

NFPA® 1321

Standard for Fire Investigation Units

2025 Edition



NFPA, 1 Batterymarch Park, Quincy, MA 02169-7471
An International Codes and Standards Organization

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NFPA® 1321

Standard for

Fire Investigation Units

2025 Edition

This edition of NFPA 1321, *Standard for Fire Investigation Units*, was prepared by the Technical Committee on Fire Investigation Units and acted on by the NFPA membership during the 2024 NFPA Technical Meeting held June 20, 2024. It was issued by the Standards Council on July 17, 2024, with an effective date of August 5, 2024.

This edition of NFPA 1321 was approved as an American National Standard on August 5, 2024.

Origin and Development of NFPA 1321

NFPA 1321, *Standard for Fire Investigation Units*, 2024 edition, is the first NFPA document to address minimum requirements relating to the establishment, structure, operation, and management of fire investigation units (FIUs).

Initiated through a project request in September 2017, the Standards Council requested input on the proposed standard. Creation of the Technical Committee on Fire Investigation Units, which is the committee responsible for NFPA 1321, was approved at the December 2018 Standards Council meeting. This technical committee was charged with primary responsibility for standards relating to the development and composition of FIUs. This committee does not have responsibility for the development of standards relating to fire investigation techniques and methodologies or fire investigator professional qualifications.

The committee includes a balance of representatives from the fire service, insurance industry, subject matter textbook publishers, special experts, and stakeholders actively engaged in fire dynamics research.

The focus of this document is to improve the quality of the work products and operations of fire investigation units by specifying policy requirements for organizations, including management systems, resources, health and safety, and documentation and reports. In addition, the document specifies policy requirements for personnel education, training, and certification.

In 2009, the National Academy of Sciences (NAS) issued a report titled *Strengthening Forensic Science in the United States: A Path Forward*. The NAS report called for all forensic practitioners to be certified, to work in accredited organizations, and to follow standard methodology. This report resulted in a new interest in improving the quality of all the forensic science disciplines, including the investigation of fires and explosions. The formation of the Organization of Scientific Area Committees (OSAC) at the National Institute of Standards and Technology (NIST) was a concrete step that responded to this demand to develop and identify standards and guides that support professional quality investigations. The project request for a new standard and the eventual development of NFPA 1321 were a result of the identified need to improve the quality of work in fire investigation units and to establish a standard consistent with accepted industry standards and guidelines.

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This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for standards relating to the development and composition of Fire Investigation Units (FIU). This committee does not have responsibility for the development of standards relating to fire investigation techniques, methodologies, or fire investigator professional qualifications.

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Information on referenced and extracted publications can be found in Chapter 2 and Annex C.

Chapter 1 Administration

1.1 Scope.

1.1.1 This standard shall specify the minimum requirements relating to the establishment, structure, operation, and management of fire investigation units (FIUs).

1.1.2 In cases where an FIU has a parent organization such as a fire department and policies already exist that establish the minimum requirements outlined within this document, the FIU shall be considered as having those requirements as part of their unit.

1.1.3* This standard shall not provide requirements relating to fire investigation methodology.

1.1.4* This standard shall not provide requirements relating to professional qualifications of fire investigators.

1.2* Purpose. This standard shall define the minimum requirements necessary for the effective operation and management of FIUs and to provide high-quality fire and explosion investigations.

1.3 Application. This standard shall apply to all public and private FIUs.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1033, *Standard for Professional Qualifications for Fire Investigator*, 2022 edition.

2.3 Other Publications.

2.3.1 US Government Publications. US Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001, www.gpo.gov.

Title 45, Code of Federal Regulations, “Health Insurance Portability and Accountability Act (HIPAA),” 2016.

2.3.2 Other Publications.

Merriam-Webster’s Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2020.

2.4 References for Extracts in Mandatory Sections.

NFPA 921, *Guide for Fire and Explosion Investigations*, 2024 edition.

NFPA 1033, *Standard for Professional Qualifications for Fire Investigator*, 2022 edition.

NFPA 1550, *Standard for Emergency Responder Health and Safety*, 2024 edition.

Chapter 3 Definitions

3.1 General.

3.1.1 The definitions contained in this chapter shall apply to the terms used in this standard.

3.1.2 Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used.

3.1.3 *Merriam-Webster’s Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.2.5 Standard. An NFPA standard, the main text of which contains only mandatory provisions using the word “shall” to

indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA manuals of style. When used in a generic sense, such as in the phrases “standards development process” or “standards development activities,” the term “standards” includes all NFPA standards, including codes, standards, recommended practices, and guides.

3.3 General Definitions.

3.3.1 Administrative Review. An examination typically carried out within an organization to ensure that the investigator’s work product meets the organization’s quality assurance requirements.

3.3.2* Audit. A systematic, independent, documented process for obtaining records, statements of fact, or other relevant information and assessing them objectively to determine the extent to which specified requirements are fulfilled.

3.3.3 Conflict of Interest. A conflict between the private interests and official responsibilities of a person in a position of trust.

3.3.4 Cross-Contamination Control Program (CCCP). Policies and procedures to prevent contamination of work areas, vehicles, evidence, or personnel.

3.3.5* Ethical Principles. Beliefs or values that when followed, promote values such as trust, professionalism, and objectivity.

3.3.6 Fire Investigation. The process of determining the origin, cause, and development of a fire or explosion. [921, 2024]

3.3.7 Fire Investigation Unit (FIU). A group or office of a public or private sector agency or entity that consists of two or more investigators with the responsibility for fire or explosion investigation.

3.3.8 Fire Investigator. An individual who has demonstrated the skills and knowledge necessary to conduct, coordinate, and complete a fire investigation. [1033, 2022]

3.3.9* Mission Statement. A written declaration of the FIU’s core purpose and focus that normally remains unchanged over time.

