU and beyond. The evidence-based best practice guidelines generated by the ORCHIDS project will be disseminated to these stakeholders.

As part of the review activities for the ORCHIDS project, we are gathering information on individual EU Member States' policies and procedures for emergencies involving civilian mass casualty decontamination. The attached survey has been distributed to you in the hope that you will help us to achieve an understanding of your country's emergency response procedures concerning mass casualty decontamination.

We would be extremely grateful if you completed this survey with as much information as you are able to provide. Alternatively, please consider forwarding this to a colleague or contact who could help complete the questionnaire for us. As a thank-you for helping us in this process, you will receive stakeholder status in the ORCHIDS project. As a stakeholder you will receive updates on project activities, recommendations on best practice for mass decontamination and access to the password protected area of the project website – www.orchidsproject.eu.

Once complete, please return the attached questionnaire to: vicky.edkins@hpa.org.uk

If you would like any further information on the ORCHIDS project or you would like to register to receive news and updates on the work being carried out as part of the project, please visit our website at:

http://www.orchidsproject.eu

If you would like to receive further information on the purpose or content of this questionnaire or any other aspect of the ORCHIDS project, please contact Dr Vicky Edkins using the above e-mail address.

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Health Protection Agency
Porton Down
Salisbury
Wiltshire
SP4 0JG UK

ORCHIDS Project

Mass Casualty Decontamination Questionnaire

The ORCHIDS project aims to provide evidence-based best practice guidelines on civilian mass decontamination. We would like your help in compiling information concerning existing mass casualty decontamination provision in EU Member States.

As a potential project stakeholder with knowledge of emergency planning and response, please complete the questionnaire that follows with information concerning mass casualty decontamination provision in your country. By completing and returning this survey you will automatically receive stakeholder status in the ORCHIDS project. As a stakeholder you will receive updates on project activities and recommendations on best practice for mass decontamination based on the ORCHIDS project research outcomes.

If you would like to be come a stakeholder in the ORCHIDS project, please complete the following questionnaire with your details, and any further information you can provide for us at this stage.

Further copies of this questionnaire can be obtained by contacting:

- **Dr Vicky Edkins**, Research Fellow, +44 (0)1980 616969, vicky.edkins@hpa.org.uk
- **Dr Richard Amlôt**, Project Manager, +44 (0)1980 616967, richard.amlot@hpa.org.uk

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Please complete each boxed section in the pages that follow.

1. Your details (please include all international dialling codes)

Name: **Title (e.g. Mr, Mrs, Dr):**

Tel no.: **Fax:**

Email:

Organisation: **Name of Country:**

National Emergency Decontamination Standard Operating Procedures

3. Decontamination of people

Decontamination – the process of making a person free of noxious chemicals, harmful micro-organisms, or radioactive material in order to minimise negative health effects.

a. Please describe the cleaning methods or procedures used in your country:

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Wiltshire
SP4 0JG UK

b. Who conducts mass casualty decontamination in your country?
(e.g. Fire Service / Ambulance Service / Military etc.)

c. What training do the personnel expected to carry out decontamination receive?
(e.g. participation in decontamination exercises, specialist training courses etc.)

d. Please give details of the type and concentration of any washing detergents used to remove contamination, including to decontaminate the body, hair or eyes:

e. Please give details of any reactive skin decontaminants used:

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f. Please give details of any washing utensils or materials used in decontamination:
(e.g. RSDL sponge, flannel, polyurethane sponge, soft brush)

g. Please give details of the temperature of water used for decontaminating people:
(please tick the appropriate box or describe below)

Cold (unheated) ☐ **15°C** ☐ **20°C** ☐ **25°C** ☐ **30°C** ☐ **35°C** ☐

40°C ☐ **45°C** ☐ **>45°C** ☐

h. What is the duration of decontamination washing procedures for people?
Please give the length of time (min utes / seconds) and any justification for the duration of the procedures.

i. Who conducts the decontamination washing?
(please tick as appropriate)

A member of the emergency services ☐

A member of another organisation ☐

The individual person / casualty ☐

Please give details:

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Wiltshire
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j. What is the overall 'flow rate' of individuals through the decontamination procedures?
Flow rate – the number of individuals who can pass through the decontamination procedures or units during a fixed period of time, e.g. 100 individuals per hour.

k. Are responses to real incidents and emergencies involving decontamination routinely evaluated?
Please give details of who is responsible for this evaluation, any evaluation methods used and how evaluations are used to improve operating procedures in future incidents.

Mass casualty decontamination research literature, guidance and policy documents

Please help us to identify any research literature, national guidance documents or policy documents concerning mass casualty decontamination provision in your country. Please also include any details of documents from other countries or from international sources, including the details of any international stakeholders who you think may be interested in the outcomes of the ORCHIDS project. Please continue on a separate sheet if needed.

4. Please list any guidance, papers, reports, articles or references you have identified concerning mass casualty decontamination.

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Mass casualty decontamination procedures for special populations and vulnerable groups

We would like to identify examples of best-practice and policy concerning the needs of special populations or vulnerable groups in emergency response, particularly regarding mass casualty decontamination procedures. Please provide details of procedures or policy decisions concerning mass casualty decontamination, considering the following definition:

Special populations or vulnerable groups definition

Including - pregnant women, immuno-compromised patients, equipment-dependent patients (especially those requiring ventilators), disabled persons requiring wheelchairs or other mechanisms of assistance, nursing home and prison residents, people with various physical challenges, mental health problems, children, the elderly, and persons from different faith groups, and any cultural or language barriers.

5. Please provide details of mass casualty decontamination provision for special populations and vulnerable groups in your country:
(please continue on a separate sheet if needed)

Thank you for completing this questionnaire. Please e-mail the completed questionnaire to vicky.edkins@hpa.org.uk or use the postal address below.

If you have any queries or would like to discuss any aspect of this questionnaire or the ORCHIDS project please contact Dr Vicky Edkins using the contact details below:

Dr Vicky Edkins, Research Fellow
Behavioural Science Research Team
Building H11, Emergency Response Department
Health Protection Agency
Porton Down
Salisbury
Wiltshire, UK
SP4 0JG

Telephone: +44 (0)1980 616969
E-mail: vicky.edkins@hpa.org.uk

APPENDIX F

Presentation by Rhys Jones: Interim report on mass decontamination overview

Interim Report on Mass Decontamination Review

Rhys Jones
Chemical Hazards & Poisons Division

Progress to date:

- ORCHIS trial

- scope to optimise decontamination procedures.

- ORCHIDS 1 stakeholder surveys

- questionnaires to collate European methods of decontamination.

- Mass Decontamination Review

- outlines mass decontamination methods and, to a certain extent, products for personal decontamination.

ORCHIDS 1 survey responses

- Surveys to collate mass decontamination methods.

- Responses received from Spain and Norway, Latvia, Austria, Hungary.

- Compilation of database ongoing.

- Translation of official documents.

- Dr. Edkins to facilitate collation of survey information and add to contacts.

Methodology

- Many similarities exist between countries.

