

Innovations in Emergency Response Products and Services



University of Calgary - Downtown Campus
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Important Innovations

- Science and technology provide an improved understanding of the hazards
- Improved communications capabilities
- Move toward use of Incident Command System (ICS)

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Science and Technology Provide an Improved Understanding of the Hazards ..1

- Ability to represent an accidental release as a transient event
 - Example 1: [ethylene pipeline failure](#)
 - Example 2: [ignition of a sour gas well blowout](#)
- Ability to evaluate hazard extents for a broad range of accidental release events accurately and quickly
 - Example 3: [ERCBH2S model results](#)

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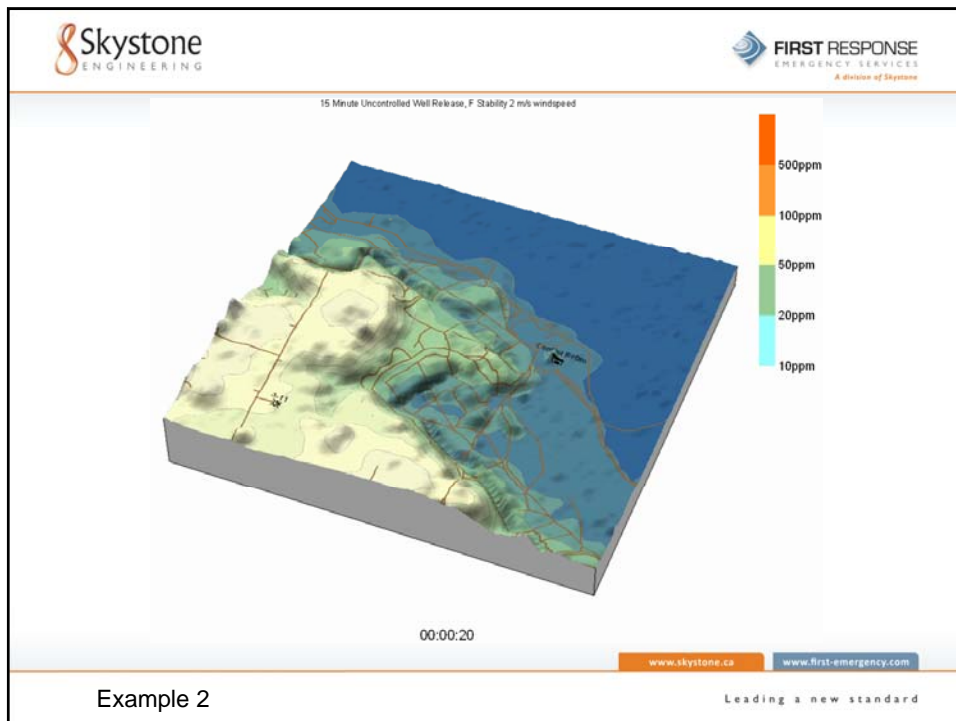
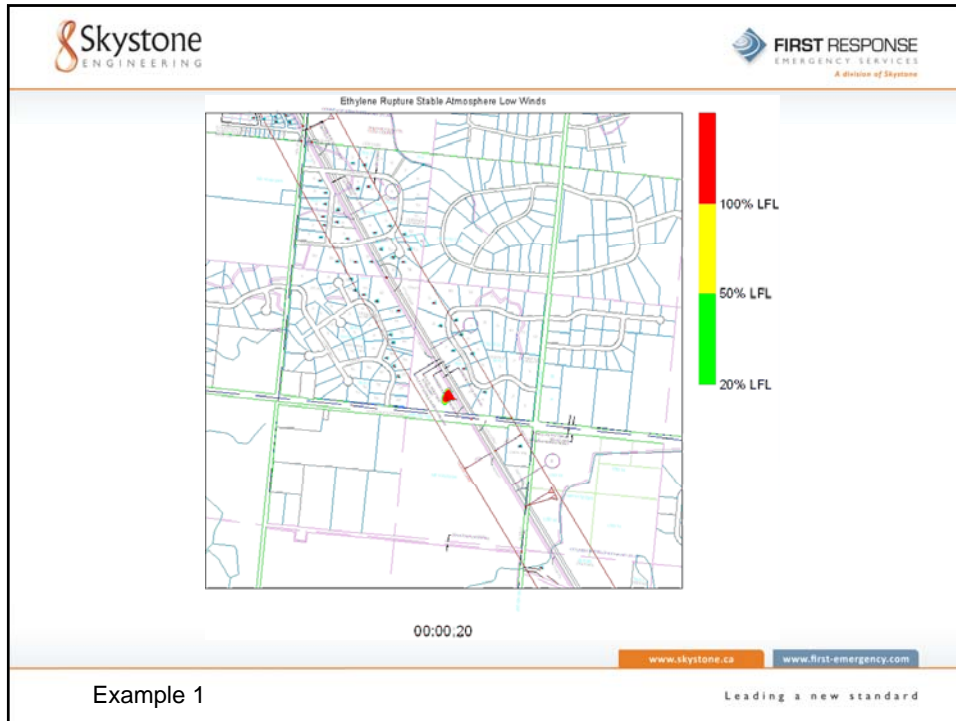


