How Fire Investigation Organizations Get in Trouble with Preventable Errors

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Defining Errors

- Type 1 Error: Determining a fire is arson when it is not
- Type 2 Error: Failing to recognize an arson fire

Identifying Errors

- Noting deviations in the investigation from established best practices defined in the fire investigation literature through quality control methodology within the chain-of-command
- Use of independent peer-review
- Retroactive case reviews to ensure convictions meet current science

What is the error rate in fire investigation cases?

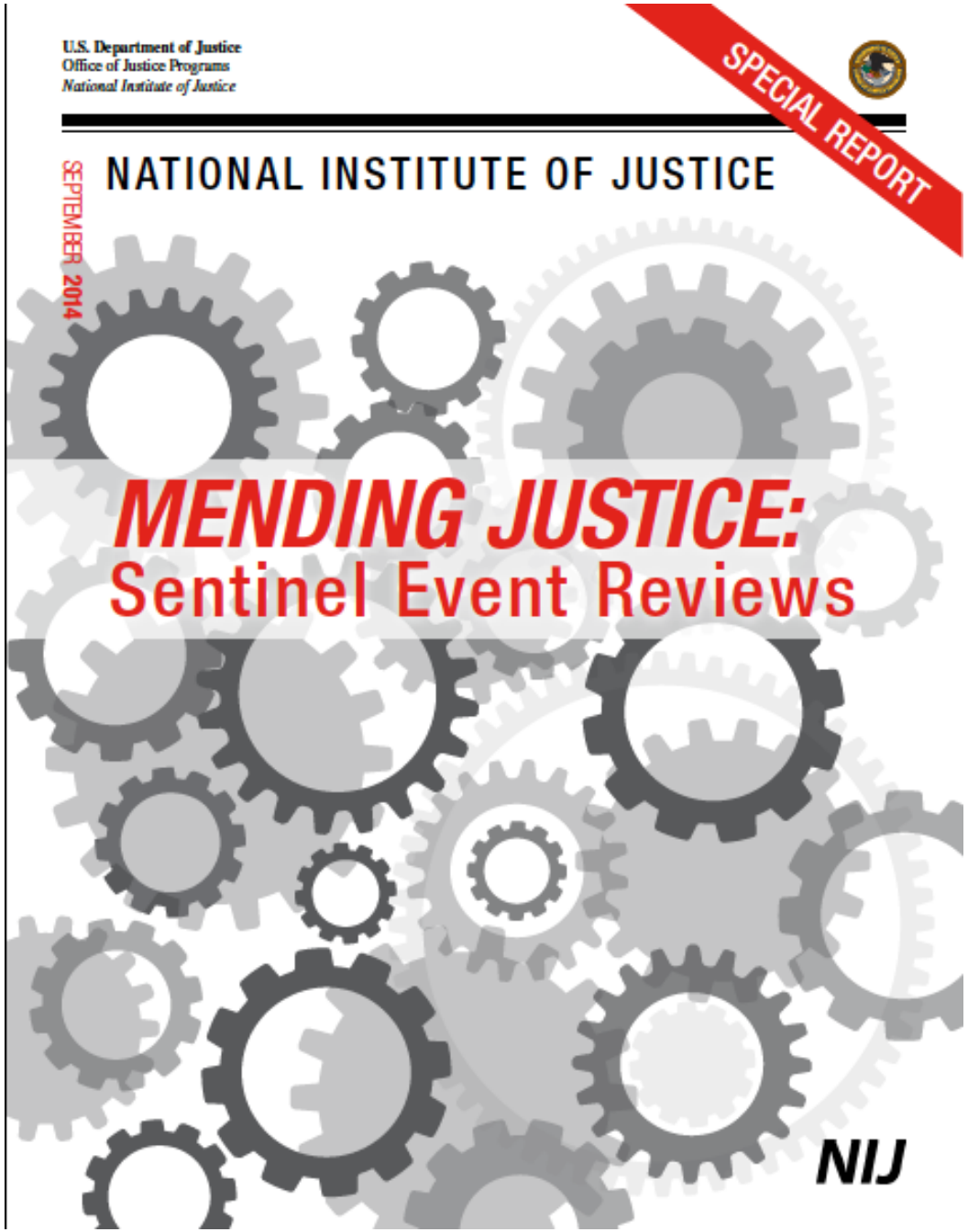
- Unknown
- Lack of consistent systems in place to determine errors
- Some fires are easy to make a determination while fully-involved structure fires can be much more difficult. These can be more prone to errors in fire cause determination.
- Fire Investigations organizations must be okay with a finding of “undetermined” when appropriate

How do we respond to these errors?