- General supervision of decontamination by emergency services.
- Removal of clothing with scissors.
- Wet decontamination using 'rinse-wash-rinse' principle.
- Sponges and soft brushes used.
- Warm water (30°C).
- Individual is responsible for washing themselves under supervision of fire and rescue services.

UK methodology

- As outlined by the London Fire Service.

- Undress casualties.

- Shower for 2 mins, 20 seconds in soap solution.

- Rinse for 1 minute.

- Casualties provided with re-robe kits.

- Soft brushes used for non-ambulant casualties.

Norwegian methodology

- The basics

- Water heated to 30°C ideally (15°C is permissible).
- Polyurethane sponges and soft brushes used.
- 3-6 minute washing cycle depending on severity of symptoms.

- Some significant differences

- Emergency services conducts decontamination washing.
- Trained nurses continue personal decon. in hospitals.
- Provision within protocol for eyes: NaCl (0.9%)

Further methods of decontamination

- Oxidation and acid/base hydrolysis

- HD and VX → sulphur molecules can be oxidised.
- VX and GD → phosphorus groups can be hydrolysed.

- Oxidative chlorination

- 'Active chlorine' such as in hypochlorite.
- United States advocates 0.5% sodium hypochlorite solution for decontamination of skin.

Mass decontamination review

- Outlines of common chemical warfare agents

- Overview of mass decontamination methods

- Physical, chemical, enzymatic etc.

- Personal decontamination

- How this interlinks with mass decontamination.

Thank you all for listening. Any questions?

APPENDIX G

Presentation by Dr Richard Amlôt: Review of the needs of vulnerable and minority groups in emergency decontamination

WP 9: Review of the needs of vulnerable and minority groups in emergency decontamination (HPA, all partners)

Aims:

- Identify issues associated with the decontamination of children, the elderly, non-ambulant casualties; gender and religious issues
- Review of emergency provision for minority and vulnerable groups in circumstances requiring emergency decontamination
- Timetabled to link with review & survey activities of Work Package 1

Deliverables:

- Technical Report 2: Decontamination provision for minority and vulnerable groups

Defining vulnerability: special populations

"Persons are considered to have special needs if they have a physical, mental, sensory, behavioural, emotional, developmental, cognitive or emotional impairment or limiting condition. Some special populations include, but may not be limited to the elderly, medically fragile, mentally and/or physically challenged, mentally ill and the developmentally delayed" **Houston Department of Health and Human Services**

A distinction should be made for "special populations" for general disaster planning, and specifically for decontamination – although there will be considerable overlap

Vulnerable groups
Civil Contingencies Act 2004, UK

1. **Children**
2. **Older People**
3. **Mobility Impaired**
4. **Mental/cognitive function impaired**
5. **Sensory Impaired**
6. **Individuals supported by health or local authorities**
7. **Temporary or permanently ill**
8. **Individuals cared for by relatives**
9. **Homeless**
10. **Pregnant women**
11. **Minority language speakers**
12. **Tourists**
13. **Travelling communities**

"While planners across the country are taking different approaches to identifying this population, planning in most cases has not moved significantly beyond the stage of compiling the lists"

Children

Potential problems during decontamination:

- **May be separated from their parents**
- **Increased difficulties communicating with responders in PPE**
- **Fear of responders in PPE**
- **Inability to follow instructions**
- **Small children may be unable to wash themselves, and may not undertake active washing**
- **Children conditioned not to talk to or go with strangers – but may be forced to**
- **Take longer to undress/dress compared to adults**
- **Reluctance of responders to wash young children**
- **May become inconsolable/withdrawn, and may hinder the steady flow of casualties**
- **May be unable to provide a medical history**
- **More susceptible to hypothermia**

Solutions and interventions (example)

	Pre-event minimum	Pre-event ideal	During event minimum	During event ideal
Persons with sensory impairment, blind/visually impaired	**Training personnel in the accompaniment of the blind**	**Preparedness exercises involving blind/visually impaired casualties**	**Unaccompanied visually-impaired people should be 'buddied' with others for help.**	**Unaccompanied visually-impaired people should be accompanied by staff throughout.**

Identifying practical recommendations for vulnerable groups

Interventions for vulnerable populations

Enhanced communication

Physical interventions

Conclusions

Ongoing review of published and grey literature

Incident reports and first hand accounts?

Identify best-practice that 'isn't written down', but is informed by experience

Practical guidance and evidence-based solutions

Partner and stakeholder assistance in collecting materials

Thank you

28 September 2009

APPENDIX H

Presentation by Dr Denis Josse: Evaluation of skin decontamination efficacy using in vitro and in vivo models

ORCHIDS Project
Third Project Meeting and Stakeholder Workshop
Wednesday 1 & Thursday 2 July 2009
CRSSA, Grenoble, France
PROGRAMME OF EVENTS

DAY 0 – Tuesday 30th June 2009
14:00 **Project partners meet at CRSSA**
14:15 – 15:30 CRSSA Lab visit hosted by Denis Josse
15:30 – 16:30 Project and lab trials (WP5) discussion, including in vitro lab work
16:30 – 17:30 Project administration and financial management
Anne Dempsey, HPA
19:00 Dinner in Grenoble

DAY 1 – Wednesday 1st July 2009
10:00 – 10:30 **Registration**
10:30 – 13:00 Introduction to CRSSA and the ORCHIDS meeting
Denis Josse, CRSSA
1. ORCHIDS project overview presentation (10:35 -11:00)
Richard Amlôt, HPA
2. EU MCD review – approach and preliminary outcomes (11:00 – 11:15)
Rhys Jones, HPA
3. MCD review – vulnerable groups review (11:15 – 11:30)
Richard Amlôt, HPA

11:30 – 11:50 **Break**
11:50 – 13:00 ORCHIDS Laboratory trials overview and updates (WP5)
1. *Rob Chilcott, Rhys Jones, Jo Larner, HPA* (11:45 – 12:15)
2. *Kuca Kamil, FMH* (12:15 – 12:45)
3. *Denis Josse, CRSSA* (12:45 – 13:00)

13:00 – 14:00 **Lunch**
DAY 1 – Wednesday 1st July 2009 (continued)
14:00 – 15:20 Partner & Stakeholder presentations
1. ORCHIS volunteer trial methodology and outcomes (14:00 – 14:20)
Jo Larner, HPA
2. Evaluation of routines and functionality of mobile decontamination units in Sweden (14:20 – 14:40)
Marianne Thunell, FOI, Sweden
3. Euratox (2005) and Var (2008): European NRBC exercises (14:40 – 15:00)
Dr Jean-Marc Sapori, Department of Emergency Preparedness and Response. Health General Directorate, France
4. PRIMer, Psychosocial Risk Manager: A Training Tool on the Psychosocial Dimensions of CBRN Events and Threats (15:00 – 15:20)
Professor Louise Lemyre, University of Ottawa, Canada
15:20 – 15:40 **Break**
15:40 – 17:00 Workshop discussions
1. ORCHIDS project aims and objectives, stakeholder involvement, outputs and implications (15:40 – 16:20)
2. Processes and people: MCD and the public (16:20 – 17:00)
19:30 **Project dinner**

