RESPONSE technologies corporation

COURSE INFORMATION SHEET

HAZARDOUS MATERIALS SAMPLING TECHNIQUES

COURSE TITLE:	**Hazardous Materials Sampling Techniques**	Course No. & Version:	**HAZ021 HAT002**
TOPIC AREA:	**Hazardous Materials**	LEVEL:	**Operations Mission Specific or Technician**
SOURCE:	**In-House**	Course No.	
PRIMARY DOMAIN:	☐ Didactic ☐ Psychomotor ☒ Combination		
DELIVERY METHOD:	30% Lecture 70% Hands-on % Distanced % Distance % Other:		
DURATION:	21 Hrs	SCHEDULING:	Three full days
PROGRAM GOAL:	During this program, the hazardous materials responder who has been previously trained to operate in appropriate personnel protective equipment will be presented with multiple exercises involving contained or dispersed unidentified substances. Using techniques presented in this class, participants will demonstrate the ability to consistently collect representative samples that can be used for advanced analysis or evidentiary purposes. This program is also intended to review various related topics found in the participants initial 160 hour IAFF HazMat Technician training program as indicated in the attached educational object statement.		
TARGET AUDIENCE:	Public safety professionals who are trained in hazardous material response at either the Operations Mission Specific or Technician level as defined by NFPA 472 and their employer's emergency response plan and who are responsible for hazardous materials sample collection.		
COURSE DESCRIPTION:	This is a three-day hands-on intensive program designed to provide the participant with information concerning the review of proper hazard risk assessment techniques, use of air monitoring devices, selection and use of PPE the proper collection of hazardous material samples in accordance with a nationally recognized 12 step process. The participants are instructed in the importance of proper sample collection, supplies and equipment, techniques and sampling plan development. Then, through application in multiple scenarios, they are given an opportunity to develop and execute a sampling plan.		
MAX STUDENTS:	20	MAX INST. RATIO:	7:1
STANDARDS MET:	29 CFR 190.1200 "Hazard Communications" 29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response" 46 CFR 172 NFPA 472 "Professional Competencies for Hazardous Materials Responders"		

APPROVALS

Organization	No. / Date	
FSFC	DS3250	Florida State Fire College approved

NOTES	Course HAZ021 and HAT002 are identical courses. HAT 002 is the course number assigned those persons enrolled in the Hazardous Materials Analytical Technician program.

Course Educational Objectives

- The participant shall identify the key physical and chemical characteristics of hazardous materials necessary to conduct a risk assessment. ***(Review IAFF 160 HMT Technician Modules 2 "Recognition and Identification" and 5 "Practical Chemistry")***

- Given situations and case studies in which the identity of a hazardous material or substance is not known, the participant shall identify the characteristics that should be evaluated in order to develop an initial hazard and risk assessment. ***(Review IAFF 160 HMT Modules Unit 2 "Recognition & Identification" and 6 "Detection Devices")***

- Using a the hazard/risk assessment job aid and, given case studies and simulations involving potentially illicit activities and un-identified hazardous materials, predict the likely fire, reactivity, toxicity and radioactivity risks associated with the product within 5 minutes. ***(Review IAFF 160 HMT Module 5 "Practical Chemistry")***

- Based upon hazards and risks, select appropriate levels of personal protections based upon NFPA 1991, 1992 and 1994 personal protective equipment standards. ***(Review IAFF 160 HMT Module 7 "Personal Protective Equipment")***

- Identify the proper sequence of air monitoring during initial entry and sampling mission entries involving identified and un-identified potentially hazardous materials. ***(Review IAFF 160 HMT Module 7 "Detection Devices")***

- The participant will identify the importance of proper sampling plan development and implementation.
  - Given case studies identify the importance of proper sampling.
  - Identify the legal implications of proper sampling
  - Describe the difference between public safety sampling as opposed to sampling for evidentiary purposes.
  - Identify the technician's sequence of events for carrying out the sampling mission.
  - Identify the necessary components for an effective sampling plan. ***(FBI 12 step sampling process)***

- Given multiple scenarios, analyze site and recon data and determine <u>appropriate</u> sampling points for obtaining representative sample(s).
  - Define "representative sample", "Points or Targets".
  - Identify what data elements are helpful in identifying sample target.
  - Based upon physical state of the target of the material and its form of containment, identify appropriate sampling points
  - Based upon the situation (e.g. clan drug lab, explosives, hazmat accidental release), identify how the situation may influence the sample points.
  - Develop a means to effectively communicate and document identified sample targets. ***(Review IAFF 160 HMT Module 5 "Practical Chemistry")***

- Given the appropriate sample target, the participant will identify, select, and prepare the necessary sampling equipment and media to be used.
  - Air Monitoring Instrumentation
  - Define clean, certified clean, and sterile
  - Define the various types of buffer solution
  - Identify considerations for interpretation or application of initial screening procedures.
  - Demonstrate the proper use of supplies and equipment used to take solid, liquid and gas/vapor samples.

- Given a sampling plan the participant will safely and effectively make entry and complete the sampling mission.
  - Based upon the PPE recommendations of the site specific safety plan the participant will select and donn the appropriate PPE required for the sampling mission.
  - Identify the key elements and procedures related to conducting an operational briefing.
  - Participate in operational briefing.
  - As a member of the sampling team demonstrate the ability to operate in the isolation area and collect representative sample(s) in accordance of the sampling plan.
  - Demonstrate the ability to properly process the sample through appropriate decontamination procedures and properly transfer control to the Science Group ***(Review IAFF 160 HMT Modules 7 "Personal Protective Equipment", 8 "Decontmination" & 10 "Incident Management)***

- Demonstrate the ability to properly conduct incident termination procedures.
  - Packaging to meet DOT specifications as necessary.

  (Review IAFF 160 HMT Module 10 "Incident Management)

Day 1

0830 – Welcome and Registration
- Introductions
- Role of Sampling
- Small Group Activity – "Results of Improper Sampling"
- Risk Assessment
  - Review of Physical and Chemical Properties
  - Rapid Risk Assessment Procedures
- Activity – Chemical Risk Assessments

1200 – 1300 Lunch
- Illicit Situation Recognition & Considerations
  - Energetic materials and HME's
  - Biological labs
  - Drug lab types and characteristics
  - Threat materials
- Activity – Case Studies

Day 2

0830 – Class Start
- Activity – Situation Risk Assessment
- Personal Protective Equipment
  - Review of protective capabilities
  - Applicable Standards
    - NFPA 1991, 1992 and 1994& NIJ LERL 1, 2, 3 & 4
- Air Monitoring Strategy
  - Review of detector capabilities & limitations
  - Procedures for Assessing IDLH Conditions

1200 – 1300 Lunch
- Overview of Sampling Tools
- Sampling Plan – The FBI 12 Step Process
  - Developing a sampling plan
- Activity – "Two Person Techniques"
- Activity – "Practice with Tools"
  - <u>Liquids</u>
    - Simple liquid in a mason jar
    - Liquid through a small neck container
    - Upper layer of a liquid
    - Lower layer of a liquid
  - <u>Solids</u>
    - Visible powder from a desktop
    - Screening a high risk envelope
    - Powder from a deep container
    - Solid from the bottom of a liquid

Day 3

0830 – Class Start

Scene Control and Incident Management
Pre-entry Briefing and Vitals
Develop a Pre-Entry Briefing Outline
Activity – “Developing a Sampling Plan”

Rotating Scenarios
- Scenario # 1
- Scenario # 2
- Scenario # 3

Debrief and clean-up
Final Written Exam
Course Review and Summary
Program Evaluation