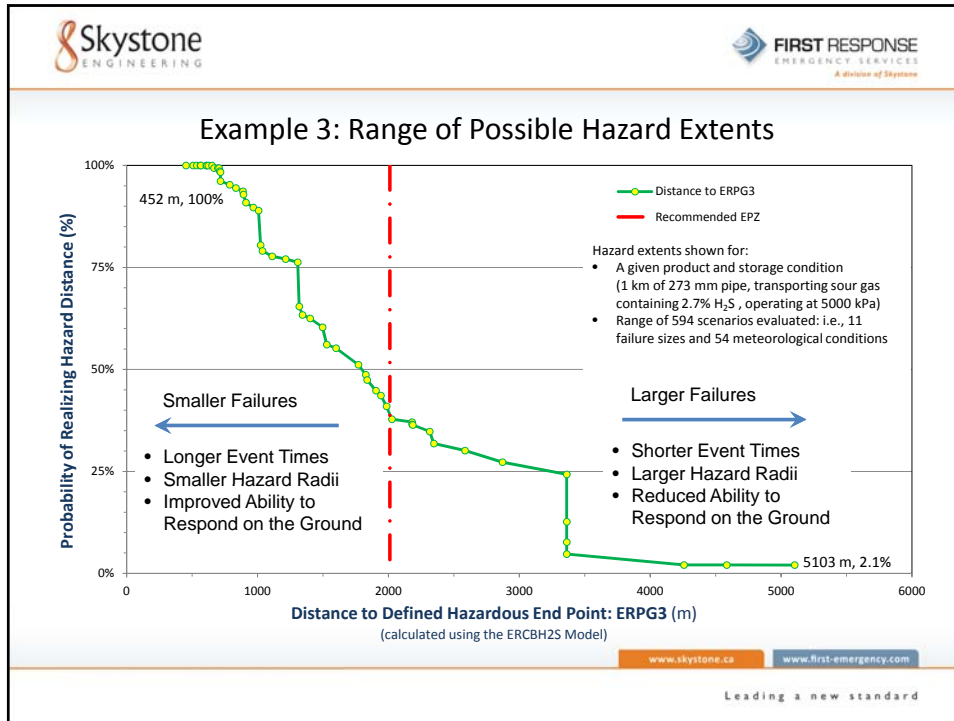
Science and Technology Provide an Improved Understanding of the Hazards ..2