DAY 2– Thursday 2nd July 2009
9:30 – 12:30 Workshop discussions and project planning meeting
1. Discussion - technology, solutions, evidence and policy (9:30 – 10:30)
2. Project planning meeting - WP5 Laboratory studies (10:30 – 11:30)
Including a presentation on skin differences from Dr Ladislav Novotny, FMH
3. Project planning meeting - WP6 Field trials (11:30 – 12:30)
12:30 – 13:00 **Meeting closed & lunch**
14:00 **Social event**
Historical tour of Grenoble

October 14, 2008

Centre de Recherches du Service de Santé des Armées (CRSSA)


CRSSA
NRBC Research Institute

SPD group
Catherine, Roselyne, Alexandre, Zakaria, Denis

Toxicology / Skin Protection and Decontamination
Centre de Recherches du Service de Santé des Armées
24 avenue des Maquis du Grésivaudan - BP 87- 38 702 La Tronche cedex
djosse@crssa.net

Orchids Workshop

July 1-2, 2009 - CRSSA, La Tronche

- Overview of our research topics

- Evaluation of skin decontaminant efficacy by using *in vitro* and *in vivo* skin models

D JOSSE, C CRUZ, R BIFARELLA, A BAZIRE, Z KSOURY

IRBA/Centre de Recherches du Service de Santé des Armées (CRSSA)

Toxicology Department/Skin Protection Decontamination

CRSSA/Toxicology
Skin Protection and Decontamination
Research topics

- Development and validation of *in vitro* and *in vivo* **models** (reliability, relevance) to study the **percutaneous penetration and cutaneous toxicity of CWA**.

- Evaluation of the **efficacy of topical skin protectants and decontaminants against CWA** (nerve agents and sulfur mustard) by using *in vitro* and *in vivo* tests.

Main partners (in France)

- Centre d'Etudes du Bouchet (DGA)
- Direction de la Sécurité Civiles (DSC) (risk management), Secrétariat Général de la Défense Nationale (SGDN) (circulaire 700: Chemical Risk Management – mass decon)
- Universities (CNRS groups from Lyon and Montpellier)
- Private companies (Bayer CropSciences, Laboratoires Dermatologiques d'Uriage)

Orchids: Decon efficacy (Disrobing + showering) against CWA and industrial chemicals ??

1. Tõngren S, Persson SA, Ljungquist A, Berglund T, Nordstrand M, Hägglund L,Rittfeldt L, Sandgren K, Söderman E. Personal decontamination after exposure tostimulated liquid phase contaminants: functional assessment of a new unit. J Toxicol Clin Toxicol. 1998;36(6):567-73.

2. Reifenrath WG, Mershon MM, Brinkley FB, Miura GA, Broomfield CA, Cranford HB. Evaluation of diethyl malonate as a simulant for 1,2,2-trimethylpropylmethylphosphonofluoridate (soman) in shower decontamination of the skin. J Pharm Sci. 1984 Oct; 73(10):1388-92.

Skin decontamination ***Objectives***

Reduce the toxicity

+

the spreading of contamination

Skin decontamination efficacy ***Critical factors***

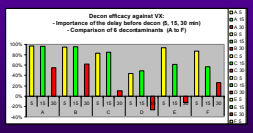
- Delay between exposure and decon (min to hrs)
- Chemical (volatility, onset of clinical signs of intoxication)
- Skin (anatomical site, hairs…)
- Environmental conditions (temperature, humidity…)
- Disrobing
- Decontaminant (wet decon, « dry decon ») + decontamination protocol

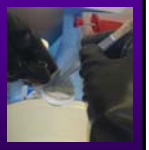
Effect of some but not all of these factors evaluated in the Orchids project.

Skin decontamination Efficacy evaluation

- **In vitro**: how much and how fast (kinetics) the chemicals are absorbed in and through the skin following skin decon (vs w/o decon: controls)?
- **Relative efficacy of decontaminants :** (A>B>C=control>D…) **but this does not prove in vivo efficacy!**

Suggestions on what is the most effective solution and protocol !



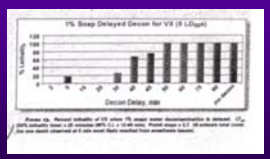


A given decontaminant could be effective in vitro (vs control) but ineffective in vivo.
If the in vitro model is relevant, the opposite result should not be observed.

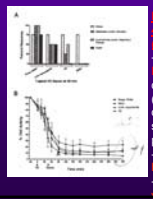
Skin decontamination Efficacy evaluation

- **In vivo**: Clinical signs and biological markers (ChE inh) of intoxication (following decon vs control), survival rate.
- Efficacy of decontaminant from a toxicological point of view: **reduction of intoxication relative to the control**.

DELAYED DECON can save lifes !



Doxzon et al., Bioscience 2004 (Hairless guinea pigs)



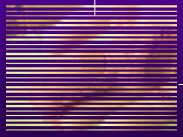
Blamason et al., 2008 (23 min post-exposure decon):
- Decon with RSDL or FE protected against death in all cases (50% of the animals decon with FE exhibited severe signs of poisoning).
- 2/4 died with 0.5% hypochlorite
- ¾ died with soapy water

Evaluation of decon efficacy ***Tests and skin models:*** ***ideally human skin in vivo but…***

In vitro permeation tests : diffusion cells + skin models (pig-ear skin vs human abd. skin)

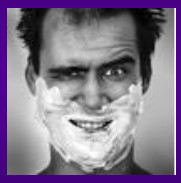
CONSISTENCY ?

In vivo permeation tests on human volunteers with non toxic OP surrogates (non invasive methods)



In vivo permeation tests on animal models (rodents vs pig) with OPs

Questions ?



APPENDIX I

Presentation by Dr Kamil Kuca: ORCHIDS project overview – FMH activities

Department of Toxicology
Faculty of Military Health Sciences
University of Defence

Kamil KUCA
Jiri CABAL
Ladislav NOVOTNY
Ruzena PAVLIKOVA
Jan MISIK

Hradec Králové; Czech Republic

Staff

- 2x Profesors
- 3x Associate Profesors
- 4x Assistent Profesors
- 5x Laboratory Assistents

- 10x PhD students*
- 10x Graduate students

*This year 5 new PhD students accepted

Laboratories

- **Chemical laboratory** – *synthesis of novel AChE modulators (inhibitors or reactivators) and detergents*
- **Decontamination laboratory** – *development of novel skin decontamination means*
- **Biochemical laboratory** – *determination of tissue ChE levels*
- ***In vivo* laboratory** – *animal testing of novel treatment or decontamination mixtures*
- **Pharmacological laboratory** – *ex vivo tissue experiments*
- **Molecular biology laboratory** – *sulfur mustard intoxication diagnosis*
- **Analytical laboratory*** - *determination of purity of novel substances and pharmacokinetics*
- **Computer laboratory*** - *prediction of AChE modulators´ interactions with ChE*

*Centre of Advanced Studies

Main activities

- Education, teaching and training of medical, pharmaceutical and military management students
- Research activities
  - Novel AChE reactivators
  - Novel prophylactic means (AChE inhibitors, bioscavengers, etc.)
  - Novel detergents for decontamination and desinfection means
  - Biosensors (for chemical and biological agent determination)
  - Sulfur mustard intoxication diagnosis (comet assay)
- Czech and international consultative activities (NATO, OPCW, Ministry of Defence, etc.)