3.3.10 Professional Development. A process that improves and increases the capabilities of personnel operating within an FIU through access to educational opportunities and practical training both inside and outside the workplace.

3.3.11* Quality Manual. A document that details an organization’s quality management system (QMS).

3.3.12 Records Management System (RMS). A set of activities required for systematically controlling the creation, distribution, use, maintenance, and disposition of recorded information maintained as evidence of business activities and transactions.

3.3.13* Report. The act of providing an account of facts, observations, and/or opinions relating to past events or the acts of an organization or its individuals.

3.3.14 Scope of Work. A written declaration that describes the division of work to be performed, which is typically broken out into specific tasks.

3.3.15 Standard Operating Guidelines (SOGs). A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely, which can be varied due to operational need in the performance of designated operations or actions. [1550, 2024]

3.3.16 Standard Operating Procedures (SOPs). A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely for the performance of designated operations or actions. [1550, 2024]

3.3.17 Technical Review. An examination of work product to assess the quality of the investigation, whether its conclusions and opinions were reached through the use of an appropriate methodology and supported by the data, and whether it is within the constraints of validated scientific knowledge.

Chapter 4 Management System Requirements

4.1 General.

4.1.1 The fire investigation unit (FIU) shall establish, implement, and maintain a management system appropriate to the scope of its activities.

4.1.2 The FIU shall document its policies, systems, programs, procedures, guidelines, and instructions to the extent necessary to assure the quality of fire investigations.

4.1.3 The system’s documentation shall be communicated to, understood by, available to, and implemented by appropriate personnel.

4.1.4 The FIU shall perform and document a management review annually that assesses performance against all requirements of the standard.

4.1.5 The FIU shall have written policies and procedures for all personnel, administration, management, records retention, and standardized practices and methods utilized by the unit.

4.2 Organization Systems.

4.2.1 Administrative Requirements.

4.2.1.1 Organizational Structure.

4.2.1.1.1 Written policies that establish the legal basis for the operation of the fire investigation unit (FIU) and compliance with applicable federal, state, and local law shall be maintained by the AHJ.

4.2.1.1.2 The FIU shall maintain an organizational chain of supervision and accountability outlined in written or graphic form.

4.2.1.2 Mission Statement or Scope of Work.

4.2.1.2.1* The FIU shall have written protocols detailing services the unit will provide.

4.2.1.2.2 The FIU shall document their commitment to allocate personnel, support, and resources to uphold the mission statement or scope of work.

4.2.1.3* Ethical Principles.

4.2.1.3.1 The FIU shall have policies addressing integrity, accountability, independence and impartiality, respect, commitment, and conduct.

4.2.1.3.2 The FIU shall have policies regarding conflicts of interest and management of identified conflicts.

4.2.1.3.3 The FIU shall have policies and procedures identifying the management of information obtained or created through investigation activities to ensure the information is retained securely and only released in accordance with existing policies and procedures or legal mandates.

4.2.1.3.4 The FIU shall have written policies identifying the procedures for the handling of complaints, to include receiving, recording, evaluating, validating, and resolving the complaint.

4.2.2 Policies and Procedures.

4.2.2.1 The FIU shall have written policies and procedures for personnel, administration, management, records retention, and standardized practices and methods utilized by the unit.

4.2.2.2 Each policy or procedure shall include instructions for the safe performance of tasks, documentation, analysis, interpretation, and reporting.

4.3 Process Systems.

4.3.1 Personnel Management.

4.3.1.1 The FIU shall have policies and procedures for the hiring and placement of personnel to operate in accordance with their defined mission or scope of work.

4.3.1.2 The FIU shall maintain written job descriptions.

4.3.1.3* The FIU or parent organization shall have policies for performance evaluations, supervision, discipline, discrimination and harassment, continuing education, maintenance of personnel records, document control, and periodic reviews.

4.3.1.4

4.3.1.4.1 The FIU shall have a written policy detailing the physical performance and medical screening required to identify individuals as fit for duty at predefined intervals.

4.3.1.4.2 The FIU shall have policies in place to account for the recurrent safety awareness training of employees.

4.3.1.4.3 The FIU shall have documented procedures for the maintenance of employee health records in accordance with the Health Insurance Portability and Accountability Act (HIPAA).

4.3.1.5

4.3.1.5.1 The FIU shall have documented procedures to ensure that outsourced subject matter experts are competent and comply with relevant requirements.

4.3.1.5.2 The FIU shall have policies regarding coordination of multiunit investigations.

4.3.1.5.3 The FIU shall have documented procedures for the selection of vendors and purchasing of supplies, equipment, and services to ensure they meet the requirements of the FIU.

4.3.2 Facilities and Equipment. The FIU shall have written procedures for the procurement, maintenance, and personnel training for fire investigation facilities and equipment.

4.3.3 Workload Analysis.

4.3.3.1* The FIU shall develop and maintain a management information system (MIS) to support the management of the FIU by providing the AHJ with data indicating the effectiveness of the FIU.

4.3.3.2 The MIS shall provide the AHJ with data indicating the effectiveness of the organization and its programs and procedures.

4.3.3.3 The MIS shall provide a means of measuring performance outcomes and trends for each of the following:

- (1) Case status
- (2) Resource evaluation
- (3) Benchmarking
- (4) Time accounting and productivity of personnel

4.3.3.4 Workload analysis shall be carried out at least annually and be included in the annual documentation of the FIU.

4.3.3.5 The FIU shall implement and utilize forms and records that aid in the collection of information and document the unit's compliance with written policies and procedures.

4.4 Management Systems.

4.4.1 Budget.

4.4.1.1 The FIU shall have a budgetary system that supports the goals, objectives, and outcomes of the unit in accordance with accepted accounting practices.

4.4.1.2 The FIU shall have written policies and procedures detailing a system of accounts for financial administration to include records of funds received and expenditures.

