Priority Action Report

Fire Debris and Explosives Subcommittee

Chemistry and Instrumental Analysis SAC

Vincent J. Desiderio

February 14, 2017

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

Fire Debris and Explosives

Subcommittee Leadership

Position	Name	Organization	Term	Email
Chair	Vincent Desiderio	US Postal Inspection Service	3 Years	vjdesiderio@uspis.gov
Vice Chair	Susan Hetzel	SEA Limited	4 Years	shetzel@sealimited.com
Executive Secretary	Brenda Christy	Virginia Department of Forensic Science	3 Years	brenda.christy@dfs.virginia.gov

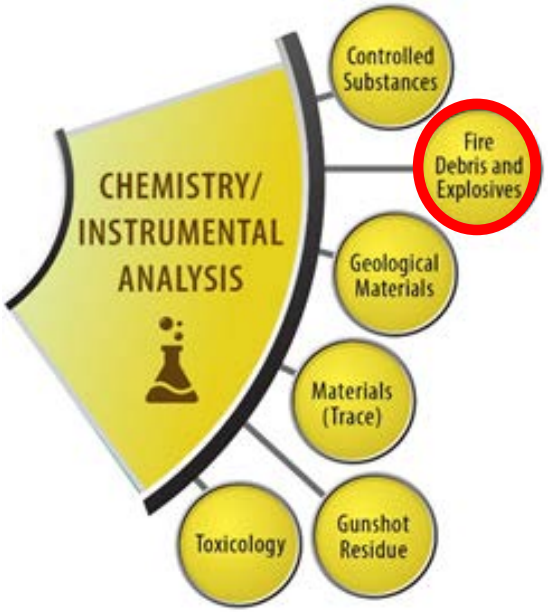
Subcommittee Members

#	Name	Organization	Email
1	Phillip Antoci	New York City Police Department	philip.antoci@nypd.org
2	Dr. Andrew T. Armstrong	Armstrong Forensic Laboratory	andrew@aflab.com
3	Marcela Brown	National Institute of Standards and Technology	marcela.najarro@nist.gov
4	Michelle Evans	Bureau of Alcohol, Tobacco, Firearms, and Explosives	michelle.r.evans@usdoj.gov
5	Dr. John Goodpaster	Indiana University Purdue University at Indianapolis	jvgoodpa@iupui.edu
6	Dr. Adam Hall	Northeastern University	a.hall@neu.edu
7	Christina Henry	Santa Clara County Crime Laboratory	CHenry@crimelab.sccgov.org
8	Dennis C. Hilliard	Rhode Island State Crime Laboratory	dch@uri.edu
9	Dr. Katherine Hutches	Bureau of Alcohol, Tobacco, Firearms, and Explosives	katherine.d.hutches@usdoj.gov
10	Douglas Klapec	Bureau of Alcohol, Tobacco, Firearms, and Explosives	doug.j.klapec@usdoj.gov
11	Wayne Moorehead	Pennsylvania State University	criminalistics@hotmail.com
12	Robert F. Mothershead II	Federal Bureau of Investigation	robert.mothershead@ic.fbi.gov
13	Reta Newman	Pinellas County Crime Laboratory	rtnewman@co.pinellas.fl.us
14	William A. Randle	Missouri State Highwau Patrol	will.randle@mshp.dps.mo.gov
15	Dr. Michael Sigman	University of Central Florida	michael.sigman@ucf.edu
16	Dr. Edward Sisco	National Institute of Standards and Technology	Edward.sisco@nist.gov
17	Lisa Windsor	Tucson Police Department Crime Lab	lisa.windsor@tucsonaz.gov

Affiliates

#	Name	Organization
1	Jamie Baerncopf	Bureau of Alcohol, Tobacco, Firearms, and Explosives
2	Matthew Beardah	UK-Defense Science and Technology Laboratory
3	Jesse Brown	Defense Forensic Science Center
4	Inge Corbin	Defense Forensic Science Center
5	Jeanet Hendrikse	Netherlands Forensic Institute
6	Judith L. Hoffman	Montana State Crime Laboratory
7	Raymond Kuk	Bureau of Alcohol, Tobacco, Firearms, and Explosives
8	Dr. Kimberly Kunkler	United States Postal Inspection Service
9	Eamonn McGee	Centre of Forensic Sciences
10	Natasha Neel	Bureau of Alcohol, Tobacco, Firearms, and Explosives
11	Dr. Jimmie C. Oxley	University of Rhode Island
12	Dr. Mark Sandercock	Royal Canadian Mounted Police
13	Mary Williams	University of Central Florida

Fire Debris and Explosives



The OSAC Subcommittee on Fire Debris and Explosives will focus on standards, guidelines, and resources related to the scientific examination and analysis of materials associated with fire and explosion investigations.

