

ON THE REQUIREMENTS TO ESTABLISH A EUROPEAN RADIOLOGICAL PREPAREDNESS FOR MALICIOUS AIRBORNE DISPERSION SCENARIOS

ANDERSSON, K.G.¹; ASTRUP, P.¹; ROOS, P.¹; MIKKELSEN, T.¹; HOE, S.C.²; JACOBSEN, L.H.³; SCHOU-JENSEN, L.³; PEHRSSON, J.³ & NIELSEN, S.P.¹

¹ Risø National Laboratory for Sustainable Energy, Technical University of Denmark, P.O. Box 49, DK-4000 Roskilde, Denmark, kasper.andersson@risoe.dk.

² Danish Emergency Management Agency, Datavej 16, DK-3460 Birkerød, Denmark

³ Prolog Development Center, HJ Holst Vej 3C-5C, DK-2605 Brøndby, Denmark

Current European capabilities to effectively address emergency situations resulting from terror attacks involving atmospheric dispersion of radioactive matter are generally very modest. A radiological dispersion device such as a 'dirty bomb' can lead to contamination of much of a large city over a period of minutes, and to avoid long lasting mass disruption and infrastructural breakdown with immense repercussions, it is essential to have an operational preparedness with reliable supportive tools available from the very start. In national European emergency plans, where available for such incidents, there is a tendency to focus on the very early phase, where people may become injured by the blast. However, the complex and potentially highly time-consuming tasks of cleaning a large city area, which may have been contaminated by a single radionuclide that is difficult to detect and map (e.g., a pure alpha emitter), are rarely seen to have been given much thought. Here decision support systems enabling a prognostic overview of the contamination and its consequences on the basis of available observations can play a particularly important role. The ARGOS and RODOS decision support systems have been developed to facilitate effective European emergency management and are used by authorities and their advisors in most European countries. Unlike other common systems on the market (some of which must be considered obsolete in view of the state-of-the-art knowledge), these are targeted to reflect European conditions and can readily be modified as needed. However, these systems were developed for decision support in connection with accidental releases from nuclear installations, and can for a number of reasons not in their present form be applied for terror-related scenarios like 'dirty bombs'. This presentation gives a systematic overview of the shortcomings, including examples of estimates of the magnitude of errors that would occur by using the current European systems in a 'dirty bomb' emergency. Further, a status is given on the ongoing work to equip ARGOS to address terror scenarios. Also the new European handbook for assisting in the management of radiologically contaminated inhabited areas, which is being integrated in the preparedness in many European countries, urgently needs supplementary information to make it applicable for terror scenarios, and also these needs are pinpointed in the presentation. It should be stressed that there is a huge and important task in developing public communication and collaboration strategies. It is here a problem that relevant best-selling books are to a great extent written by non-experts, and often give rise to misunderstandings and myths, for instance by confusing terms and suggesting useless countermeasures. Also a number of other non-radiological issues are discussed in the presentation in relation to malicious airborne radionuclide dispersion.