4.4.1.3 Policies and procedures shall be implemented for the selection of vendors and purchasing of services, equipment, and supplies.

4.4.2 Strategic Planning. The FIU shall establish procedures for the review of the mission, goals, objectives, and effectiveness of the unit at pre-defined intervals.

4.4.3 Quality Assurance—Management and Internal Reviews.

4.4.3.1* The FIU shall have a policy for the review of guiding documents and management systems.

4.4.3.2 The FIU shall have a policy for the maintenance of documented corrective actions and preventative measures.

Chapter 5 Outside Resources, Facilities, and Equipment

5.1* Outside Resources.

5.1.1 The FIU shall have written policies for when and how to request additional resources anytime the needs of the investigation exceed the available manpower and expertise.

5.1.2* The FIU shall not operate outside its area of expertise.

5.1.3 The FIU shall have a written policy to identify the need to involve other resources and entities.

5.1.4* The FIU written policy for evaluating the need for additional resources shall be based on when an event exceeds the FIU's capabilities or resources.

5.2* Indoor/Outdoor Facilities.

5.2.1* The FIU shall have a written policy for the collection, intake, storage, security, processing, and evaluation of all evidence.

5.2.2 Written policies, procedures, and controls to prevent and limit unauthorized access to evidence shall be established by the FIU.

5.3 Systems and Equipment. FIUs shall have the types and quantity of systems and equipment needed to perform their duties.

Chapter 6 Health and Safety

6.1 General. The FIU shall have a health and safety program that meets the requirements of the authority having jurisdiction (AHJ).

6.2* Health and Safety Program.

6.2.1* A health and safety program shall establish policies, procedures, and reporting specifications.

6.2.2 The health and safety program shall generate policies for the health and safety of personnel.

6.2.3* The health and safety program shall include any local, state, provincial, tribal, or federal health and safety regulations in place in the particular jurisdiction.

6.2.4* A health and safety program shall describe and specify baseline personal protective equipment (PPE) needed to meet the policy requirements.

6.2.5 The health and safety program shall be managed for compliance and include a means to address issues of noncompliance.

6.2.6 The health and safety program shall contribute to the budget process of the parent agency to ensure funding for health and safety requirements.

6.2.7 The health and safety program shall include a regular periodic review of policies and procedures on no less than an annual basis.

6.2.8 The health and safety program shall have a process for the investigating and reporting of any workplace incidents, injuries, or illnesses sustained by FIU members.

6.2.9 The information gathered and lessons learned from the health and safety program shall be considered and addressed in policy review and change.

6.2.10* A health and safety program shall have policies addressing the following:

- (1)* Baseline medical screening, including the use of specialized equipment
- (2)* Scene safety and development of a written safety plan
- (3) Respiratory protection
- (4) Control of safety hazards
- (5) Decontamination of personnel, equipment, evidence, vehicles
- (6) PPE
- (7) Vehicle use
- (8)* Exposure reporting

6.3 Personal Protective Equipment (PPE).

6.3.1 Members of an FIU shall be provided with PPE applicable to their prescribed duties.

6.3.2 Members of an FIU shall be trained in the use, care, and decontamination of PPE.

6.3.3 All PPE shall meet or exceed the requirements set forth in the applicable regulations or standards published by public and private agencies and the applicable NFPA standards.

6.3.4* Employers shall train their personnel in site safety assessment of a fire scene prior to the determination of applicable PPE and other health and safety issues.

6.3.5* An FIU shall have a policy for conducting a site safety assessment to evaluate environmental conditions, weather, structural integrity, and other factors prior to determining what PPE and safety control measures to use at any scene.

6.3.6* Minimum PPE based on the identified hazards shall include the following:

- (1) Protective outerwear, structural fire suppression outerwear, or other protective garments
- (2) Foot protection
- (3) Eye protection
- (4) Head protection
- (5) Hearing protection
- (6) Respiratory protection
- (7) Hand protection
- (8) Disposable gloves for evidence removal and recovery

6.3.7 Employers shall have a policy or procedure for the method of disposal or transport of used PPE in a manner that will not contaminate vehicles, tools, or clothing worn by fire investigation unit members after the scene is cleared and decontamination has occurred.

6.4 Safety in the Laboratory or Workplace Areas—Occupational Exposure, Disease, and Other Trauma-Related Injuries.

6.4.1* A methodology to track occupational exposure, disease, and trauma-related injuries shall be developed, implemented, maintained, and audited on a 6-month basis.

6.4.2 The employer shall have a policy for ensuring that all employees at the time of initial assignment to the FIU or private company are in compliance with the requirements of the AHJ.

6.4.3* The FIU shall have a policy for the completion of a site safety assessment prior to starting scene examination.

6.4.4* A site safety assessment shall include the following components:

- (1) Hazard identification
- (2) Risk assessment
- (3) Controlling the hazard, as follows:
 - (a) Elimination
 - (b) Substitution
 - (c) Engineering controls
 - (d) Administrative controls
 - (e) Personal protective equipment (PPE)
- (4) Monitoring and review (i.e., audit)

6.4.5 The employer shall develop, implement, maintain, and manage a cross-contamination control program (CCCP) to prevent cross contamination of personnel involved in the investigation of fires and similar events.

6.5* Vehicle Use. The FIU shall establish a vehicle use policy that covers operation, maintenance, damage, decontamination, and necessary equipment.

6.6 Special Scenes.

6.6.1* Scenes shall be considered special scenes when they require the use of PPE, equipment, investigative techniques, or other methods beyond the capabilities of the responding agency.

6.6.2 Specialized PPE or equipment required for the processing of special scenes shall only be used by qualified personnel.

Chapter 7 Education, Training, and Certification

7.1 Education and Training.

7.1.1* Personnel in the FIU shall receive education and training in the field of fire and explosion investigation.

