2012 The InterAgency Board (IAB)

R&D Priority List Descriptions

This R&D survey was vetted through the IAB membership. The research and development items were assessed based on the following criteria: urgent need, life safety, mission performance, incident management, compatibility or interoperability, use by multiple responder disciplines, and use in day-to-day operations as well as major incidents.

To learn more about the IAB and the surveys, please visit www.iab.gov.

1.	**Emergency Responder Body Worn Integrated Electronics System Development**	A body worn electronics system integrating enhanced communications capabilities, locations and tracking capabilities, situational awareness and environmental sensing capabilities, physiological status monitoring capabilities, and respiratory protective equipment status.
2.	**Enhance Communications in Environments that Interfere with Radio Transmissions**	Portable network extension of current radio capabilities into areas where coverage is prohibited by environment/terrain (e.g. tunnels, canyons, large structures, ships etc.).
3.	**3-D Tracking of Personnel**	Technology development for tracking operating personnel in a 3-D environment. The research and development of 3-D tracking systems needs to continue until these systems are fielded.
4.	**Hands-Free Radio Intercom**	Portable radio/accessory combination that allows for hands-free, intercom style communications via portable radios amongst a small group of persons in close proximity to each other (≤30'), simultaneous ability to listen to a command channel, and the ability to talk on the command channel when keying a microphone.
5.	**Handheld Standoff Chemical and Explosive Identifier**	Instrument capable of detecting and identifying chemical substances (e.g. CWAs and TICs) and explosives from outside of exposure or contamination zone, at standoff distances. This item must be intrinsically safe, able to withstand temperature and humidity changes, and must be ruggedized for field use.
6.	**Noise-Filtering Digital Speaker/Microphone for SCBA Facepiece**	Digital radio needs to clearly transmit spoken audio while a responder is wearing an SCBA facepiece. The breathing sounds from the SCBA and any other competing background noise need to be eliminated from the radio's transmission.
7.	**Detection of Airborne Hazards at Fire Scenes**	More research into advanced technologies for real time evaluation of airborne hazards at fire scenes. This technology must evaluate both gases and vapors which present with acute exposure hazards and well as chronic hazards posed by vapors, gases and airborne particulates.
8.	**Rapid System(s) to Decontaminate Vehicle Interiors**	Limited research indicates that current infection control and disinfection procedures for ambulance interiors may be ineffective, and are personnel and material extensive. Ambulance resources (crews and equipment) are key components of medical surge capacity. This requirement is essential for protection against contagious and infectious pathogens (capable of a pandemic spread).
9.	**Vehicle-Borne Improvised Explosive Device (VBIED) Render Safe Tool**	A method for and equipment that will effectively and quickly enter/examine/diagnose/render safe a potential vehicle borne improvised explosive device (VBIED).
10.	**APR and PAPR Applicability in the Post Fire Environment**	Investigate the potential feasibility to use existing industrial or CBRN APR and/or PAPR technologies for personal protection during the overhaul, origin, cause, investigation, and recovery phases of structure fire operations.
11.	**Incident Management Accountability System**	An accountability card that holds a radio frequency chip and relays that information to command automatically when you show up on scene.

12.	**Equipment/Procedures for Interim Field Decon of Firefighting Personnel and Equipment After Structure Fire Fighting**	Quantify the need for field expedient decontamination of firefighter PPE and personnel after structure firefighting operations. If data supports the need, then develop equipment, process, and procedures that can be used to facilitate these activities.
13.	**Device for Standoff Casualty Triage**	A portable device that provides the capability for stand-off casualty triage that is needed and that locates patients that are still viable.
14.	**Guide for Increasing Patient Transport Capability**	Written guide on equipment, procedures, and standards for converting non-medical transportation assets to patient transport assets would help to improve the federal, state and local patient and victim transport capability. It should focus on commonly available ground transportation assets but consideration should also be given to including air transportation assets).
15.	**Unknown Substance Field Screening Skills Proficiency Evaluation Program**	Development of a standardized national proficiency evaluation program and the provision of said program to personnel who have assigned responsibilities to conduct presumptive unknown substance field screening so that personnel can demonstrate proficiency.
16.	**Radio and Battery Usage Rating Standardization**	Create and adopt a national standard set by the user community for the life span of radios and batteries.
17.	**Conops Analysis for Robotic Applications within the Fire Service**	R&D is needed to determine how existing and developing robotics technologies can be leveraged for use in the fire service. The first step is a Conops Analysis to determine possible robotics uses in the fire service; this analysis would be used to guide funding for development of fire service oriented robotics technologies.
18.	**Modeling, Simulation, & Gaming Software Evaluation Tool**	Software tool that users to search for a model, simulation, or simulator appropriate for their particular requirement and receive recommendations based on the criteria developed, the user's constraints, and ranking of relative importance of those criteria.
19.	**Proactive Training Resource (PTR) Initiative**	A compendium or electronic resource that "proactively" accepts all types of emergency response debriefings, identifies training strengths and challenges from those debriefs, generates an output matrix that identifies trend indicators, and allows users to be directed to a PTR for use in developing training improvement programs.
20.	**Equipment/Supply Guide for Relocating Special Needs Evacuees**	An equipment and supply guide for the transport and relocation of individuals in nursing homes, homecare, or with special medical needs, with emphases on safety, performance & planning standards, and sources for collaboration & reference.
21.	**Enhanced Decontamination Capability for Special Needs Victims**	Equipment to decontamination special-needs populations: bariatric, pediatric, service animals, etc.
22.	**Weapons Contamination/ Decontamination Study**	A comprehensive study needs to be conducted by researching weapon cleaning/decontamination policies at CBRIF, Military and weapon manufacturers on the effects of contamination and subsequent decontamination of weapons. A best practice guideline should then be created for the law enforcement agencies.