2014 IAB RESEARCH & DEVELOPMENT PRIORITY LIST

This R&D survey was vetted through the IAB membership. The research and development items were assessed based on the following criteria: mission performance, life safety of first responders and civilians, strengthening response systems, and anticipation of purchase by communities in need. To learn more about the IAB and survey, please visit *www.iab.gov*.

1.	ENHANCE COMMUNICATIONS IN HOSTILE ENVIRONMENTS	Portable network extension of current radio capabilities into areas where coverage is prohibited by environment/terrain (e.g., tunnels, canyons, large structures, ships etc.).
2.	3-D TRACKING OF PERSONNEL	Continue technology development for tracking operating personnel in a 3-D environment until these systems are fielded.
3.	HANDHELD STANDOFF CHEMICAL AND EXPLOSIVE IDENTIFIER	Instrument capable of detecting and identifying chemical substances (e.g. chemical warfare agent and toxic industrial chemical) 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.
4.	HANDS-FREE RADIO INTERCOM	Portable radio/accessory combination that allows for hands-free, intercom style communications via portable radios among a small groups in close proximity (≤30'), simultaneous ability to listen to and talk on command channel when keying a microphone.
5.	NOISE-FILTERING DIGITAL SPEAKER/MICROPHONE FOR SCBA FACEPIECE	Portable radio/accessory that allows for hands-free, intercom style communications between small groups located in close proximity (up to 1/16th of a mile) while being able to simultaneously monitor and transmit with a push-to-talk button on a priority channel or talk group.
6.	VEHICLE-BORNE IMPROVISED EXPLOSIVE DEVICE (VBIED) RENDER SAFE TOOL	Method for and equipment that will effectively and quickly enter/examine/diagnose/render safe a potential vehicle-borne improvised explosive device.
7.	HANDHELD FIELD DEPLOYED BIOLOGICAL DETECTION	Continue developing and deploying handheld bio detection equipment for first responders.
8.	IMPLEMENTATION OF UNMANNED AERIAL VEHICLES (UAVS)	Develop and implement UAVs for local law enforcement/fire departments, to include research and development of laws, policies, procedures, testing and selecting of appropriate technology, training, equipment maintenance, etc.
9.	IMPLEMENTATION OF PROTECTIVE BALLISTIC GEAR FOR FIRE AND MEDICAL RESPONDERS	Ballistic personal protective equipment for non-law enforcement first responders.
10.	SAMPLING KIT FOR CLOTHING/ EQUIPMENT CONTAMINATION IDENTIFICATION	Identify practical approaches to field sampling to allow for the identification and detection of contaminants and deem if items (e.g., body armor, radios, etc.) can be decontaminated for reuse.
11.	DEVELOP MODEL PROCEDURES AND/OR LESSONS LEARNED FROM FIRST RESPONDERS TO ATYPICAL EMERGENCIES	Identify lessons learned for the integration of police, fire, and EMS responses capabilities to complex emergencies.
12.	FIELD DETECTION/ANALYSIS DEVICES FOR FIRE VAPORS GASES AND PARTICULATES IN POST-FIRE OPERATIONS AND INVESTIGATIONS	Develop hand-held or "man portable" device for use by personnel exposed to dangerous carcinogens, toxic gases and particulates after fire is extinguished as well as command and support personnel exposed in area surrounding fire.
13.	DEVICE FOR STANDOFF CASUALTY TRIAGE	Develop portable device that provides the capability for stand-off casualty triage that is needed and locates patients that are still viable.

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14.	VIRTUAL REALITY TRAINING SIMULATION	Develop device that allows first responders to train in a virtual environment.
15.	FEMALE BALLISTIC-RESISTANT BODY ARMOR RESEARCH AND TESTING	Test methods and performance requirements specific to body armor designed for female wearers.
16.	WEARABLE INTRINSICALLY SAFE MINIATURIZED MULTI-DETECTOR SENSOR	Platform that Transmits Multiple, wearable sensors that can be integrated into a single platform with wireless communication capability. Platform could be a vest with plug-and-play detector ports and a common power source and controlled via software wirelessly connected to a laptop in the support zone. Detectors should also provide visual and audio alarms to alert the wearer.
17.	PROACTIVE TRAINING RESOURCE (PTR) INITIATIVE	Compendium resource that accepts all types of emergency response reports (AAR, lessons learned, IPs, threats), identifies strengths and challenges, generates a PTR that identifies trends and facilitates targeted guidance, training or protocols.
18.	IMPROVED FILTERING FACEPIECE RESPIRATOR (FFR)	New generation form-fitting respiratory protective equipment for particulate materials, including biologicals, exposures. Re-evaluate current nomenclature to describe consistent protection and determine method for achieving improved face seal.
19.	SENSOR HUB TO INTEGRATE PERSONAL AREA NETWORKS (PAN) DEVICES WITH LAND MOBILE RADIOS (LMR) AND OTHER NETWORKS	Develop equipment and protocols to route Personal Area Network (PAN) data (e.g., location, physiologic status, voice) from multiple connected devices from different manufacturers.
20.	PROTECTIVE SHIELDS RESEARCH AND TESTING	Develop standard for protective shields to address ballistic threats and fragments/shrapnel from explosions. Protective shields need to be evaluated to a performance standard so responders have confidence that the shield will perform as expected, development of such standard will require research and testing.
21.	EQUIPMENT/SUPPLY GUIDE FOR RELOCATING SPECIAL NEEDS EVACUEES	Equipment and supply guide for the transport and relocation of individuals in nursing homes, homecare, or with special needs, with emphases on safety, performance & planning standards, and sources for collaboration and reference.
22.	IMPROVED MICROCLIMATE COOLING SYSTEM FOR DOWN RANGE USE	Revise person-worn cooling devise that maintains core body temperature at acceptable levels and addresses issues regarding perspiration collection.
23.	GUIDE FOR STRESS MANAGEMENT AFTER INCIDENTS	Validate current stress and incident management and mental health methods or techniques because current methods vary in their focus and effectiveness.
24.	SMART RESPONSE VEHICLES	Develop an intelligent emergency response system that uses a networked approach to enable emergency response vehicles to safely respond to emergencies while reducing response times.
25.	MODELING SIMULATION & SIMULATOR SOFTWARE EVALUATION TOOL	Develop software tool that will allow users to search for a model, simulation, or simulator appropriate for their particular operational and/or training requirements and receive recommendations based on the criteria developed, the user's constraints, and ranking of importance.
26.	EMERGENCY RESPONDER BODY WORN INTEGRATED ELECTRONICS SYSTEM	Develop body worn electronics system that integrates enhanced communication, locations and tracking, situational awareness and environmental sensing, physiological status and monitoring, and respiratory protective equipment status capabilities. This system would require the development of a PAN appropriate for emergency response operations.