7.1.1.1 The FIU shall establish procedures for education and training for members to remain current on the requirements listed in NFPA 1033 and critical tasks related to fire investigation, as adopted by the FIU.

7.1.1.2 The procedures required in 7.1.1.1 shall address funding, support, and types of training.

7.1.2 Minimum Education Requirements.

7.1.2.1 The fire investigator shall meet the education requirements of NFPA 1033.

7.1.2.2 Personnel assigned a supporting role in the FIU shall meet the education requirements and professional qualifications specific to their discipline (e.g., evidence collection technician, fire protection engineer).

7.1.3 Records.

7.1.3.1 Education and training records shall be maintained by the individual FIU personnel as well as the FIU in accordance with the management information system (MIS) as prescribed in Chapter 4.

7.1.3.2 The education and training records shall include a current curriculum vitae (CV) for each investigator, including all supporting documentation.

7.1.4 Management shall evaluate the technical competencies of personnel prior to assigning them to conduct independent work.

7.1.4.1* Management shall develop and implement a method for the annual evaluation of the proficiency of FIU personnel by an experienced and competent evaluator.

7.1.4.2 Management shall document the competency and proficiency of FIU personnel.

7.2 Certification.

7.2.1* Fire investigators in an FIU shall be certified as meeting the requirements of NFPA 1033.

7.2.2 The FIU management shall require personnel to maintain their certifications (or professional designations) in their respective disciplines through continuing education as determined by the FIU.

7.3 Professional Development.

7.3.1* The FIU shall establish a written protocol for all personnel operating within the FIU to attend ongoing professional development.

7.3.2 The FIUs shall have a policy to provide funding, support, and opportunities for continuing professional development.

7.3.3* The FIU shall establish a written policy for minimum hourly training requirements.

Chapter 8 Documentation and Reports

8.1* Introduction. FIUs shall have a policy for documenting fire scenes and be capable of reporting investigative findings.

8.2 Documentation.

8.2.1* FIUs shall have a policy for the use of the tools necessary to document a fire scene in accordance with NFPA 1033.

8.2.2* FIUs shall have a policy related to the reception, retention, and security (i.e., protection) of the data received during and after an investigation.

8.2.3* FIUs shall have a data and documentation archiving policy.

8.3 Reports.

8.3.1* The FIU shall develop a report policy that ensures the reports reflect the investigation in accordance with NFPA 1033 and the FIU's standard operating procedures (SOPs).

8.3.1.1 The investigator responsible for the overall report per the FIU shall ensure that the data is reliable and its contents and collection are in accordance with NFPA 1033 and the FIU's SOPs.

8.3.2* The FIU shall develop a policy to ensure that fire and explosion origin and cause reports are authored by qualified fire investigators with the minimum qualifications outlined in NFPA 1033.

8.3.3* The investigator responsible for the overall report per the FIU shall ensure that the data is reliable and its contents and collection are in accordance with NFPA 1033 and the FIU's SOPs.

8.3.3.1 FIUs shall have a policy to check with the appropriate client or agency to ensure that litigation reports meet the necessary requirements.

8.4 Quality Assurance/Quality Control.

8.4.1* Administrative Reviews. The FIU shall develop a policy for administrative reviews.

8.4.1.1 Administrative reviews shall be conducted to determine whether all the steps outlined in an organization's SOPs have been followed and all the appropriate documentation is present in the file.

8.4.1.2 An administrative review shall be conducted before any final report is released.

8.4.2* Technical Reviews. The FIU shall develop a policy for technical reviews that ensures the report reflects all the aspects of the investigation in accordance with NFPA 1033.

8.4.2.1 The technical review shall be an evaluation of the sufficiency of a case record with regard to the tests that were conducted and the observations and conclusions contained in the report.

8.4.2.2 The technical review shall prove that there is sufficient basis for the scientific conclusions contained in the report.

8.4.2.3 The scope of the technical review shall ensure, at a minimum, the following:

- (1) The results, opinions, and interpretations are accurate, properly qualified, and supported by the case records
- (2) The applicable policies and procedures were used
- (3) The written reports contain all the required information
- (4) The results are scientifically valid

8.4.2.4 The person performing the technical review shall be qualified as a fire investigator and be technically competent in the areas specific to the scenario.

8.4.2.5 The person performing the technical review shall not be the author(s) of the report.

8.4.2.6 The technical review procedures shall include provisions for the resolution of disagreements.

8.4.2.7 The technical reviewer shall document the scope of the review and specifically detail any limitations or restrictions placed on the reviewer that could adversely affect the review process.

8.4.2.8 The FIU shall develop a policy to review expert witness testimony given by its investigators at a court or other proceeding.

8.5* Audit. The FIU shall develop a policy regarding retrospective reviews of reports to ensure that the expressed policy is implemented.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.3 The basic methodology for fire investigation is the scientific method. For additional information related to the scientific method, see NFPA 1033 and NFPA 921.

A.1.1.4 The qualifications for fire investigators can be found in NFPA 1033.

A.1.2 This standard is not intended to replace or conflict with existing guidance such as NFPA 921 and NFPA 1033. Instead, these documents should be utilized to support the FIU framework established by NFPA 1321. For instance, this standard requires the use of fire investigators trained and qualified to the job performance requirements (JPRs) established in NFPA 1033. Similarly, it identifies that practices based on scientific methodology, such as those found in NFPA 921, are necessary for accurate and reliable origin and cause determination. Hence all three NFPA documents should be used in conjunction with one another to support the establishment, operation, and management of FIUs.