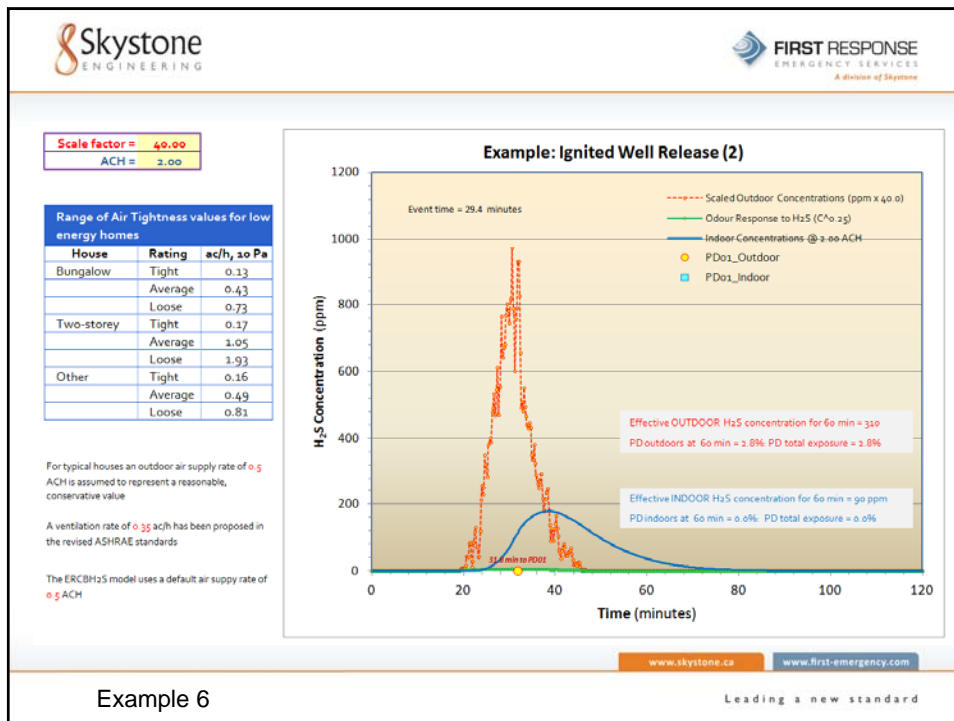
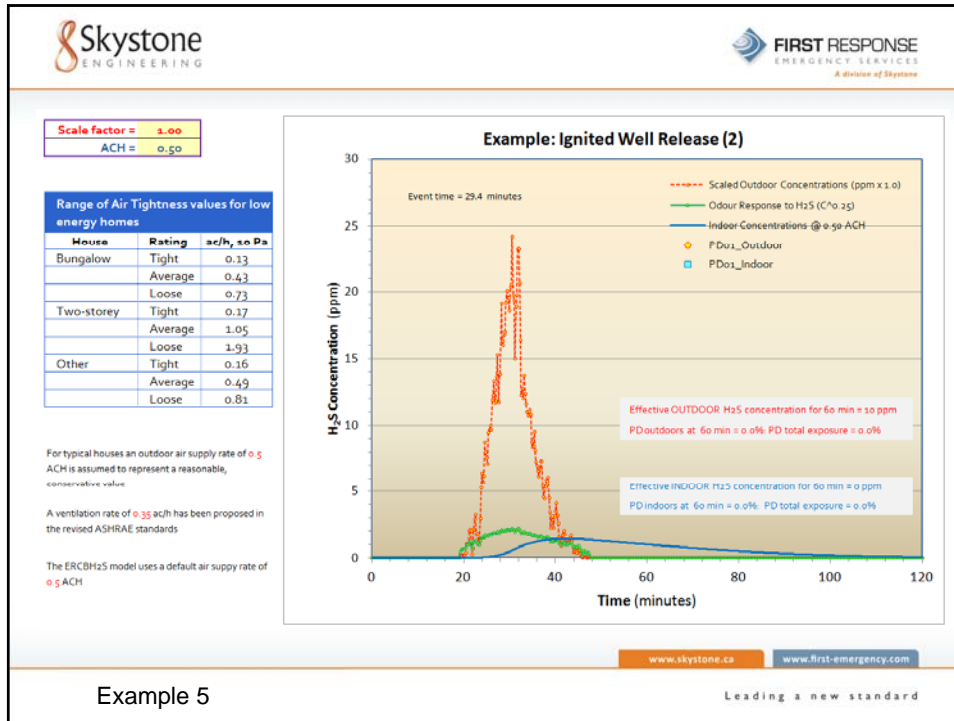
- Ability to evaluate benefits achieved through control and mitigation options
 - Immediate Ignition (well blowouts)
 - Example 4: [Firefly Ignition System](#)
 - Emergency Shut-down Valves (pipeline failures)
 - Control Systems
 - Example: pressure-rate-of-drop
 - Shelter-in-Place
 - [Example 5](#) & [Example 6](#)



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Communication - Planning Considerations

For **PLANNING** purposes we need to identify

- Who we need to communicate with?
 - Our response team
 - The public at risk
 - Government agencies, other responders and support services
 - The media
- What information is required from them to support an effective response, and meaningful and timely communications?
- What information do they required from us to protect themselves, to provide a level of comfort and to assist in achieving an effective response?
- Do the proposed response actions and mitigation measures match what the science says?

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Communication - Response Needs

- For **Response** purposes we need to be able to
 - Identify the location of a failure and those at risk near the failure
 - Communicate in a prioritized, effective and timely manner with
 - ✓ Our response team, and
 - ✓ Those at risk, the public, government agencies, other responders, other support services and the media
 - Provide accurate and timely information regarding protective actions (e.g., shelter in place, evacuation, egress, etc.), status of the event, progress of response activities.

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Improved Communications Capabilities

Well Information

- Well name
- Location (x, y)
- EPZ - polygon

Emergency Management Database

- Resident Location (x, y)
- Resident contact information
- Special requirements

Pipeline Information

- Line license number
- Location (shape file)
- EPZ - polygon

Resident Contact Information within the Zone or Polygon: e.g.,

- Name (s)
- Address
- Contact number(s): land line, cell
- Special requirements, etc.

User defined polygon

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Standardization of Incident Command System (ICS)

- Makes **Unified Command** functional
 - Ensures uniform response structures across organizations
 - Standardizes training and certification for all emergency response personnel (portable skills)
 - Provides common understanding and terminology across a industry and government agencies and at a corporate and field level
- Adheres to span of control of 1 to 7
 - ensures success of plan

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graph TD
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    command --- liaison[liaison]
    command --- public_info[public info]
    command --- planning[planning]
    command --- operations[operations]
    command --- logistics[logistics]
    command --- finance[finance]
            
```

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Thank you for your time

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