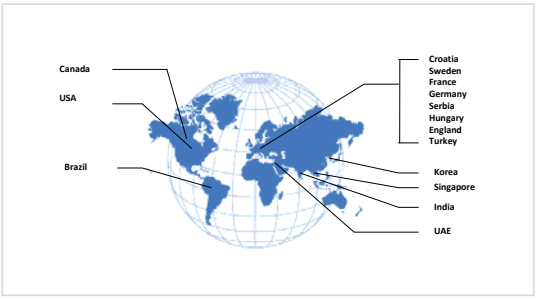
Recent Projects

- At present time, we are solving **20 project**
- Projects:
  - 11 Ministry of Defence, CZ
  - 1 EU (ORCHIDS)
  - 1 NATO (Croatia)
  - 2 Ministry of Education (Korea)
  - 2 Czech Grant Agency
  - 1 Ministry of Health, CZ
  - 2 Company Projects

Products

- **PANPAL** (prophylactic mixture for the pretreatment of nerve agent exposure)
- Autoinjectors for the field therapy of nerve agent intoxications (**COMBO-PEN, DIAZEPAM, three-chambered autoinjector with HI-6 DMS**)
- Antidotes for the medical care of nerve agent exposed casualties (**ANTIVA, CHONOL I, CHONOL II, RENOL, HI-6 DMS**)
- Antidote for the medical care of BZ exposed chemical casualties (**7-MEOTA**)
- TRANSANT (Prophylactic **HI-6 patch**)
- Decontamination mean **HVEZDA**

Our Partners



Cooperating companies

- **Decomkov Praha, Praha, CZ** – *development of novel decontamination means and antidotes against nerve agents*
- **Vakos XT, Praha, CZ -** *development of novel antidotes against nerve agents*
- **ChemProtect, Praha, CZ** - *development of novel decontamination means and antidotes against nerve agents*
- **VF, Cerna Hora, CZ** – *development of biosensors for detection nerve agents and pesticides and afatoxins*

Project ORCHIDS

Studies conducted in our laboratories:

In vitro skin permeability of VX agent and POX

In vivo pig skin permeation (VX agent and POX)

In vivo rat skin permeation (VX agent and POX)

Project ORCHIDS

***In vitro* permeability study** was established at our department in 2008:

Now we are waiting for the universal method which will be used at all departments (Eng., Fr., CZ) to obtain comparable results.

Project ORCHIDS

***In vitro* permeability studies (cont.):**

- We are focused on **POX** at present time (less toxic)
- *Spontaneous hydrolysis of POX* - influence of pH
  - influence of temperature
  - influence of aditives
- *Skin penetration* - dependence of the drop size
  - dependence of the exposure time

*More info – POSTER 01

Project ORCHIDS

***In vitro* permeability studies (cont.):**

- We modified Ellman´s method for the determination the quantity of nerve agent which is crossing the skin

*More info – POSTER 02

- Morphology changes of the pig skin after the different storing conditions

*Dr Novotny - PRESENTATION

Project ORCHIDS

***In vivo* studies**: LD_{50} [mg.kg^{-1}] of selected nerve agents were measured (the same *in vivo* model).

- Tested **animals** – mice, rats, guinea pigs
- Used **nerve agents** – tabun, sarin, soman, VX, RVX, POX, DFP
- **Administration** used – *im*, *ip*, *po*, *sc*, *pc*

We obtained
- interspecies differences
- nerve agent differences
- administration differences

Project ORCHIDS

***In vivo* studies (cont.)**:

Administration	TABUN	SARIN	SOMAN	VX
i.v.	Nm*	0,143 (0,127-0,160)	0,076 (0,070-0,082)	cca 0,0145
i.m.	0,275 (0,269-0,281)	0,215 (0,193-0,238)	0,124 (0,106-0,145)	0,0268 (0,0264-0,0273)
i.p.	cca 0,6	0,40 (0,346-0,462)	0,24 (0,218-0,264)	0,0442 (0,037-0,054)
p.o.	Nm*	1,019 (0,893-1,168)	1,614 (1,365-1,908)	Nm*
s.c.	cca 0,3	0,252 (0,241-0,246)	0,15 (0,129-0,179)	Nm*

Determined after 2h and 24h

*will be measured within several months

MICE RESULTS

Project ORCHIDS

***In vivo* studies (cont.)**:

Administration	TABUN	SARIN	SOMAN	VX	RVX	PARAOXON	DFP
i.m.	0,183 (0,161-0,208)	0,096 (0,093-0,099)	0,069 (0,063-0,075)	0,0082 (0,0072-0,0092)	[2h] 0,0153 (0,0099-0,0239) [24h] 0,0141 (0,0116-0,0182)	0,321 (0,241-0,387)	1,399 (1,19-1,50)
i.p.	Nm*	Nm*	0,117 (0,10-0,126)	0,0456 (0,0363-0,0573)	0,063 (0,0529-0,0852)	1,276 (0,812-2,006)	3,20 (2,19-4,27)
p.o.	3,6 (2,69-4,82)	0,67 (0,59-0,77)	0,37 (0,30-0,44)	[2h] 0,189 (0,169-0,213) [24h] 0,122 (0,112-0,134)	Nm*	2,519 (2,203-2,881)	3,331 (3,00-3,80)
s.c.	0,270 (0,240-0,310)	0,11 (0,101-0,120)	0,12 (0,103-0,139)	0,0119 (0,0084-0,0157)	0,0159 (0,0138-0,0213)	0,429 (0,35-0,44)	1,58 (1,255-1,92)
p.c.	cca 400	117,9 (89,39-155,6)	9,987 (7,165-13,91)	[2h] >0,150 [24h] 0,0849 (0,079-0,10	Nm*	[4h] >50 [24h] 12,11 (6,26-22,07)	[4h] >420 [24h] 800,0 (203,6-429,0)

Determined after 2h and 24h

*will be measured within several months

RATS RESULTS

Project ORCHIDS

***In vivo* studies (cont.)**:

Administration	SARIN	SOMAN	VX	R VX	PARAOXON
i.m.	0,0345 (0,032-0,037)	[2h] 0,029 (0,017-0,050) [48h] 0,024 (0,021-0,028)	[2h] 0,0070 (0,0061-0,0077) 24h 0,0061 (0,0052-0,0083)	[2h] 0,0188 (0,0159-0,02) [24h] 0,0139 (0,0101-0,023)	[2h] 1,0 (0,735-1,48) 24h 0,78 (0,63-6,18)
s.c.	0,046 (0,044-0,049)	Nm*	Nm*	Nm*	Nm*
p.c.	Nm*	8,84 (6,70-11,66)	0,240 (0,123-0,470)	Nm*	[4h] >200 [24h] 107,1 (24,74-307,2) [48h] ≤25

Determined after 2h, 24h and 48h

*will be measured within several months

GUINEA PIGS RESULTS

Project ORCHIDS

Next steps:

- Research stay of our vet doctor in Suffield (Canada) – animal (pig) handling (2009)
- Visit of HPA to see *in vivo* pig studies (2010).
- Establisment of *in vivo* pig study at our department and *in vivo* testing (2010-2011).
- Continuing *in vitro* pig skin tests and *in vivo* rat decontamination tests (2009-2011)

Czech Ministry of Defence Project

To get other sources for **co-financing** for ORCHIDS project, we applied in 2008 for Ministry of Defence project with similar (not the same) topic.