Accreditation is a critical element of the quality triangle for forensic science. This standard is a suitable basis for accreditation of fire investigation units. NFPA 921, NFPA 1033, and this standard work together to form the basis for quality fire investigations. For further information, see the following:

Beyler, C et al., *Strengthening Fire and Explosion Investigation in the United States: A Strategic Vision for Moving Forward*, OSAC Technical Guidance Document 0005, The Organization of Scientific Area Committees (OSAC) for Forensic Science, 2021. <https://doi.org/10.29325/OSAC.TG.0005>

National Commission on Forensic Science, *Recommendation to the Attorney General Universal for Accreditation, Universal Accreditation*, 2015. <https://www.justice.gov/archives/ncfs/file/477851/download>

Strengthening Forensic Science in the United States: A Path Forward Committee on Identifying the Needs of the Forensic Sciences Community, National Research Council, ISBN: 0-309-13131-6, 352 pages, 6 x 9, 2009. <http://www.nap.edu/catalog/12589.html>

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials nor does it approve or evaluate testing laboratories. In determining the acceptability of installations or procedures, equipment, or materials, the "authority having jurisdiction" may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The "authority having jurisdiction" may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, is used in NFPA standards in a broad manner because jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction;

at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.3.2 Audit. An audit, as used in this document, is intended to verify that the implemented policies have been followed in the organization's work products. Audit work activities are internal FIU tasks, independent of other agencies, customers, or clients, to ensure that FIUs meet their own established policies.

A.3.3.5 Ethical Principles. There is not one consistent set of principles that all FIUs follow, but each FIU has the right to develop the principles that are meaningful to the unit.

A.3.3.9 Mission Statement. Properly crafted mission statements incorporate all of the following:

- (1) Serve as filters to separate what is important from what is not
- (2) Clearly state which markets will be served and how
- (3) Communicate a sense of intended direction to the entire organization

A.3.3.11 Quality Manual. The quality manual demonstrates the commitment to meeting customer expectations of delivering quality products or services.

A.3.3.13 Report. Reports can be verbal or in writing.

A.4.2.1.2.1 All the requirements contained within this standard are mandatory and must be included within the policy documents of the FIU. In cases where the FIU is part of a larger parent organization, these policies can be reflected in the parent organization's existing policies and procedures. The parent organization's policies and procedures can meet or exceed the minimum requirements of the FIU.

A.4.2.1.3 Documenting ethical principles can take many forms. Organizations can include such things as SOPs, policies and procedures, quality manuals, and code of ethics.

A.4.3.1.3 Personnel records can include a curriculum vitae, training, education, certifications, licensing, and merits.

A.4.3.3.1 A records management system (RMS) could contain documentation of complaints, nonconformities, corrective actions, preventative actions, personnel documents, operational procedures, performance evaluations, equipment maintenance/calibration, software maintenance, facilities management, and applicable codes.

A.4.4.3.1 A review of guiding documents and management systems is conducted to make appropriate changes and ensure the continued effectiveness of the unit and its ability to conduct investigations at predefined intervals.

A.5.1 There are a variety of resources FIUs may consider depending on the size, breadth, and scope of their operation.

For example, FIUs may review the following stakeholder resources:

- (a) District and state attorneys
- (b) Elected officials
- (c) Building and code enforcement officials
- (d) Public works
- (e) Zoning
- (f) Task forces (e.g., county, state, federal resources, agencies)
- (g) Legal resources
- (h) Fire departments

- (i) Police, sheriff, and constable departments
- (j) Building and fire code inspectors
- (k) Health departments
- (l) Medical examiners and coroners
- (m) Public and private utility agencies
- (n) Lightning activity reports
- (o) Involved insurance companies
- (p) Private companies

FIUs may also consider the following safety resources:

- (1) Support mechanisms for SCBA in hot or warm zones
- (2) Resources for health and safety questions/concerns
- (3) Hazmat/safety/air-monitoring/chemical identification resources
- (4) Biohazard removal
- (5) Decontamination
- (6) Structural engineering analysis and stabilization
- (7) Coordination with local utility and power companies

FIUs may also consider the following logistical resources:

- (1) Meals, restroom facilities, warming/cooling, parking, media control and press areas, investigative command centers, and additional investigators or manpower
- (2) Standard operating guidelines—staffing levels appropriate to the scene size and safety; span of control
- (3) Heavy equipment/thawing resources/environmental needs
- (4) Lighting
- (5) Scene security
- (6) Evidence preservation
- (7) Memorandum of understanding (MOU)—inter-agency, intra-agency, public, and private
- (8) Coordination with local utility and power companies
- (9) Tools and equipment storage, sterilization, and cleaning

A.5.1.2 When evaluating expertise in relation to a fire investigation unit and fire or explosion investigation, there are a variety of resource considerations that need to be undertaken. The following are examples of some of those resources as they relate to expertise:

- (1) Subject matter expertise
- (2) Legal—considerations can vary between public sector investigators and private sector investigators, given the nature and scope of their duties. Those considerations can include, but are not limited to, the following:
 - (a) Legal access to a scene
 - (b) Interviewing witnesses or suspects in custody
 - (c) Right to counsel
 - (d) Evidence identification, documentation, collection, testing, and preservation
 - (e) Chain of custody
 - (f) Legal consideration for private sector investigations
 - (g) Legal obligations of other government agencies
 - (h) Notice requirements
 - (i) Spoliation concerns
 - (j) Arson reporting immunity statutes
 - (k) Confidentiality requirements
 - (l) Authorizing statutes
 - (m) Authority having jurisdiction (AHJ)
- (3) Ethics or resource conflicts
- (4) Records retention

As rules differ between jurisdictions for records retention, the FIU needs to be aware of those regulations for their juris-

diction as they relate to Freedom of Information Act (FOIA) requests, civil subpoenas, juvenile cases, and so on. Entities should comply with all regulatory requirements of local, state, or federal agencies, including redaction requirements.