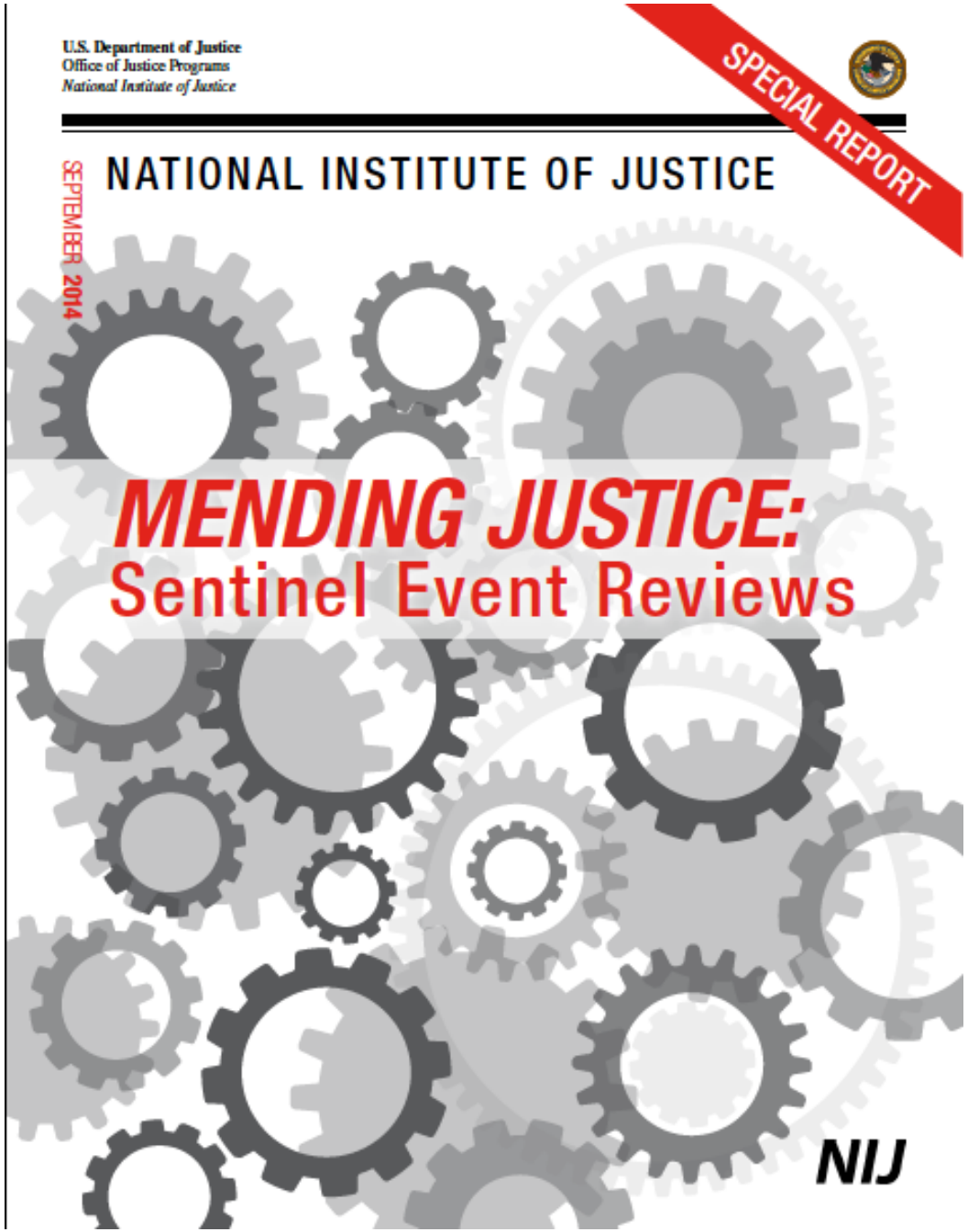
- Avoid “knee jerk” denial
- Don’t wait for a wrongful conviction
- Address “near misses.” (dismissals, acquittals)
- Have a goal of preventing the next error
- Understand that we are scientists, and that the legal system may not always respond appropriately

How do we respond to these errors? (cont.)

- Root-cause analysis needs to be done to avoid identifying symptoms versus getting to the true causes. “The Tricks Used by Pilots, Surgeons & Engineers to Overcome Human Error” by Douglas Star (May 2015)
- Critical need to examine all components of the fire investigation system – not just certain parts of it that gets the most attention such as cases exposed in the media
- “Mending Justice” Sentinel Events Analysis
- See a wrongful conviction as the “organizational accident” that it is


U.S. Department of Justice
Office of Justice Programs
National Institute of Justice
SPECIAL REPORT
NATIONAL INSTITUTE OF JUSTICE
SEPTEMBER 2014
MENDING JUSTICE:
Sentinel Event Reviews
NIJ

Who is responsible?