Title of the project: **Development of new skin decontamination and desinfection agent based on micelar systems.**

It was approved.

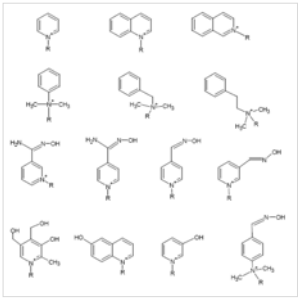
Main Investigator: Kamil Kuca
Budget: 3 460 000,- CZK = approx 130 000,- Eur
Years: 2008-2011

Czech Ministry of Defence Project

The aim of this project is to develop new compound or mixture of compounds with a good decontaminant efficacy against wide spectrum of chemical warfare agents or organophosphorus pesticides. The second aim is also to gain the universal disinfectant, which will be effective against many kinds of microbes.

The solution of the project: Novel quaternary detergents are prepared. They are able to form micelles – use of micelar environment – for micelar catalysis – increase of nerve agent hydrolysis. Moreover, quaternary moieties are able to disturb membranes of several microorganism and so to kill the pathogens. Optimalized mixture of such detergents could be considered as decontamination-desinfection mean.

Czech Ministry of Defence Project



Already prepared compounds.

Some CMCs already determined.

Decontamination and desinfection potency currently under investigation.

Potential use as promising detergents for ORCHIDS Project.

Contact

Kamil KUCA
Tel: +420 973 251 523
Fax: +420 495 518 094
E-mail: kucakam@pmfhk.cz

Jiri CABAL
Tel: +420 973 251 506
Fax: +420 495 518 094
E-mail: cabal@pmfhk.cz

Acknowledgement

This presentation was supported by the EU grant agency – project ORCHIDS (LN, RP, JM) and by the Ministry of Defence (Czech Republic) projects FVZ0000501 (JC) and OVUOFVZ200807 (KK).

APPENDIX J

Presentation by Rhys Jones: The effects of disrobing on decontamination

Mannequin chemical exposures: Does clothing form an effective barrier?

Rhys Jones
University of Surrey

Background

Re-evaluation of current data

- Currently thought that removal of clothing reduces the exposure to contaminants by an estimated 75 – 90% (Houston & Hendrickson, 2005).
- Clothing may enhance chemical absorption by acting as an occlusive dressing, altering hydration and temperature of the skin.
- Removing clothing is considered to be the minimum level and most important part of decontamination in a chemical or radiological incident (Levitin *et al.*, 2003).

Materials and methods

- Invisible Red S – a fluorescent dye dissolved in analytical grade EtOH.
- Exposure chamber made from Perspex.
- Validation of integrity and flow-through conducted.
- Flow rate of 5.70 m s^{-1}
- Smoke and initial tests with test chemical.
- Particles scattered using improvised disperser.
- 4 mg ml^{-1} solution in EtOH
- 2 minute exposure using 15 mls → 60 mg total.

Materials and methods (2)

- Front and back photographs.
- UV light, imaging and UV filters.
- Before and after disrobing.
- Head-on and overhead exposures.
- Image-Pro Analyser 6.2

Materials and methods (3)

Smoke integrity test

Materials and methods (4)

Improvised 'Tulip' particle disperser

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Materials and methods (5)

UV imaging box

Mannequin picture – 25 UV LEDs

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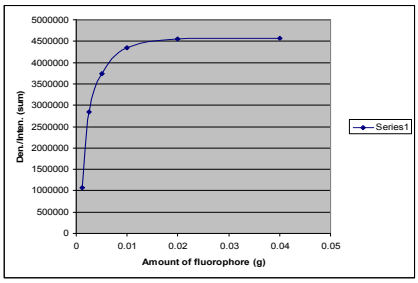
Materials and methods (6)



Calibration curve

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Results

- De-robing removes ~70% of fluorophore (head-on exposure).
- Several implications for the types of chemical/biological incidents.

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Conclusions

- Other factors need to be considered when interpreting these results.
- Very controlled conditions.
- Environmental factors in real situations.
- Using chlorine (Cl_2) to assess barrier function to gaseous elements.
- Further work to be conducted using physiological simulants
  - **Artifical sebum**
  - **Liquid latex**

APPENDIX K

Presentation by Jo Larner: In vitro assessment of decontamination showering

In Vitro Assessment of Decontamination Showering Using Diffusion Cell Methodology.

Jo Larner
CBRN & Chemical Toxicology Group
Chemical Hazards and Poisons Division

Introduction

ORCHIDS Work Package 5 Milestone

Model the effects of different parameters upon penetration of sulphur mustard and its simulant, methyl salicylate

Current UK showering protocol

At 1 hour post exposure casualties:

A) disrobe

B) shower with detergent solution for 2 minutes followed by a water rinse for 1 minute,

C) rerobe

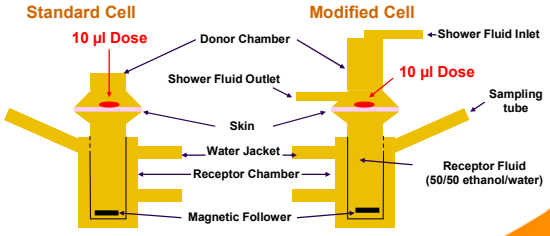
Water flow rate 6000 L h^{-1}, (equivalent to ~8.6 ml min^{-1} cm^{-2})

Detergent/Water temperature 35 °C

Aims

1) Effect of Shower Duration √
2) Effect of Shower Temperature √
3) Effect of Detergent
4) Effect of Physical Removal

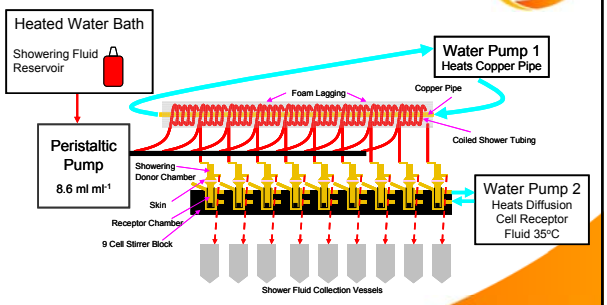
In Vitro Diffusion Cell Methodology



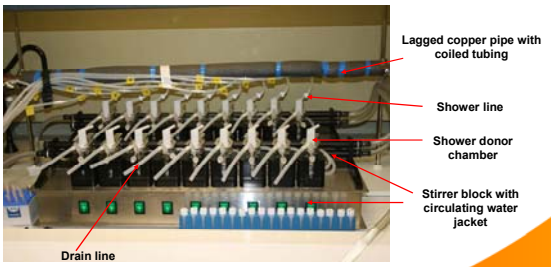
Dermatomed skin (500 µm thick) is clamped between donor and receptor chambers and the radiolabelled dose is applied to epidermis.