A.5.1.4 Examples of when additional resources should be considered are as follows:

- (1) Fatalities
- (2) Severe injuries
- (3) Evidence of another crime not directly related to the origin and cause of the fire or explosion
- (4) Significant financial fire damage
- (5) Large event
- (6) Political, religious, high-profile locations or persons

A.5.2 Evidence storage facilities should be maintained in accordance with ASTM E1492, *Standard Practice for Receiving, Documenting, Storing, and Retrieving Evidence in a Forensic Science Laboratory*. Collection, labeling, and preservation of evidence should conform with ASTM E1188, *Standard Practice for Collection and Preservation of Information and Physical Items by a Technical Investigator*, and ASTM E1459, *Standard Guide for Physical Evidence Labeling and Related Documentation*.

A.5.2.1 The evidence policy should cover the following topics:

- (1) Evidence collection procedures
- (2) Storage and disposal of evidence
- (3) Chain of custody
- (4) Maintaining a list of appropriate testing facilities for the proper evaluation of the evidence
- (5) Documentation
- (6) Periodic evidence audit
- (7) Evidence security and protection
- (8) Proper marking, identification, handling, and storage of hazardous materials in evidence storage
- (9) Laboratory submission procedures
- (10) Reporting laboratory results

Hazardous materials include, but are not limited to, the following:

- (1) Lithium-ion batteries
- (2) Combustible liquids
- (3) Flammable liquids and gases
- (4) Self-heating materials
- (5) Solvents
- (6) Chemicals
- (7) Biological, blood, and body parts/bodily fluids

The FIU provides (or contracts with another entity to provide) adequate facilities and equipment to achieve its mission, including, where applicable:

- (1) Office space
- (2) Evidence storage (including temporary evidence storage)
- (3) Tools and equipment
- (4) Library resources (including digital resources)
- (5) Examination space
- (6) Lighting
- (7) Document storage (including digital documents)
- (8) IT infrastructure
- (9) Decontamination
- (10) Vehicles
- (11) Building security
- (12) Access control
- (13) Inventory system

- (14) Environmental systems
- (15) Communication systems
- (16) Maintenance
- (17) Fire protection systems

A.6.2 A health and safety program is an essential element for operating an FIU and safeguarding its investigation team members.

A.6.2.1 Additional material relative to health and safety on fire scenes is provided in the safety section of NFPA 921.

A.6.2.3 This would include regulations issued by OSHA where it applies, any applicable NFPA standards, and industry guidelines.

A.6.2.4 Additional or specialized PPE might be needed based on the hazards present and the evaluation of the work conditions.

A.6.2.10 All public and private sector employers have a responsibility to provide a safe workplace and protect their employees from recognized hazards, as required under the general duty clause of the Occupational Safety and Health Administration (OSHA) Act of 1970.

Investigators and their employers are expected to comply with all OSHA regulations, standards, and practices applicable to the tasks and activities conducted at their workplace, which most often will be at fire and explosion scenes. The key to compliance with occupational safety and health regulations and the foundation of an organization's standard operating procedures, policies, and employee training programs is a comprehensive written occupational safety and health program.

A.6.2.10(1) Baseline medical screening is an essential step in the evaluation of employees assigned to any organization where there is a possibility of exposure to contaminants or trauma.

NFPA 1550 offers an overview of the elements that should be included in a medical screening.

A.6.2.10(2) For more specific guidance on fire or explosion scene plans, see the safety chapter of NFPA 921.

A.6.2.10(8) Note that exposure reporting is mandated by OSHA where tested levels exceed the threshold specified in 29 CFR 1910.1020, "Hazardous Waste Operations and Emergency Response."

A.6.3.4 Training of personnel includes instruction in the interpretation of safety data sheets and other documentation, as well as interviewing parties most familiar with the site. A hazardous material operations (HAZWOPER) training program is desirable and would meet these requirements.

A.6.3.5 The methodology recommended in NFPA 921 should be followed.

A.6.3.6 PPE should be appropriate for the potential hazards expected to be encountered. If disposable outerwear is not available, then equivalent protection can be provided by structural fire suppression outerwear that has been properly decontaminated and is compliant with NFPA 1851. Preplanning of the unit's response area can identify specialized PPE that is needed for fire and explosion scenes beyond what is baseline.

A.6.4.1 Tracking of this information is necessary to ensure that the proper documentation of those exposed or have had a trauma-related injury as a result of a work-related injury.

A.6.4.3 A hazard is a biological, chemical, mechanical, electrical, atmospheric, environmental, or physical agent that has or could have the potential to result in injury, illness, property damage, or interruption of a process or an activity in the absence of a control measure.

A site safety assessment is a tool to ensure that there is a systematic process for hazard identification, risk assessment, and a control strategy to effectively manage hazards that might occur within the fire or explosion scene.

A.6.4.4 The site safety assessment should include all of the components that make up the assessment to ensure that a systemic process is followed. The components of a site safety assessment are defined as follows:

- (1) *Hazard identification.* This is the process of examining each work area and work task for identifying all the hazards which are “inherent in the job.”
- (2) *Risk assessment.* Can be defined as the process of assessing the risks associated with each of the hazards identified so that appropriate control measures can be implemented based on the probability (i.e., likelihood) that harm, injury, or ill health can occur and how severe the consequences of exposure might be.
- (3) *Controlling the hazard.* This is the process of identifying and implementing the most efficient and cost-effective risk control measures having regard to the hierarchy of control principle. (See www.cdc.gov/niosh/topics/hierarchy/default.html.)

Controlling exposures to occupational hazards is the fundamental method of protecting workers. Traditionally, a hierarchy of controls has been used as a means of determining how to implement feasible and effective control solutions.

One representation of this hierarchy is shown in Figure A.6.4.4.