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Summary of Priority Projects

Priority	OSAC Process	Working Title of Document
HIGH	SDO	(SDO-8) Standard Guide for a Systematic Approach to the Analysis and Identification of Ignitable Liquids in Fire-Related Samples
HIGH	SDO	(SDO-9) Standard Guide for the Forensic Examination and Identification of Intact Explosives
HIGH	SDO	(SDO-6) Standard Practice for Quality Assurance of Laboratories Performing Analysis of Ignitable Liquids and Ignitable Liquid Residues
HIGH	SDO	(SDO-1) Standard Practice for Reporting Results and Opinions of Explosives Analysis
HIGH	SDO	(SDO-2) Standard Practice for Reporting Results and Opinions of Fire Debris Analysis

Summary of Priority Projects

Priority		Working Title of Document
MEDIUM	SDO	(SDO-13) Standard Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Active Headspace Concentration onto an Adsorbent Tube
MEDIUM	RA	(RA-2) ASTM E2451-13: Standard Practice for Preserving Ignitable Liquids and Ignitable Liquid Residue Extracts from Fire Debris Samples
MEDIUM	SDO	(SDO-3) Standard Terminology Relating to the Examination of Explosives
MEDIUM	SDO	(SDO-4) Standard Terminology Relating to the Examination of Fire Debris
MEDIUM	RA	(RA-1) ASTM E2881-13e: Standard Test Method for Extraction and Derivatization of Vegetable Oils and Fats from Fire Debris and Liquid Samples with Analysis by Gas Chromatography-Mass Spectrometry

Summary of Priority Projects

Priority	OSAC Process	Working Title of Document
MEDIUM	SDO	(SDO-10) ASTM E1388-12: Standard Practice for Sampling of Headspace Vapors from Fire Debris Samples
MEDIUM	SDO	(SDO-7) E1412-12: Standard Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration With Activated Charcoal
MEDIUM	RA	(RA-3) ASTM E1386-15: Standard Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Solvent Extraction
MEDIUM	SDO	(SDO-12) E1413-13: Standard Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Dynamic Headspace Concentration
MEDIUM	SDO	(SDO-11) E1618-14: Standard Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry

Summary of Priority Projects

Priority	OSAC Process	Working Title of Document
LOW	SDO	(SDO-14) Method Validation (New Document)
LOW	SDO	(SDO-5) Case file review (New Document- Passed to SAC)

Standards/Guidelines Development Priority 1 Document

Document Title:

(SDO-8) Standard Guide for a Systematic Approach to the Analysis and Identification of Ignitable Liquids in Fire-Related Samples

Scope:

This guide presents brief overviews of the techniques that are available for extracting/analyzing fire debris samples for the presence of ignitable liquids and provides guidance on the sequence in which analyses should proceed.

Objective/rationale:

The objective is to provide a standard guide for approaching the analysis of ignitable liquids/residues in fire related samples.

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Task Group Name: Document Development and Evaluation
Task Group Chair Name: Michelle Evans
Task Group Chair Contact Information: Michelle.R.Evans@usdoj.gov
Date of Last Task Group Meeting: January 11, 2017

Standards/Guidelines Development Priority 1 Document

Key Components of Standard:

- Provides guidance for a systematic approach to the analysis of fire debris with consideration to:
  - Evidence packaging, handling, and assessment/evaluation
  - Sample preparation
  - Instrumental analysis
  - Data interpretation and reporting
- Serves as a branching off point for more specific documents.

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Complete documents in task group and send out to full subcommittee for evaluation.	SDO-200	M. Evans	October 1, 2017

Standards/Guidelines Development Priority 2 Document

Document Title:

(SDO-9) Standard Guide for the Forensic Examination and Identification of Intact Explosives

Scope:

This guide presents brief overviews of the techniques that are available for analyzing intact explosive samples and provides guidance on the sequence in which analyses should proceed.

Objective/rationale:

The objective is to provide a standard guide for approaching the analysis of intact explosives.

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Task Group Name: Document Development and Evaluation
Task Group Chair Name: Michelle Evans
Task Group Chair Contact Information: Michelle.R.Evans@usdoj.gov
Date of Last Task Group Meeting: January 19, 2017

Standards/Guidelines Development Priority 2 Document

Key Components of Standard:

- Provides guidance for a systematic approach to the analysis of intact explosives with consideration to:
  - Evidence packaging, handling, and assessment/evaluation
  - Sample preparation
  - Instrumental analysis
- Serves as a branching off point for more specific documents.
- Provide guidance for what components must be present to identify specific types of explosives.