Quantification by liquid scintillation counting of radiolabel in receptor fluid.

Modified In Vitro Diffusion Apparatus



Modified In Vitro Diffusion Apparatus



Modified In Vitro Diffusion Apparatus

Shower and drain lines in place

Skin after 24 hours post dose

Methodology

Protocol

Cells 1-3	no shower (control)
Cells 4-6	1st condition
Cells 7-9	2nd condition
Cells 10-12	3rd condition
Cells 13-15	4th condition
Cells 16-18	5th condition

Dose: 10 µl (1 µCi)

Quantification by liquid scintillation counting of radiolabel

Requires staggering of dosing times, decontamination times and receptor sampling times.

Penetration profile: Receptor samples collected for counting at predose, 30 mins, 1.5, 2, 3, 4, 5, 6, 7, 8 and 24 hours post dose. Sampling fluid replaced each time.

Dose distribution calculated by measuring label in shower fluid (weighed), shower swab, receptor media @ 24 hours, dismantle swab and skin (weighed).

Penetration profile of 14C-methyl salicylate

Conclusions

1. Approximately 10% of applied methyl salicylate penetrates the skin independent of decontamination showering with water at 1 hour post dose.
2. Recovery of radiolabel is 20-30%; the remainder evaporates.
3. Showering with water appears to remove some methyl salicylate from the skin and produces differences in % dose distribution in different compartments.
4. What would this mean if sulphur mustard behaves similarly?

   Showering may reduce the hazard from secondary exposure: transfer of agent between casualties and emergency personnel.

Next steps

3) Effect of Detergent on Methyl Salicylate Absorption

Comparison of English, French, Czech and Spanish detergents against controls (no shower) and water.

4) Effect of Physical Removal During Showering on Methyl Salicylate Absorption

Comparison of different washing techniques.

All four experiments to be repeated with sulphur mustard for comparison

APPENDIX L

Presentation by Jo Larner: Whole-Body Imaging of a UV Fluorescent Chemical Warfare Simulant for Comparison of Decontamination Protocols

ORCHIS

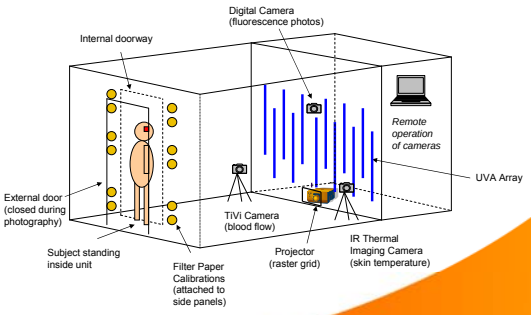
水

Whole-Body Imaging Of A UV-Fluorescent Chemical Warfare Simulant for Comparison of Decontamination Protocols

Jo Larner

CBRN & Chemical Toxicology Group
Chemical Hazards and Poisons Division

MIAU Design



Theory

Fluorescence Phenomenon

Emission of visible light (fluorescence) from a substance irradiated with shorter wavelengths e.g. ultraviolet light.

Emitted visible light can be photographed and the image subsequently analysed by software for fluorescent intensity.

At low concentrations, surface fluorescence intensity varies with amount of fluorophore. This permits quantification from comparison with a calibration curve of applied fluorophore.

ORCHIS Photography

Fluorescence response from the skin is influenced by each individual's auto-fluorescence (due to variation in skin pigmentation (melanin), presence of blood (haemoglobin) and other proteins in the skin.

Measurement of individual skin reflectance spectroscopy, blood flow and skin temperature may permit adjustment for autofluorescence.

ORCHIS Photography

A fluorophore is required that demonstrates good contrast against innate skin fluorescence.

Chosen Fluorophore:

Invisible Red S – Non-irritant, organic europium complex

Molecular Weight >1100 Da

Red colour (Ex 365nm, Em 616 nm) – good contrast against the blue/purple fluorescence of human skin.

Only slightly water soluble – therefore suitably resistant to showering so as to enable measurement on skin even after washing.

Aim of ORCHIS Study

To compare 5 decontamination showering protocols:

A Control (no shower) *(Control)*

B 3 minute shower without instructions (current UK protocol)

C 3 minute shower with cloth

D 3 minute shower with instructions

E 3 minute shower with instructions and cloth

F 6 minute shower

UV Photography Data

Process

Photographs were taken at:

1.Baseline

2.Post tag application

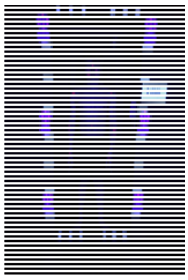
3.Post shower

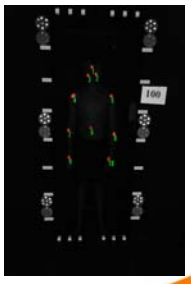
Quantification against filter paper calibrations

Compare mean differences in removal of fluorophore between showering protocol groups

UV Photography

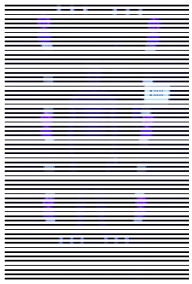
Post-tag application

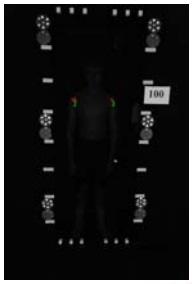




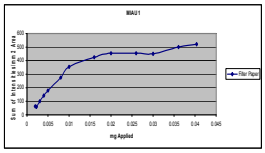
UV Photography

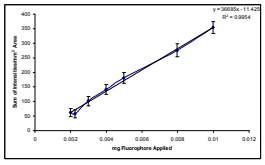
Post shower

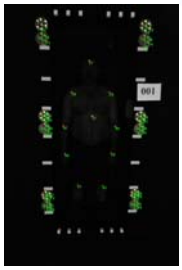




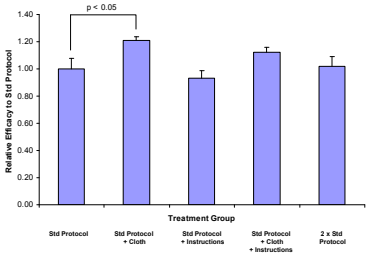
UV Photography



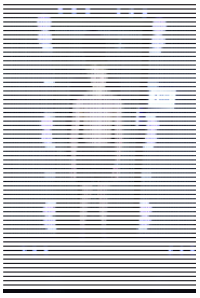




Ranking of Showering Protocols Against Positive Controls



Rasterstereography



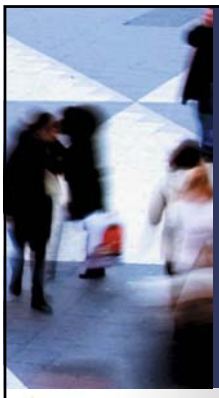
Surface topology influences fluorescence measurements due varying distances and angles between UV array, subject and camera.

Additional photography using raster grid projection may permit individual adjustment for surface topology


Health Protection Agency
Thank you for your attention.

