

# Accident Investigation – Evidence Gathering

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# Introductions

- Name / Company
- Your experience with incident investigations



# Agenda

- Basics of Incident Investigation
  - Securing the Scene
  - Data Gathering
  - Interviewing
- Tabletop Exercise
- Photography
- Lunch Break
- Photography Practice
- Field Exercise
- Report Out
- Adjourn



# Basics of Accident Investigation



# Basics of Incident Investigation

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# Securing the Scene

- Early preservation of evidence makes the investigator's task easier and more effective
  - First responders and incident command should be trained on evidence preservation
- Preservation of evidence is always overridden by lifesaving or safety considerations
  - Hazardous materials
  - Bloodborne pathogens
  - Physical hazards
  - Electrical hazards
  - Extinguish fires

# Securing the Scene

- Rope off or barricade the accident area and place appropriate signage
  - Consider outlying areas, e.g. areas containing explosion fragments
- Weather and environmental conditions
  - Protect the scene from weather damage, e.g. rain, winds, etc.
- Post guards if appropriate to control access and limit entry to authorized personnel
  - Identify escorts for managing entrants
    - Regulatory investigators
    - Others not familiar with potential site hazards



# Securing the Scene

- Preserve data relevant to the accident and investigation
  - Written data
    - Operations manuals, maintenance manuals, SOPs, inspection reports
  - Computer data
    - Operational information, system records
  - Personnel
    - Identify witnesses and system experts



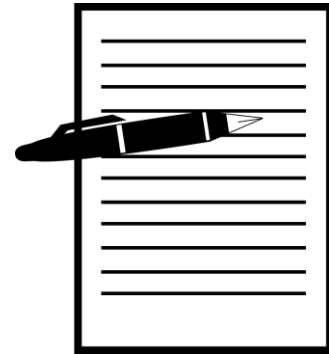
# Data Gathering

- Fragility of Data
  - People Data
    - Testimony or written statements from witnesses, participants, etc.
  - Physical Data
    - Results of analysis of parts, chemical samples, etc.
      - Positions – depictions of locations of people and physical evidence
      - Patterns
      - Parts
      - Properties



# Data Gathering

- Fragility of Data
  - Paper (and some electronic files)
    - Policies
    - Procedures
    - Event logs
    - Alarm logs
    - Test records
    - Training records



# Fragility of Data

		Form of Fragility		
Data Source	Loss	Distortion	Breakage	
People/ Position	Forgotten Overlooked Unrecorded	Remembered wrong Rationalized Misrepresented Misunderstood	Transferred Influenced Personal conflicts	
Physical/ Position	Taken Misplaced Cleaned up Destroyed	Moved Altered Disfigured Supplemented	Dispersed Taken apart	
Paper	Overlooked Misplaced Taken	Altered Disfigured Misinterpreted	Incomplete Scattered	

# Photograph of Incident Scene



# *Data From People*

- People with information
- How people acquire information
- Assessing data from people
- Interviewing
  - Initial interviews
  - Follow-up interviews

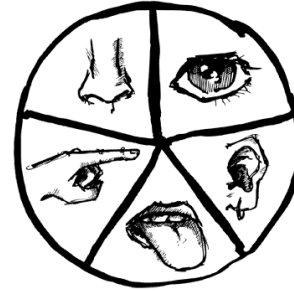


# People with Information

- Participants
  - Personnel who contributed to the incident's sequence of events
- Victims
  - People who experienced some injury, harm or loss
- Observers
  - People in a position to sense characteristics of the incident
- Programmers
  - People who influenced the behavior of equipment, participants or victims
- Others
  - People who were in a position to sense characteristics of the process before the incident

# How People Acquire Information

- Direct sensory observation
  - I saw .....
  - I smelled ....
- Memory of their own actions
  - People may not recall unconscious acts
- Conclusions or reasoned decisions
  - Filling in the gaps in the story
- Personal opinions, feelings and beliefs



# Sensory Input Characteristics

- Initially accurate sights, sounds, odors, tastes and touches
- Recorded and remembered in sequential order (like a mental movie)
- Record does not begin until person is alerted in some way
- Focus is on a limited number of subjects that attract the most attention
- Filter out confusing and extraneous data that will not likely affect immediate decisions

***Primary importance to investigators***



# Action Memory Characteristics

- Initially accurate mental records of conscious actions
- Actions recorded and remembered in sequential order (like a mental movie)
- Actions not resulting from conscious thoughts may be difficult to recall

