



# JENSEN HUGHES

Advancing the Science of Safety

## **Error Management in Fire/Explosion Investigations**

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# Overview- Standards/Guides are not enough

- ◆ NFPA 921- development, acceptance, use
- ◆ Continuing issues with the quality of fire investigations
- ◆ Specific issues
- ◆ The way forward



# NFPA 921- Guide for Fire and Explosion Investigation

- ◆ NFPA organized committee in 1980's, first edition published in 1992, 120 pages
- ◆ Genesis of 921 was to dispel myths and develop scientifically-based methods into the investigation process
- ◆ The core principle of 921 is the scientific method
- ◆ Significant initial resistance, general acceptance in 2000.
- ◆ Daubert was a significant driver for acceptance of NFPA 921 as a standard of care
- ◆ Currently in its 8<sup>th</sup> Edition, nearly 400 pages



# Ongoing Problems

- Significant backlog of arson cases based upon old myths remains
- While all investigators claim to use 921, many are not conducting investigations according to 921 methods.
- Ongoing defective investigations are not being recognized and remediated
- Non-scientifically based fire investigation opinions are still being offered in court
- 921 has not fixed the problems it was designed to solve



# Areas of Concern

1. Scientific research basis underlying investigation methods
2. Standards and guides development
3. Education and training
4. Certification and Accreditation
5. Report writing and review
6. Investigation organizational management
7. Judicial gatekeeping



# Ongoing Problems

## Scientific research underlying investigation methods

- Initial progress in 921 was based upon fire science research NOT specifically conducted for investigation purposes
- Ongoing support for investigation method research has been modest with low level and intermittent NIJ support
- ATF Fire Laboratory has not yielded much published research work, dominated by case work
- OSAC committee developing a research agenda to guide research and stimulate funding



# Ongoing Problems

## Standards and Guides Development

- ◆ Written as a guide, 921 is now the standard of care
- ◆ NFPA 1033, Standard for Professional Qualifications for Fire Investigator, was slow in incorporating 921-based requirements, but now fully reflects the 921 methodology
- ◆ Further work is needed reflect more specific “job performance requirements” in 1033
- ◆ OSAC committee is reviewing 921 and 1033 to identify opportunities for improvement based on existing knowledge as well as to drive the research agenda



# Ongoing Problems

## Education and Training

- ◆ Existing level of formal education required by NFPA 1033 is completion of high school
- ◆ No shortage of books or training opportunities based upon 921 methodology
- ◆ Job performance of some investigators does not reflect effective training
- ◆ OSAC subcommittee is reviewing education and training requirements and effectiveness with the goal of contributing to standards and practices





# Ongoing Problems

## Certification and Accreditation

- ◆ Two certification programs available, IAAI, NAFI
- ◆ Job performance of some certified investigators does not reflect effective certification
- ◆ OSAC subcommittee is reviewing education and training requirements and effectiveness with the goal of contributing to standards and practices



# Ongoing Problems

## Report Writing and Review

- ◆ Requirements for report preparation and review in NFPA 921 and 1033 are both limited and general, e.g. from 1033:

*Prepare a written report, given investigative findings, documentation, and a specific audience, so that the report accurately reflects the investigative findings, is concise, expresses the investigator's opinion, contains facts and data that the investigator relies on in rendering an opinion, contains the reasoning of the investigator by which each opinion was reached, and meets the needs or requirements of the intended audience(s).*

- ◆ Fire investigation reports in the public sector are most often inadequate, ie does not fulfill above requirement.
- ◆ OSAC subcommittee is studying these requirements with the intent of preparing more detailed requirements that may be suitable for inclusion in 921 and 1033. Sample reports, templates, and checklists are being considered.



# Ongoing Problems

## Investigation Organizational Management

- ◆ Defective fire investigations and reports are not remediated by management reviews or policies
- ◆ *NFPA 1730, Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations to the Public*, a new NFPA standard provides a means of creating organizational standards of care
- ◆ OSAC subcommittee is studying the standard and will consider making proposals for the NFPA committee's consideration.



# Ongoing Problems

## Judicial Gatekeeping

- ◆ Judges are generally ill-prepared for this role and are very hesitant to exercise their gatekeeping function.
- ◆ Beyond development of NFPA 921 and 1033, the fire and explosion investigation community has done little to assist judges in their gatekeeper role
- ◆ There is no directory of individuals qualified to serve as special masters and there are no training programs or documents designed for judicial use
- ◆ OSAC subcommittee is considering if there are actions and developments required by the fire/explosion investigation community.



# CONCLUSION

- ◆ There is a complex system of elements that contribute to high quality fire and explosion investigations
- ◆ This goes well beyond the development of guides and standards, though these documents are foundational
- ◆ A holistic approach seems to be indicated
- ◆ And sadly it takes a long, long time!
- ◆ A federal commitment to the process can provide the resources and impetus to move forward



# QUESTIONS?

## Contact

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