Using the Emergency Response Guide Widget

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Agenda

• Emergency Response Guidebook
  - History
  - Components
• Emergency Response Guide Widget
  - Development
  - Updates
• Demonstration
• Upcoming
• Questions
Emergency Response Guidebook

A Short Introduction
History

- First published in 1978
- Updated every four years
- Developed by US Department of Transportation
- Joint effort between:
  - United States
  - Canada
  - Mexico
  - Argentina
Components

The ERG is broken into five sections:

- White - Information
- Yellow - Reference
- Blue - Reference
- Orange - Response
- Green - Distances
- White - Information (again)
Components

The White Section provides:

• Instructions on how to use the guidebook
• Information regarding shipping documents
• Guidance for hazardous material incident response
• Information on the hazard classification system
• General safety precautions
• … and more!
The Yellow Section references the material in numerical order by assigned 4-digit UN/NA number.

The Blue Section references the material in alphabetical order by name.
The Orange Section provides safety recommendations and directions during the initial response phase. It includes:

- **Potential Hazards**
  - Health
  - Fire or Explosion
- **Public Safety**
  - Protective Clothing
  - Evacuation
- **Emergency Response**
  - Fire
  - Spill or Leak
  - First Aid

### Potential Hazards

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>- Various gases may cause dizziness or asphyxiation without warning.</td>
</tr>
<tr>
<td>Fire or Explosion</td>
<td>- Contact with gas or liquid fuel may cause burns, severe injury and/or fatalities.</td>
</tr>
<tr>
<td>Public Safety</td>
<td>- Evacuate people from the area if you can do so without risk.</td>
</tr>
<tr>
<td>Emergency Response</td>
<td>- Spill or leak can be contained.</td>
</tr>
<tr>
<td>Emergency Response</td>
<td>- First aid should be provided.</td>
</tr>
</tbody>
</table>

### Protective Clothing

- Structural firefighters' protective clothing will provide limited protection.
- Always wear protective clothing when handling refrigerated liquefied gases.

### Evacuation

- Consider initial evacuation for at least 500 meters (1,640 ft).
Components

The Green Section provides initial evacuation or protective action distances, and specific guidance for:

- Materials that are Toxic-by-Inhalation (TIH)
- Toxic gases that are produced on contact with water
- Six materials commonly transported in bulk
Components

The White Section at the back of the guide provides:

- Information regarding protective clothing and equipment
- Instructions on fire and spill control
- BLEVE (boiling liquid expanding vapor explosion) safety precautions
- Improvised Explosive Devices (IEDs) and for hazardous materials being used for terrorism
- Glossary
- Emergency Contact information
- ... and more!
Emergency Response Guide Widget
The Evolution of the Emergency Response Guide Widget
Development

- Developed by Local Government
- First published in 2009
  - Flex Viewer widget
  - 2008 values
  - Geoprocessing tools
- Updated in 2013
  - JavaScript widget
  - Updated to 2012 values
  - Added demographic logic
Recent Updates

• Updated to 2016 values
  - All values, not just Table I
  - Human-readable names added
• UI adjustments
• New data tables
  - Table 3 - Toxic Inhalation Hazards (TIH)
  - Boiling Liquid Expanding Vapor Explosion (BLEVE)
  - Orange Section Distances
    - Public Safety
    - Evacuation
• No logic updates
ERG Book Workflow

Do you see an explosive placard or label?

For Divisions 1.1, 1.2, 1.3, 1.5 - Use Guide 112
For Divisions 1.4 or 1.6 - Use Guide 114

Do you know the UN/NA number?

Search for the ID number in the Yellow Pages

Search for the material in the Blue Pages

Do you know the name of the material?

Do you see a placard or label?

Refer to Pages 8-9

Refer to Pages 10-13

Do you see a railcar or trailer?

Use Guide 111

Determine the Guide Number

Is the material highlighted in green?

Use the appropriate Orange Guide

If the Guide Number has a “P”, the material may suffer a violent polymerization

Is the material on fire?

Use the appropriate Orange Guide for Evacuation Distance

Use Table 1 for isolation and protective action distances

Consult the appropriate Orange Guide

Protect in downwind direction according to Table 1 for residual release

If product includes the reference “when spilled in water”, consult Table 2 for a list of the generated gases and do not use water as extinguishing agent
ERG Widget 1.x Workflow

Do you know the UN/NA number?

- Search for the ID number in the Yellow Pages

Do you know the name of the material?

- Search for the material in the Blue Pages

- Determine the Guide Number

- If the Guide Number has a “P”, the material may suffer a violent polymerization

- Use the appropriate Orange Guide

For Divisions 1.1, 1.2, 1.3, 1.5 - Use Guide 112
For Divisions 1.4 or 1.6 - Use Guide 114

- Do you see an explosive placard or label?

- Do you see a placard or label?

- Do you see a railcar or trailer?