The hierarchy of controls is one example of some of the most effective to least effective actions that can be taken to implement control solutions. The levels of the hierarchy of controls are defined as follows:

- (a) *Elimination of the Hazard.* Physical removal of the hazard is the most effective hazard control.
- (b) *Substitution.* The second most effective hazard control involves replacing something that produces a hazard with something that does not produce a hazard or produces a lesser hazard. This control mechanism where investigating a fire or explosion scene might or might not be useful.
- (c) *Engineering Controls.* The third most effective means of controlling hazards is engineered controls. These do not eliminate hazards, but rather isolate people from hazards.
- (d) *Administrative Controls.* Sometimes referred to as work practice controls, administrative controls are changes in work procedures such as written safety policies, rules, supervision, schedules, and training with the goal of reducing the duration, frequency, and severity of exposure to hazardous chemicals or situations.

- (e) *Personal Protective Equipment (PPE).* PPE includes gloves, clothing, overalls, suits, respirators, hard hats, safety glasses, high-visibility clothing, and safety footwear. PPE is the least effective means of controlling hazards because of the high potential for damage to render PPE ineffective. Additionally, some PPE, such as respirators, can increase physiological effort to complete a task and, therefore, might require medical examinations to ensure workers can use the PPE without risking their health.

- (4) *Monitoring and review (audit).* It is important to monitor and review to ensure that the control mechanisms that are in place are still proper as the fire or explosion scene changes during scene processing.

A.6.5 Policies on vehicle use include, but are not limited to, specifics on permissible use, hours of permitted operation, geographical operation, state of readiness, safeguarding of the vehicle and its contents, and operation in times of special circumstance (e.g., severe weather or civil unrest).

A.6.6.1 Examples include hazmat incidents, biological hazards, chemical manufacturing or storage fires, industrial fires, incidents involving ordnance, fireworks or explosives, aircraft incidents, multiple fatalities, civil unrest, and marine incidents.

For additional information, the safety chapter in NFPA 921 has a special hazards section and should be consulted.

A.7.1.1 The education and training should be in accordance with the JPRs of NFPA 1033 as well as the fire investigation methodologies and techniques as prescribed in NFPA 921.

This education and training can include, but is not limited to, formal education through a post-secondary school, online training, peer-to-peer training, research, self-study, formal and informal continuing education classes, professional development, and mentoring.

A.7.1.4.1 It is important that the fire investigator’s techniques are periodically reviewed for competence to recommended practices. This can include shadowing on the scene, reviewing case files, presenting cases, having discussions, and testing.

A.7.2.1 The fire investigation certification should reference NFPA 1033, NFPA 921, and current literature that represents the established recommended practices of the fire investigation profession.

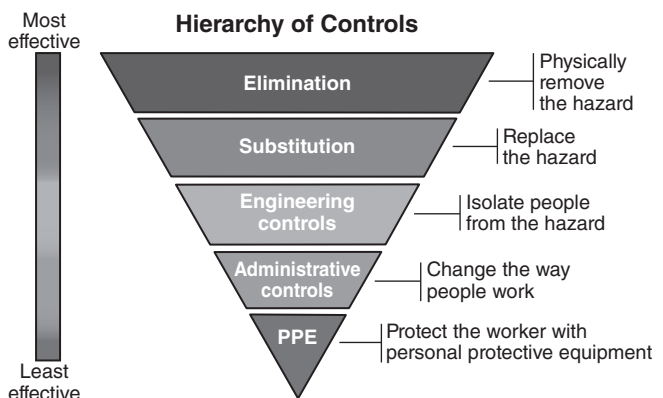


FIGURE A.6.4.4 Hierarchy of Controls.

A.7.3.1 Professional development can be achieved through internal or external organizations utilizing a variety of instructional methods. Professional development helps build and maintain the morale within the FIU, encourages personnel to better themselves thus creating a synergistic effect within the organization. Didactic methods of professional development provide investigators with theoretical knowledge. Examples could include such classes as that of college-level coursework or any collegiate-level structured course which issues a grade. Additional educational opportunities include online coursework, attending lectures, or other similar venues. Professional development that is training related could include educational opportunities outside the classroom or hands-on training. Examples include live-fire observation, field observation, shadowing senior investigators, evidence collection scenarios, and so on.

A.7.3.3 NFPA 1033 and ASTM standard requirements for training are dependent upon unit operation and personnel operating within the unit. Professional development should be consistent with policies and procedures of the FIU. It is recommended that the minimum number of professional development hours be in compliance with the current edition of NFPA 1033. The correlation of hours should be on an annual basis or over multiple years. The training should be relevant to the mission of the FIU.

A.8.1 This requirement comes directly from the chapter on management systems. Reporting the results of a fire investigation requires proper documentation of the scene and conveying the results of that documentation through an appropriate report mechanism defined within the FIU's policy.

Development of the appropriate policies to document and report incidents will further provide FIUs with the mechanisms and tools to become accredited, if so desired by the FIU.

Following the FIU's established policies for documentation and reporting should also allow an independent reviewer, whether another technical expert or auditor, the complete set of tools required to appropriately assess, understand, and confirm whether the FIU followed its policy to support and come to appropriate conclusions.

A.8.2.1 In developing an appropriate scene documentation policy, the FIU could consider NFPA 921, in conjunction with NFPA 1033, as a source of necessary minimum elements.

A.8.2.2 Data comes into an investigation in many forms including paper and electronic documents, Internet materials, and other objects. The policy should consider the nature and probability of loss and address these issues. For example, Internet materials can require recording the access date and time. Further information can be found in Chapter 14 of NFPA 921. FIU policies should support data retention rather than destruction. Retention and protection policies should include backups to avoid loss through catastrophic events (*see Chapter 4*).

A.8.2.3 Archiving policies should consider the appropriate length of time for retention considering the type and nature of any proceedings or potential users of the archived information. See Chapter 16 of NFPA 921 for additional guidelines.

