Office of Law Enforcement Standards (OLES)

OLES: Developing Standards for Chemical, Biological, Radiological, Nuclear, Explosive Response Equipment
IAB

Develops & Maintains

STANDARD EQUIPMENT LIST (SEL)

Essential Items for responding to

Chemical Biological Radiological Nuclear Explosive

terrorist attacks
National Fire Protection Association

- 69,000 professional & 80 trade association members
- 100+ years of standards experience
- Members include largest group of First Responders
National Institute for Occupational Safety & Health

• Division of Centers for Disease Control & Prevention

• Among missions: public protection against airborne hazards

• Federal authority for approving respiratory protective devices
IAB STANDARD EQUIPMENT LIST
"Most commodity SubGroups have realized that all equipment that falls in the individual equipment categories will not provide suitable levels of field performance."

1999 IAP Annual Report
"The importance of this SubGroup cannot be overstated ... It is critical that compatibility issues of equipment are addressed now, through nationally recognized standards, before the advent of multi-agency, multi-jurisdictional WMD incidents."

1999 IAP Annual Report
"Standard requirements need to be developed to ensure adequate levels of performance by all domestic preparedness equipment."

1999 IAP Annual Report
Office of Law Enforcement Standards

Developing

• Performance Standards
• Test Methods & Procedures
• Technical Reports
• User Guides

since 1971
Office of Law Enforcement Standards

- Member, IAB Standards Coordination Committee

- IAB’s Executive Agent

- Arbiter, Coordinator & Administrator
Qualifications

• Technical Arm, NIJ’s Office of Science & Technology

• Working partner with Federal, state & local public safety organizations
Qualifications

• Produced 200+ standards, test methods, technical reports, and user guides

• History of effective team building
TECHNICAL CHALLENGES

• Existing standards are inadequate hybrids of industrial/military standards

• Terrorist CBRNE agents differ greatly from most industrial hazards

• Domestic terrorist situations differ significantly from battlefield situations
CBRNE Equipment Standards

TECHNICAL CHALLENGES

• Developing equipment contingent on identifying & quantifying exposures

• Systematic identification and measurement are lacking

• Some necessary detection technologies are unavailable
First Objective: Develop standards for CBRNE respiratory devices
CBRNE Equipment Standards

- Memorandum of Understanding signed by 4 federal partners
- Reapportioned funds
- Appointed project manager
National Institute for Occupational Safety & Health

- Assigned lead technical role
- Developing overall plan
- Gathering threat assessment data
- Quantifying threats
National Institute for Occupational Safety & Health

- Identifying applicable standards
- Developing final performance standards & test procedures
- Adapting certification program to accommodate CBRNE
U.S. Army Soldier Biological, Chemical Command (SBCCCOM)
U.S. Army Soldier Biological, Chemical Command (SBCCOM)

• Supports NIOSH’s efforts
• Completes world-class team
• Analyzes threat assessment data
• Identifies likely CBRNE agents & delivery systems
U.S. Army Soldier Biological, Chemical Command (SBCCOM)

- Assesses existing standards
- Performs vital laboratory research
- Develops key criteria & test methods
- Conducts warfare agent tests against standards
U.S. Army Soldier Biological, Chemical Command (SBCCOM)

- Publishes database in support of user guides
- Serves as independent testing laboratory
Office of Law Enforcement Standards

- OBJECTIVES
- MILESTONES
- TIMETABLES
NIOSH-SBCCCOM TEAM: 2001

- Specific hazard exposures
- Respiratory exposures
- Non-respiratory exposures, PPE, detection equipment
NIOSH

- Set CBRNE respirator certification standards
- Conducting discussions
- Analyzing current standards
- Determining greatest needs of First Responders
NIOSH

- Complete gas & organic vapor chemical laboratory
- Propose guidelines for selecting test subjects
- Establish approval policy for SCBA respirators
NIOSH

- Publish user guides
- Evaluate current analytical methods
- Develop sizing system
- Draft report on respiratory filter degradation
SBCCOM

• Define sensitivity of chemical agent detectors

• Assess available detection technologies

• Develop ranking matrix

• Review test methods for detectors and non-respiratory PPE
SBCCOM

- Support development of standards for chemical agent detectors & PPE
- Support development of user guides
- Recommend test requirements
- Begin validating test methods
IAB

- Accepted early results of respiratory standards effort
- Accepted strategy for standards development
- Will apply strategy, if successful, to all CBRNE equipment standards efforts
Office of Law Enforcement Standards

USER GUIDE SERIES

- Existing CBRNE Equipment
- Five Volumes
- Print & CD-ROM
- Covers PPE, detection, decontamination, and communications
### 3.3.3 High Performance Liquid Chromatography (HPLC)

High performance liquid chromatography is most useful in the detection and identification of large and small biological and chemical agents in both liquid and gaseous form. The detection and identification of both chemical and biological agents with high performance liquid chromatography is so unobtrusive that do not require any special equipment or training. The system also incorporates high performance liquid chromatography instruments that can be configured in a variety of ways to fit specific needs. Examples include Shimadzu, Varian, and others, and is shown in Figures 3-15, 3-16, 3-17, and 3-18. As with GCs, HPLC instruments can be equipped with a variety of detectors such as ultraviolet–visible (uV-Vis) spectrometers, mass spectrometers, fluorescence, and other detectors. Two limitations to the fielding of HPLCs are requirements (120V house current) and high purity solvents.

![Image of HPLC System](image-url)

**Figure 3-15. Hewlett Packard HP1000 HPLC System**

![Image of HPLC System](image-url)

**Figure 3-17. Shimadzu LC-10 HPLC System**

![Image of HPLC System](image-url)

**Figure 3-18. Varian ProStar Analytical HPLC System**

### Table 5-3. Handheld Portable Detection Equipment (CA) May 2000

<table>
<thead>
<tr>
<th>Detector Name</th>
<th>Chemical Agent Detected</th>
<th>Time Detected</th>
<th>Sensitivity</th>
<th>Resistance to Interference</th>
<th>Response Time</th>
<th>Start-Up Time</th>
<th>Detection Rates</th>
<th>Alarm Capability</th>
<th>Portability</th>
<th>Battery Needs</th>
<th>Power Capabilities</th>
<th>Environmental Durability</th>
<th>Unit Cost</th>
<th>Operator Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>MiniRae 2000</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>PGC Chemical Agent Detector</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>SA Passport II PID Detector</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Advanced Portable Detector (APD) 2000</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>IT INDIV Individual Chemical Agent Detector</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

**Figure 3-15. Hewlett Packard HP1000 HPLC System**

**Figure 3-17. Shimadzu LC-10 HPLC System**

**Figure 3-18. Varian ProStar Analytical HPLC System**
Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders

NIJ Guide 100-00

Volume I
June 2000
Office of Law Enforcement Standards

COMPUTER-BASED ASSESSMENT TOOL

- Three scenarios
- Probable agents & delivery systems
- Probable exposures
- Based on SBCCCOM models
ACHIEVEMENTS

Management Structure

World-Class Team

Development Strategy

First Responder Resources

Heightened Awareness