APPENDIX M

Presentation by Dr Marianne Thunell: Evaluation of Routines and Functionality of Mobile Decontamination Units in Sweden



EVALUATION OF ROUTINES AND FUNCTIONALITY OF MOBILE DECONTAMINATION UNITS IN SWEDEN

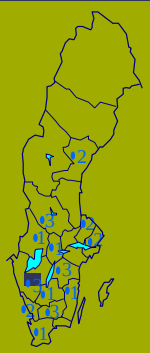
Marianne Thunéll[d]

Pascale Ribordy[a], Uno Dellgar[b], Åsa Ljungquist[c], Kristina Arnoldsson[d], Ola Nerf[e], Hans Ekåsen[e], Ola Claesson[d]

[a] Stockholm's Prehospital Centre
[b] UDR Consulting
[c] National Board of Health and Welfare
[d] FOI CBRN-Defense and Security
[e] Swedish Rescue Services Agency

Mobile decontamination units in Sweden

- 25 units
- 3 models



Cargo - Trailer and 2 side-tents

Walking persons and stretchers

Frenatus - Midi/Airshower decontamination tent

2 m x 2 m

Walking persons or stretchers

SEDAB - decontamination tent

Walking persons and stretchers

Main issues addresed

- Capacity
- Decon time
- Air and water temperatures
- Concentrations of chemicals in the decontamination area
- Concentrations of chemicals evaporating from the test-persons after decontamination
- Concentrations of chemicals in the decontamination units after the decon
- Wind
- Function of the decon unit
- What did the test persons and personnel think of the decon

Tests - Substances

- Purasolve® ethyl lactate (PEL) (water soluble)
- Methyl salicylate (MES) (limited water solubility)
- Water

Tests - Test-persons

- Up to 15 per trial:
  - 10 walking
  - 5 on stretchers
- Information to test persons
  - The health care need the possibility to decon victims of chemical accidents
  - Earlier trials
  - Purpose of this trial
  - How the trial is performed

Tests - Decontamination procedure

- Personnel in PPE performed decontamination inside the units

Decontamination procedure

- **Undressing**
- **Showering** (water and soap x 2)
- **Drying** with a towel
- **Persons leave** the unit enwrapped in a blanket

Sampling procedure

- Sampling of air inside the decon unit
- Sampling of evaporated PEL and MES
  - from the test-persons
  - from used towels
  - from clean blankets
- Sampling in units after finished decon

Results

- Decon time
  - Walking - 9 min (5 min decon)
  - Stretcher - 12 min (7 min decon)
- Capacity
  - Cargo -12-14 walking and 4-5 stretchers per hour
  - Midi/airshower - 6-7 walking and 5 stretchers per hour
  - Sedab – 12-14 walking and 8-9 stretchers per hour
- Air and water temperatures
  - Air - winter 18-30ºC (with reinforcement)/summer 12-22ºC
  - Water - winter 28-35ºC (27-45ºC) /summer 12-22ºC

Results

- Concentrations of chemicals in the decontamination areas

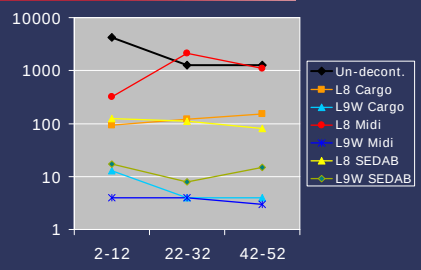
Concentrations of PEL and MES at the decontamination areas

	PEL (ug/m³)			MES (ug/m³)		
	Average	Min	Max	Average	Min	Max
Winter						
Cargo trailer-tent	**3 851**	818	10 487	**1 407**	666	3 775
Midi/Airshower	**1 200**	70	2 201	**99**	21	199
SEDAB tent	**3 006**	36	5 706	**879**	66	2 849
Summer						
Cargo trailer-tent	**5 657**	2 633	11 399	**548**	142	1 794
Midi/Airshower	**7 451**	1 133	22 996	**750**	176	2 179
SEDAB tent	**1 500**	74	7 976	**427**	54	2 091

Results

- Concentrations of chemicals in the decontamination area
- Concentrations of chemicals evaporating from the test-persons after decontamination

Evaporation of PEL from test-persons inside the sampling chambers



Results

- Concentrations of chemicals in the decontamination area
- Concentrations of chemicals evaporating from the test-persons after decontamination
- Concentrations of chemicals in the decontamination units after the decon
  - After 15 hrs
    - PEL 10-200 µg/m³ (aver. 20 µg/m³)
    - MeS 10-50 µg/m³
- Wind
- Function of the decon unit
- What did the test persons and personnel think of the decon

Conclusions

- Concentrations of the chemicals varies for all trials and for all units. Probably due to parameters that were not controlled during the trials. Entrances and exits, turbulence within the units, temperature differences, inside/outside and within the units, different "flow" of persons.
- The "right" wind direction is not enough to keep the drying area clean.
- Clean, not used blankets become contaminated in the drying zone.
- The concentration of chemicals within the units were, part of the time, so high that the corresponding limit values for short term stay without respiratory protection was exceeded for most industrial chemicals.

Conclusions

- Contaminated persons are cleaner after the decon ☺
  - Though the remaining amounts evaporating from the persons after decon could in many cases give high concentrations with small closed spaces, i.e. ambulances or rooms at the hospital. In many cases risk limits are exceeded for corresponding chemicals.
- Persons decontaminated with maximum flow through the units show worse results.
- Clean persons going through decon show measurable amounts during evaporation sampling.
- Measuring on towels give no extra information.

Conclusions

All 3 mobile decontamination units had problems and deficiencies:

- High concentrations in the air during decontamination – risk for secondary exposure
- Units are fragile and vulnerable
- Units require maintenance and technical upgrading

Personnel:

- Well informed, educated and trained personnel in PPE
- Routines must be simple and easy to follow

APPENDIX N

Presentation by Prof Louise Lemyre: PriMer, Psychosocial Risk Manager: A Training Tool on the Psychosocial Dimensions of CBRN Events and Threats

GAPSanté
Groupe d'Analyse Psychosociale, uOttawa

PRiMer, Psychosocial Risk Manager:

A Training Tool on the Psychosocial Dimensions of CBRNE Events and Threats

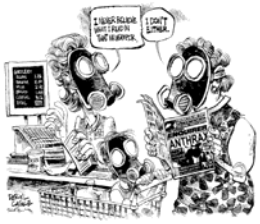
Louise Lemyre, Ph.D., FRSC
Professor of Social Psychology
McLaughlin Research Chair on Psychosocial Risk
Institute for Population Health, University of Ottawa
Canada

ORCHIDS Workshop, Grenoble, July 2009

Psychosocial matters!

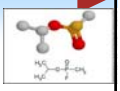
But what does psychosocial mean?