A.8.3.1 The depth and extent of the report will be dictated by many factors, including the potential for subsequent litigation,

department or agency policy, time and resource limitations, the scope of the investigation, or direction from client(s) or supervisor(s).

The policy on reports should consider managing verbal reports as well as written reports. Verbal reports should also demonstrate and convey the investigator's implementation of the scientific method in the investigation in accordance with NFPA 1033. A policy could address this through the use of memory methods such as flashcards, similar to Miranda warning cards, that remind an investigator to cover all these topics. For verbal reports, the FIU policy should address quality control and audit such delivery through methods such as post-verbal-report note keeping, debriefing, or other methods.

FIU report policies can include a single general approach applicable to most incidents but also allow for flexibility to meet the needs of a particular incident. A variety of standard document formats are available for consideration in developing report policies, such as the following:

- (1) ASTM E620, *Standard Practice for Reporting Opinions of Technical Experts*
- (2) ASTM E678, *Standard Practice for Evaluation of Scientific or Technical Data*
- (3) NFPA 921
- (4) NFPA 1033

Note that an NFIRS or similar departmental report might not meet the requirements of a properly qualified investigative report. The FIU policy should consider whether such reports are implemented in a manner that conveys the scientific method as required by NFPA 1033.

Some reports, such as certain types of limited witness statements or other data collection activities, like measurements, could fall within the purview of the overall fire investigation but not require all of the steps outlined in NFPA 1033.

A.8.3.2 Subsection 8.3.2 is intended to ensure that the report is authored by someone who can qualify to express an opinion as to the origin and cause of a fire in accordance with NFPA 1033.

A.8.3.3 Reports for use in federal civil litigation should conform with the requirements of Federal Rules of Evidence (FRE) Rule 26, "General provisions governing discovery." Reports prepared for use in other forums (state courts, mediation, arbitration, criminal trials) should conform to the forum's specific requirements. This is best accomplished through careful coordination between the author and the sponsoring agency or client.

A.8.4.1 It is recommended that the policy follow the methodology expressed in NFPA 921 regarding administrative reviews.

A.8.4.2 It is recommended that the policy follow the methodology expressed in NFPA 921 regarding technical reviews, including whether or under what circumstances such review should occur.

A.8.5 As with general audit policies, these activities are best performed by independent entities.

Annex B Template Standard Operating Procedures/ Guidelines

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

B.1 Purpose. The purpose of this annex is to provide a template to reflect the written policies, procedures, and guidelines, including those applicable to the methodology and safety assessments, for fire and explosion investigations [i.e., standard operating procedures (SOP) and standard operating guidelines (SOG)].

B.2 Outline. An SOP for fire investigation units should, at a minimum, include the 12 sections identified in B.2.1 through B.2.12.

B.2.1 Title. The title should be concise but complete enough to identify the subject at hand.

B.2.2 Introduction. An introduction is generally not necessary but can be added if the fire investigation unit (FIU) determines that an explanatory statement is necessary for the proper understanding of the SOP or SOG.

B.2.3 Scope. The scope should include information relating to the purpose of the SOP or SOG.

B.2.4 Reference Documents. Any time an SOP or SOG refers to another document, those documents should be listed in the referenced documents section. Do not list documents unless they are specifically referenced in the SOP or SOG.

B.2.5 Definitions. A definition section might be necessary for terms that can be misconstrued if not clearly defined in the document.

B.2.6 Safety. Identify the safety hazards that might be encountered during the procedure described in the SOP or SOG and describe the methods to mitigate or eliminate the safety hazards.

B.2.7 Procedure. In proper sequence, include detailed directions for performing the operation. Describe in detail the successive steps for the procedure, grouping related operations in logical divisions. Use sub-headings if they will help the organization of the material. Make the procedure concise, to the point, and easily understandable.

B.2.8 Deployment. Describes the circumstances in which this procedure might be necessary.

B.2.9 Documentation. Describe in detail any data that is expected to be generated from the procedure. If standard forms are available, this is the section in which they should be identified.

B.2.10 Record Keeping. Describe the FIU's policy for record keeping and retention for the documentation that arises out of the procedure.

B.2.11 Report. State the detailed information expected as a result of the procedure.

B.2.12 Amendments. A unique identifier, revision number, approver, and approved date should be included.

Annex C Informational References

C.1 Referenced Publications. The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

C.1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 921, *Guide for Fire and Explosion Investigations*, 2024 edition.

NFPA 1033, *Standard for Professional Qualifications for Fire Investigator*, 2022 edition.

NFPA 1550, *Standard for Emergency Responder Health and Safety*, 2024 edition.

NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2020 edition.

C.1.2 ASTM Publications. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM E620, *Standard Practice for Reporting Opinions of Technical Experts*, 2018.

ASTM E678, *Standard Practice for Evaluation of Scientific or Technical Data*, 2013.

ASTM E1188, *Standard Practice for Collection and Preservation of Information and Physical Items by a Technical Investigator*, 2017.

ASTM E1459, *Standard Guide for Physical Evidence Labeling and Related Documentation*, 2018.

ASTM E1492, *Standard Practice for Receiving, Documenting, Storing, and Retrieving Evidence in a Forensic Science Laboratory. Collection, and Labeling*, 2017.

C.1.3 NIOSH Publications. National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, 1600 Clifton Road, Room 4505, MS E-20, Atlanta, GA 30329-2027.

"Hierarchy or Controls," NIOSH, 2015.

<https://www.cdc.gov/niosh/topics/hierarchy/default.html>.

C.1.4 US Government Publications. US Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001, www.gpo.gov.

Freedom of Information Act, 5 USC, § 552.

Occupational Safety and Health Act of 1970, 29 USC, § 651-658.

Title 29, Code of Federal Regulations, Part 1910.120, "Hazardous Waste Operations and Emergency Response."

United States Federal Rules of Evidence, Rule 26, "General provisions governing discovery," as amended through 2011.