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Complete documents in task group and send out to full subcommittee for evaluation.	SDO-200	M. Evans	October 1, 2017

Standards/Guidelines Development Priority 3 Document

Document Title:

(SDO-6) Standard Practice for Quality Assurance of Laboratories Performing Analysis of Ignitable Liquids and Ignitable Liquid Residues

Scope:

This practice covers quality assurance issues in forensic laboratories performing forensic ignitable liquid/residue analysis including evidence handling, method validation, documentation, proficiency testing, audits, and health and safety.

Objective/rationale:

The objective is to provide a standard practice for establishing quality procedures in laboratories that perform fire debris analysis.

Task Group Name: QA/QC
Task Group Chair Name: Robert Mothershead
Task Group Chair Contact Information: Robert.Mothershead@ic.fbi.gov
Date of Last Task Group Meeting: January 20, 2017

Standards/Guidelines Development Priority 3 Document

Key Components of Standard:

- This document provides guidance for the elements that are necessary to ensure that quality work is being performed in the fire debris laboratory.
- Areas that are covered include:
  - Quality Management System Requirements
  - Personnel
  - Physical Plant Requirements
  - Evidence Handling Considerations
  - Analytical Procedures
  - Instrument/Equipment Performance
  - Handling of Records
  - Health and Safety Requirements

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Complete task group review and present to the subcommittee for review and approval.	SDO-100	R. Mothershead	April 21, 2017
Identify relevant SDO and assemble and submit packet.	SDO-200/SDO-300	R. Mothershead	July 31, 2017
Submit to C&IA SAC for review.	SDO-400	V. Desiderio	August 15, 2017

Standards/Guidelines Development Priority 4 Document

Document Title:

(SDO-1) Standard Practice for Reporting Results and Opinions of Explosives Analysis

Scope:

This practice:

1) Serves as a guide in report writing for the examination and analysis of intact explosives, post-blast explosive residues, and improvised explosive devices.

2) Applies to the writing of explosives reports, which are not normally written in a full formal scientific format, but rather in a condensed format.

3) Establishes key elements for the reporting of these results that are informational, understandable, and suitable for both criminal and civil litigation.

Objective/rationale:

To provide systematic guidance for the practice of reporting the results of explosives related laboratory examinations.

Task Group Name: Reports, Terminology, and Testimony
Task Group Chair Name: Dr. Katherine Hutches
Task Group Chair Contact Information: Katherine.D.Hutches@usdoj.gov
Date of Last Task Group Meeting: January 17, 2017

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Standards/Guidelines Development Priority 4 Document

Key Components of Standard:

- Provides guidance for report content and format
- Provides guidance for clearly reporting results
  - Provides report wording examples

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Complete revisions within task group and present to the subcommittee for evaluation.	SDO-200	K. Hutches	April 21, 2017

Standards/Guidelines Development Priority 5 Document

Document Title:

(SDO-2) Standard Practice for Reporting Results and Opinions of Fire Debris Analysis

Scope:

This practice:

1) Serves as a guide in report writing for the examination and analysis of fire debris and related evidence for the presence of ignitable liquids and ignitable liquid residues.

2) Applies to the writing of fire debris reports, which are not normally written in a full formal scientific format, but rather in a condensed format.

3) Establishes key elements for the reporting of these results that are informational, understandable, and suitable for both criminal and civil litigation.

Objective/rationale:

To provide systematic guidance for the practice of reporting the results of fire debris related laboratory examinations.

Task Group Name: Reports, Terminology, and Testimony
Task Group Chair Name: Dr. Katherine Hutches
Task Group Chair Contact Information: Katherine.D.Hutches@usdoj.gov
Date of Last Task Group Meeting: January 17, 2017

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Standards/Guidelines Development Priority 5 Document

Key Components of Standard:

- Provides guidance for report content and format
- Provides guidance for clearly reporting results
  - Provides report wording examples

Task Group/Subcommittee Action Plan

Planned Actions	OSAC Process Stage (e.g., SDO 100)	Assignee	Estimated Completion Date
Complete revisions within task group and present to the subcommittee for evaluation.	SDO-200	K. Hutches	April 21, 2017

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Research & Development Needs Identified

- https://www.nist.gov/topics/forensic-science/osac-research-development-needs
  - **Evaluation and Comparison of Different Adsorption/Elution Methodology**
  - **Determining the Threshold of Identification for Ignitable Liquids**
  - **Source Attribution for Ignitable Liquids from Fire Debris**
  - **General research in support of new standards**

Additional Items of Interest

- Reports, Interpretation, and Terminology Task Group
  - Developing Daubert resources for Fire Debris and Explosives analysis.
- Research and Training Task Group
  - Developing training resources for Fire Debris and Explosives analysis.
  - Working on a project that is looking at the various GC/MS methods used for Fire Debris Analysis
- Subcommittee Website
  - https://www.nist.gov/topics/forensic-science/fire-debris-and-explosives-subcommittee
- Notes on the Challenges that We Face

Priority Action Report

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