- Descriptive term for all human processes involving psychological and social components.
- Relates to the way we think, feel and behave.
- *Psychosocial* applies to both individual and collective processes;
- Applies to victims, public, workers & decision-makers



Examples of psychosocial considerations

Sarin in Tokyo (1995)
- 12 deaths, 17 severely injured
- 9000 "psychological casualties" overflowing hospitals



Giona , Brazil (Radioactive Garbage)
- 8 deaths
- 250 Exposed
- 200.000 Tested for Non-contamination Certificates

Mad Cow (Prion), Canada (2003)
- 1 sick cow in Canada
- 0 Canadian death
- Closure of borders to trade
- Billions of dollars, distress in farmers, loss of farming capacity

Challenges in Managing Public Responses to Mass Decontamination

1. Planning for population fear, compliance, community capacity and resilience
2. Maintaining public trust and confidence
3. Providing psychosocial training for responders and decision-makers
4. Establishing inter-organizational decision-making and coordination

Our empirical work:

- National Surveys (N=1500)
  - * Manova analysis
    - Social Environment >:Physical Environment
  - * Significative differences Genders, Educ, Region
  - * Significative interaction: Gender X Factor X Target
  - * R (perceived risk)= Severity + Uncertainty + Control
  - * R (worry) = Perceived Coping Efficacy
  - * Best Model: Cognitive + Affective
- Focus groups with citizens across Canada
  - Different views depending if under personal control
  - Expect regulation if uncontrollable
  - People focus more on the consequences than the hazard

Results Summary (excerpts)

Data from national consultations:

- To Public:
  - Bio Hazards = Radionuc > Chemical = Explosives
  - Psychosocial > mortality
  - Low p(hazard), Hi p(Impact)
  - Tier3(Societal) effects >Tier2(Services)>Tier1(Damage)
- To Responders:
  - Responders have different S-O-Ps
  - Inter-jurisdictional conflict and operability
- To Policy-Makers
  - Decision-making under uncertainty
  - Media relations

Perception of Risk

-non-linear

-overestimate small risks

-underestimate high risks

-fear ≠ 1/security

- biotic (biological) ≠ inert (chemical)

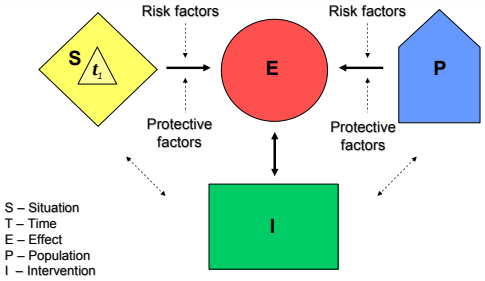
- Dread, Familiarity, Beliefs

Strenght of Rehearsed Behaviors, Perceived Coping Efficacy

The Ripple Effects

Intervention in Context

Psychosocial Risk Assessment & Management Framework (P-RAM)

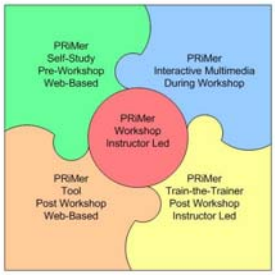


PRiMer Goal

…from hazard driven assessment to population driven management…

"Prime" the responder community with the knowledge and skills to increase its ability to prepare and respond with appropriate psychosocial considerations and enhance community resilience and coping capacity.

PRiMer Components



PRiMer Content & Tools

5 Psychosocial Considerations

- Perceptions Matter
- Routines Predict Behaviour
- People Act in Purposeful and Adaptive Ways
- People Are Differentially Affected
- People Want to Connect and Help

3 Planning Principles

- Anticipate
- Communicate
- Coordinate

3 Tools (in preparation)

- Web-based Self Study Guide
- One-Day Workshop
- GIS Decision Support Tool

PRiMer
Psychosocial Risk Manager

Web-based Self Study Guide

One-Day Workshop

GAPVILLE

A focus on:

- 3 Planning Principles
  - Anticipate
  - Communicate
  - Coordinate
- Case studies
- Simulation exercises
- Group activities
- Intro to psychosocial *Decision Support Tool*

GIS Decision Support Tool

- Geographic Information Software (GIS) will allow planners to access a map of their community through Google Maps
- Legend provides planners with various symbols that can be used to plot organizations, communication points, and other resources

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uOttawa

CRTI-IRTC

Partners

- Institute of Population Health, University of Ottawa
- Public Health Agency of Canada (PHAC)
- DRDC Centre for Security Science (21 federal departments/agencies)
- Under the CRTI Program (CBRNE Research & Technology Initiative)

Demo

GAPSanté
Groupe d'Analyse Psychosociale, uOttawa

Louise Lemyre, Ph.D., FRSC
School of Psychology, Faculty of Social Sciences
Director of 'Groupe d'Analyse Psychosociale de la santé', GAP-Santé
McLaughlin Research Chair on Psychosocial Aspects of Risk and Health
Institute of Population Health, University of Ottawa
louise.lemyre@uOttawa.ca

www.gapsante.uOttawa.ca

APPENDIX O

Presentation by Colonel Frederic Dorandeu: CBRN Training WG/WT4

CBRN Training WG / WT4

(NTG/JSSG)

Forsvarets Sundhedstjeneste

Exercise Clean Care 2009

August 31 – September 4

POC :
MJ/MD Klaus B. Braun
Danish Armed Forces Medical Services
E-mail: olg-braun@mil.dk
Phone: +45 2267 8018
Fax: +45 7228 5200

Forsvarets Sundhedstjeneste

Forsvarets Sundhedstjeneste

Exercise Clean Care 2009

The exercise will be conducted with the Barracks of Skive as base and the rest of the plan unchanged.

Exercise plan:

- Monday: Arrival and making ready.
-Tuesday: Static display.
- Wednesday: Exercise in a educational pace.
Thursday: Exercise on a tactical base.
Friday: Maintenance and home run.

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Exercise Clean Care 2009

Plan for observers:

Monday:
Welcome and briefings on the focus areas:
-Triage, search and rescue.
-Treatment before DECON.
- DECON on wounds.
Guest speaker: John Graham, USAMRICD.
Tuesday:
Static display and splitting up into groups, planning observations.
Wednesday:
Observing exercise and evaluating.
Thursday:
Observing exercise and evaluating.
Friday:
Briefings, evaluations and inputs to report.

A planning meeting for the team leaders was held on Friday the 15th.

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Exercise Clean Care 2009

Participation:

Austria: DECON Team with medical first aid.
Approx. 25 people.

The Nederlands: Casualty DECON Facility (CDF) and a Role 1 Medical Treatment Facility (MTF) under COLPRO.
Approx. 30 people.

USA: US Army Europe Emergency Management Assessment Team.
APPROX. 16 people.

Great Brittan: Ambulance HART, with Incident Response Unit and Urban Search and Rescue
APPROX. 20 people.

Denmark: DECON from Danish Civilian Protection Corpse.
APPROX. 25 people.

By this all aspects of a CBRN MASCALL is covered!

Forsvarets Sundhedstjeneste

Exercise Clean Care 2009

Way ahead:

Upcoming weeks: Convening orders will be sent out to the Participants and the Observers.

In the convening order for the Observers will be a call for briefings on issues related to handling of CBRN MASCALL.

Especially on the 3 main focus areas:

- **-Triage, search and rescue.**
- **-Treatment before DECON.**
- **- DECON on wounds.**

All practical preparations to be done.

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