***Primary importance to investigators***



# Conclusion and Reasoned Decision Characteristics

- Based on observations, individual reasoning processes, individual history, and valuation
- Less accurate than direct sensory inputs and action records
- Over time, sensory inputs and action records are influenced (intentionally or unintentionally) by an individual's conclusions and reasoned decisions
- Should not be confused with accident-sequence facts

***Secondary importance to investigators***

# Opinion, Feeling, and Belief Characteristics

- Subjective (personal and real to the individual)
- Less accurate than direct sensory inputs and action records
- Over time, sensory inputs and action records are influenced (intentionally or unintentionally) by an individual's conclusions and reasoned decisions
- Should not be confused with accident-sequence facts
- Must be respected during interviews

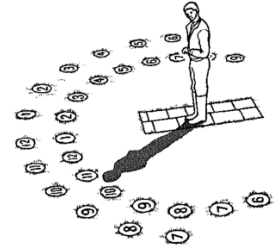
***Secondary importance to investigators***

# *Assessing Acquired Information*

- Witness position issues
- Sensory illusion issues
- Other reliability and credibility issues

# Witness Position Issues

- The information gathered by the witness is dependent upon their position during the event
  - Downwind vs upwind
  - Relative location of nearby equipment and structures
  - Ambient conditions
  - Relative location of the sun
  - Number of people nearby
- Inconsistencies between witness testimony may be explained in part by the position of the witness



# Sensory Illusion Issues

- Common optical illusions
- Relative motion
- Vertigo
- Medication effects
- Absence of shadows
- Night vision limitations
- Refraction
- Intensity of lights versus distance
- Age, long-term physical condition, and short-term physical condition
- Emotional status



# Other Reliability and Credibility Issues

- Knowledge / familiarity with process and overall experience
  - Allows individuals to notice minor changes in the system status
- Emotions
  - Can be a large influence if the individual has had a personal loss from the incident
- Position / job threat
- Exaggeration
- External influences
- Tendency to underestimate long distances or periods of time while overestimating short distances or periods of time

# *The Interview Process*

- Taking initial statements
- Locating witnesses
- Selecting interview locations
- Scheduling interviews
- Establishing and maintaining rapport
- Conducting the interview
- Documenting the interview
- Concluding the interview and follow-up



# Taking Initial Statements

- Witnesses should write or dictate initial statements of their observations
  - Minimal questioning by the investigators
- Statements should focus on the sequence of events
- Should be done as soon after the incident as possible
  - Emergency response team may need to assist
  - Training should be provided

# Locating Witnesses

- Personnel associated with the process
- Referrals made by current witnesses
- Emergency response personnel
- Employee, visitor sign-in sheets, security logs
- External witnesses

**PLEASE  
SIGN IN & OUT  
HERE**

# Selecting Interview Locations

- Use neutral locations with convenient access for the witnesses
  - Near the accident scene (ensure area is safe)
  - Break rooms, training rooms
  - Worksite
    - A good choice – witness can provide/show information to help demonstrate sequence of events

# Scheduling Interviews

- Schedule as soon as practical after the incident
- Times should be convenient to the witness
- Prepare to adjust the interview schedule based on emerging information
- Keep to the time promised for the interview
  - Reschedule an additional time if necessary
- Provide time between interviews
  - Allows time for investigator to process information and plan for the next witness

# Establishing and Maintaining Rapport

- Select the interview style to maximize results from witnesses
  - One-on-one interviews (typically the best)
  - Several-on-one interviews (sometimes required for legal reasons)
  - Group interviews
- Explain the purpose and objectives
- Warm up with non-business issues and routine matters
- Characterize their important contribution to the investigation
- Be friendly, respectful and listen attentively
- Maintain composure
- Do not rush the interview, even if it appears there is no new information

# Conducting the Interview

- Be prepared
  - Review initial written statements, compare to established facts
  - Have a list of questions ready, but don't have a rigid script
- Ask for an initial statement using open ended questions
  - "Tell me what you saw.... What you did...."
- Avoid interrupting with too many questions
  - Let them talk
- Resolve to remain unbiased, don't lead or bias the witness
  - "You did check that the power was disconnected, didn't you?"



# Concluding the Interview and Follow-Up

- Ask the witness for opinions and recommendations
  - Do at the end, so they don't build a case to support a conclusion
- Ask who else might be able to provide relevant information
- Invite additional input if new information is remembered or discovered
- If you think a follow-up interview may be needed, ask witness for available times
- Express appreciation

# Data Gathering Exercise



# Photograph of Incident Scene



# BREAK