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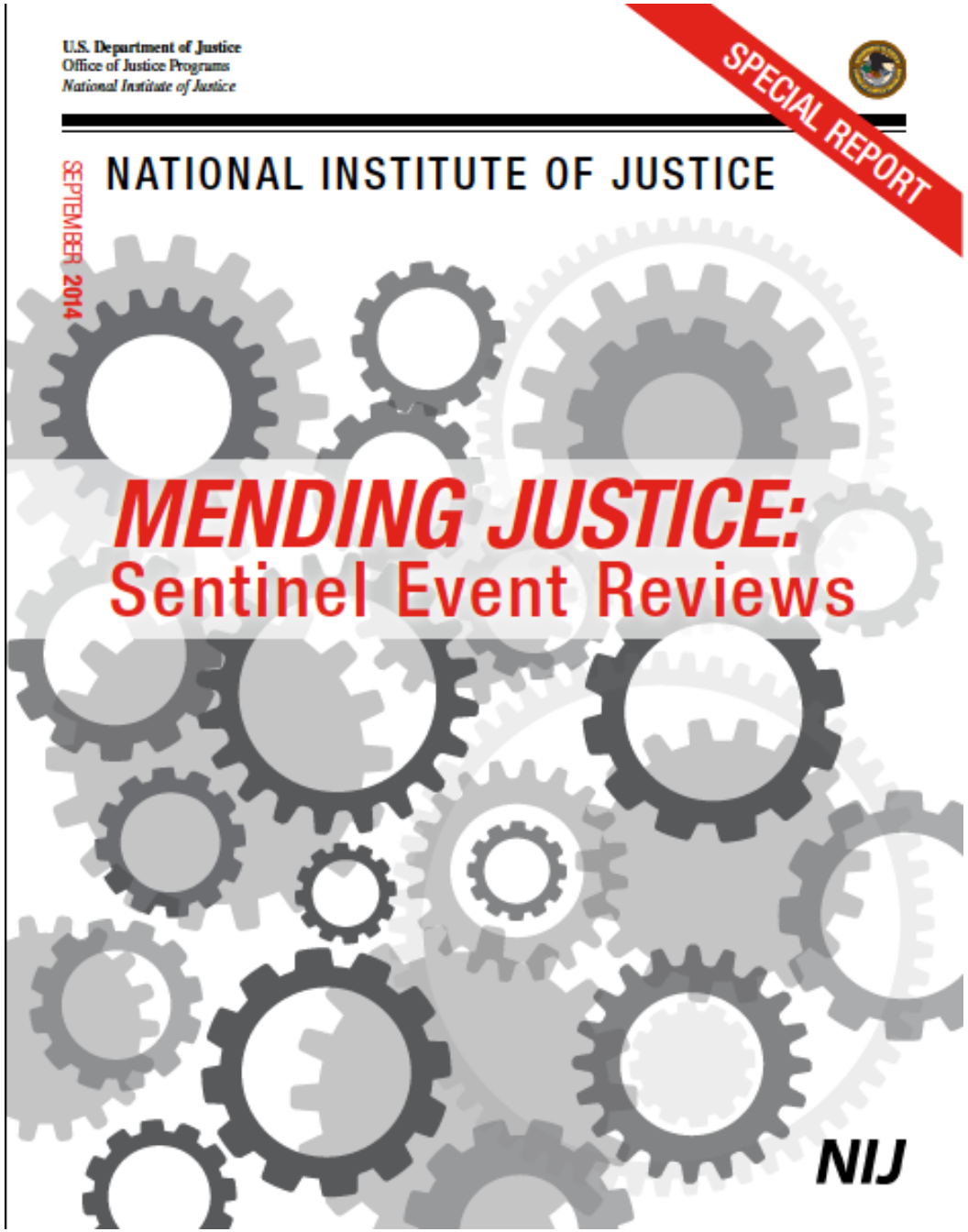

EVERYONE INVOLVED!

Breaking down the fire investigation system

- Educational background of fire investigator applicants
- Training of new fire investigators and continuing education
- Resources available to fire investigators (public vs. private)
- Case load
- Availability of scientific experts to assist fire investigators, prosecutors, and defense attorneys working within a very science-centric fire investigation environment

How does the fire investigation system prevent errors?

- Have a system that supports being progressive and transparent
- Strong leadership
- Create a process to follow best practices by keeping up with current fire investigation literature
- Hire investigators with a scientific background and/or make available scientists and engineers to be involved with fire investigations
- Diverse training and evaluation of performance
- Implement a Science Advisory Workgroup (SAW) comprised of experts with diverse expertise available for training and retroactive case reviews
- Follow the 17 recommendations in the Texas Forensic Science Commission report issued in April 2011

How does the system react when errors are identified?

- Again, there has to be an organizational culture that demands transparency and is committed to improving the criminal justice system. Egos must be kept in check!
- Notification of prosecutors and defense attorneys occur when problems with a fire investigation are identified post-conviction
- Use that error as an opportunity to evaluate the system to take corrective and preventive actions
- Always seek the root-cause versus the symptom. Do the analysis.
- Share this analysis within the profession for continual improvement.

Conclusion

- Fire investigation organizations must have strong leadership
- Demanding training program – Professional development plan
- Preferred hiring of fire investigators with scientific background and/or have scientists and engineers available to assist
- Follow best practices
- Embrace current fire investigation literature
- Establish a SAW to assist with training and retroactive case reviews

Conclusion (cont.)

- Perform root-cause analysis to minimize errors
- Commit to transparency by reporting forensic errors to prosecutors and defense lawyers
- Review new errors and implement changes to avoid them in the future through further root-cause analysis
- Continually seek improvement in the organization

Questions?