- Refer to Pages 8-9

- Refer to Pages 10-13

Is the material on fire?

- Use the appropriate Orange Guide

- Use Table 1 for isolation and protective action distances

If product includes the reference “when spilled in water”, consult Table 2 for a list of the generated gases and do not use water as extinguishing agent

- Consult the appropriate Orange Guide
Demonstration
Using the ERG Widget
Downloading the Solution

https://github.com/Esri/solutions-webappbuilder-widgets
Installing the ERG Widget

Copy widget folder from source to your instance of Web AppBuilder (Dev Edition)

At ArcGIS Enterprise 10.5.1, custom widgets can be added to hosted Web AppBuilder as a Portal item type.
Creating a new App
Create a new app inside Web AppBuilder
Creating a new App
Create a new app inside Web AppBuilder

Create a New Web App

- Default (2D)
- Default (3D)
- Ground Zero
- Editor
- Maplet
- Defense Solutions 2.3 Template

Next  Cancel
Creating a new App
Create a new app inside Web AppBuilder
Creating a new App
Create a new app inside Web AppBuilder
Configuring the App
Select themes, maps, and configure application attributes

**Topographic**
This topographic map is designed to be used as a basemap and a reference map. The map has been compiled by Esri and the ArcGIS user community from a variety of best available sources.

**Set Initial Extent**
Specify the initial map extent when the application starts up.
- Use Current Map View
- Use Web Map’s Default Extent

**Customize Visible Scales**
Customize the visible scales of the map to limit or extend the scale levels which the map can zoom to.
- Customize...

**Branding**
Add logo, title, or subtitle for your app.
- Emergency Response App
- Add New Link

**App State**
- Keeps map extent and layers visibility while leaving the app.

**Loading Screen**
Configure background and loading icon for the loading screen.
Configuring the App
Select Widgets
Configuring the App

Select Widgets
Configuring the App
Configure the ERG Widget
Configuring the App
Configure the ERG Widget
Using the App
Open the ERG Widget
Using the App
Identify a search group

[Image of the Emergency Response App interface with a map and input fields for various parameters such as location, spill size, and time of spill.]
Using the App
Choose a material

Materials:
- Calcium chloride
- Calcium hydroxide (when spilled in water)
- Calcium hydrogensulfite (when spilled in water)
- Calcium phosphide (when spilled in water)
- Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide
- Carbon monoxide
- Carbon monoxide and Hydrogen oxide mixture, compressed
- Carbon monoxide, compressed
- Carbon monoxide, refrigerated liquid (cryogenic liquid)
- Carbonyl fluoride
- Carbonyl fluoride, compressed
- Carbonyl sulfide
- Carbonyl sulfide
- Chlorine
- Chlorine dioxide, hydrate, frozen (when spilled in water)
- Chlorine pentfluoride
- Chlorine trifluoride
- Chloroacetaldehyde
- Chloroacetone, stabilized
- Chloroacetonitrile
- Chloroacetyl chloride (when spilled in water)
- Chloroacetyl chloride (when spilled on land)
- Chlorophenylchlorosilane (when spilled in water)
- Chloropicrin
- Chloropicrin and Methyl bromide mixture
- Chloropicrin and Methyl chloride mixture
- Chloropicrin mixture, n.d.s.
- Chloropicrin mixture, n.d.s.
Using the App
Select the time of day
Using the App

Identify the wind direction by entering it...
Using the App
... or looking it up using a service
Using the App
Understanding the demographics of the threatened area
Using the App
Identifying the critical facilities in threatened area
Upcoming
Future plans for the Emergency Response Guide Widget
Updates

Fall 2017

• Updates to logic
  - New tables
  - New inputs

• Updates to UI
  - Filter and Sort
  - Output to Services

• Enhancements
  - Add Bomb Threat Tables

• Bug Fixes

• ... and more?
ERG Widget 2.x Workflow

Do you see an explosive placard or label?

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Do you see a railcar or trailer?

Refer to Pages 10-13

Is the material on fire?

Use the appropriate Orange Guide

If tank is heated, consult BLEVE table

If a bomb, consult the Bomb Threat table

Use Table 1 for isolation and protective action distances

Consult the appropriate Orange Guide

If product includes the reference “when spilled in water”, consult Table 2 for a list of the generated gases and do not use water as extinguishing agent

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Determine the Guide Number

If the Guide Number has a “P”, the material may suffer a violent polymerization

Use the appropriate Orange Guide

Is the material highlighted in green?

Protect in downwind direction according to Table 1 for residual release

Consult the appropriate Orange Guide
References

• ArcGIS Solutions Website
  http://solutions.arcgis.com/

• GitHub
  https://github.com/Esri/solutions-webappbuilder-widgets

• Pipeline and Hazardous Materials Safety Administration (US Department of Transportation)
  https://www.phmsa.dot.gov/hazmat/outreach-training/erg