Future Impact of the FHA to the Fire Protection Program

Julie Cordero, PE
SNL/NM Fire Marshal
Hazardous Materials

- Control areas
  - Building Level
  - Multiple Control Areas
- Number of allowable control areas decreases as floor height increases
- Maximum Allowable Quantities (MAQs) decrease as floor height increases
- MAQs vary based on state (storage vs. in use)
- MAQ increases (e.g., automatic sprinkler systems, flammable liquid storage cabinets, gas cabinets)
IBL Control Areas

- 3 control areas (2 interior & 1 exterior gas storage)
- One POC for entire building – 27,854 sq ft
- Posted Signage with MAQs for single Chemical Storage Room
- Easy to generate reports
Chemical Information System (CIS)

- 29,000+ Unique Chemicals
  - 29,000+ Material Safety Data Sheets (MSDS)
  - 32,000,000+ lbs of material
  - 162,000+ containers
- Classified per NFPA 704 Hazard Rating System
- MAQ evaluations were *tedious*!!!
Fire Code Classification

- IFC (2012), Table F101.2

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>NFPA 704 Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly Toxic</td>
<td>H4</td>
</tr>
<tr>
<td>Flammable Gas</td>
<td>F4</td>
</tr>
<tr>
<td>Pyrophoric Gas</td>
<td>F4</td>
</tr>
<tr>
<td>Explosive</td>
<td>R4</td>
</tr>
<tr>
<td>Organic Peroxide, UD</td>
<td>R4</td>
</tr>
<tr>
<td>Unstable Reactive, 4D</td>
<td>R4</td>
</tr>
<tr>
<td>Unstable Reactive, 3D</td>
<td>R4</td>
</tr>
</tbody>
</table>
Previous Method of Evaluation

**CIS**

NFPA 704 Hazard Rating System

**CIS Query:** Bldg X, Reactivity 4

Total Quantity (Solid): 0.4 lb

Total Quantity (Liq): 4 lbs

**Fire Codes**

<table>
<thead>
<tr>
<th>Material</th>
<th>MAQ (Storage)</th>
<th>MAQ (Transport)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic</td>
<td>Solid(^3) - 1 lb</td>
<td></td>
</tr>
<tr>
<td>Peroxide</td>
<td>Liq(^3) - 1 lb</td>
<td></td>
</tr>
<tr>
<td>(Unclassified)(^1)</td>
<td>Gas - N/A</td>
<td></td>
</tr>
<tr>
<td>Unstable</td>
<td>Solid(^3) - 1 lb</td>
<td></td>
</tr>
<tr>
<td>Reactive</td>
<td>Liq(^3) - 5 lbs</td>
<td></td>
</tr>
<tr>
<td>(Class 4)(^1)</td>
<td>Gas(^3) - 10 ft(^3)</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Permitted only in sprinklered facilities

\(^2\) Quantities differ for use (open/closed)

\(^3\) MAQs increase if stored in approved cabinets

\(^4\) MAQs increase if stored in sprinklered facilities

1) Evaluate MSDS
2) Determine fire code classification
3) Determine if MAQ is exceeded
4) Address any issues
MAQ Tool

- Developed with Corporate support
- FPE & ES&H Coordinators have access to perform evaluations
- Pulls data from CIS
- Rolls up quantities per the Fire Code Classifications
- Flags areas that are over or approaching the MAQ
  - Considers increases for sprinkler systems
- Assumes one control area per building
- Notifies Managers, ES&H, and Chemical Owners
- Records data from Chemical Owners
  - Disposition (e.g., CIS reconciled, chemical disposed of, chemical stored in approved cabinets, etc)
- Evaluations are performed in minutes vs. days
- Is continuously improving
Fire Code Classification Efforts

- How have other sites addressed this issue?
- NFPA 704 Hazard Rating R4
- Fire Protection Assessment Schedule
  - NFPA 704 Hazard Rating 3 and 4
  - NFPA 704 Hazard Rating 1 and 2
- MSDS
  - Mixtures
- HMEx Assistant
- www
Fire Code Classification Progress

Data as of 4/20/12
Fire Code Classification Progress

Data as of 4/20/12
# MAQ Tool

## Get Started
- MAQ Rollup Tool
- Evaluations
- Administrate MAQs
- MAQ Process Flow Chart
- MAQ FAQs

## Contacts
- Julie Cordero
- Laura Draelos

## Resources
- Building and Fire Safety Home
- Chemical Inventory System (CIS)

## MAQ Hazardous Materials

**Site:** SNL/NM  
**NFPA Codes:** All  
**Fire Code Class:** Flammable -- Gas  
**Physical States:** Solid, Liquid/Aerosol, Gas  
**Assessed By:** Julie V Cordero  
**Date of Assessment:** 2012-05-04

<table>
<thead>
<tr>
<th>Bldg</th>
<th>State</th>
<th>Rolled Up Qty</th>
<th>MAQ</th>
<th>Fire Code Class</th>
<th>Comments</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gas</td>
<td>334.78 CUFT</td>
<td>2000 CU FT</td>
<td>Flammable -- Gas</td>
<td></td>
<td>Export Details</td>
</tr>
</tbody>
</table>

- Building is over their MAQ limit
- Building is within 80% of their MAQ limit
- Building has a sprinkler system
- Chemical Fire Code Class is TBD
- None Chemical has no Fire Code Class

[Show all]
# MAQ Tool

## Contacts
- Julie Cordero
- Laura Draelos

## Resources
- Building and Fire Safety Home
- Chemical Inventory System (CIS)
- Lab Safety: A Fire Protection Perspective
- Division ES&H Coordinators
- Center ES&H Coordinators
- MAQs for R4 Hazard Rating
- MAQs for H4 Hazard Rating
- MAQs for F4 Hazard Rating

## Table

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</tr>
</thead>
<tbody>
<tr>
<td>720</td>
<td>Gas</td>
<td>334.78 CUFT</td>
<td>2000</td>
<td>Flammable -- Gas</td>
<td>Select no-notification reason</td>
<td>Hide</td>
</tr>
</tbody>
</table>

### SUMMARY

<table>
<thead>
<tr>
<th>Fire Code Class</th>
<th>Total Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>flammable - Gas</td>
<td>334.78 CUFT</td>
</tr>
</tbody>
</table>

### DETAILS

- **Location**: AQ00019550, AQ00636696, AQ00727357
- **FP Rolled Up Qty**: 200.00 CUFT, 25.43 CUFT, 20.00 CUFT
- **Purchase Date**: 04/25/1995, 08/22/2007, 09/24/2009
- **Name**: McWatters, Bruce Ray, Perry, Daniel Lee
- **Fire Code Class**: NITROGEN (10%)/HYDROGEN (BAL), ETHYLENE
- **Health**, **Fire**, **Reactivity**, **Special**

- NITROGEN (10%)/HYDROGEN (BAL): 1 0 0 N
- ETHYLENE: 2 4 2 U
- HYDROGEN: 1 4 0 U
### MAQ Tool

**Get Started**
- MAQ Rollup Tool
- Evaluations
- Adminstrate MAQs
- MAQ Process Flow Chart
- MAQ FAQs

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- Julie Cordero
- Laura Draelos

**Resources**
- Building and Fire Safety Home
- Chemical Inventory System (CIS)

![Image of MAQ Tool interface](image)

<table>
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<tr>
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<th>SNL/NM</th>
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<tbody>
<tr>
<td>NFPA Codes:</td>
<td>All</td>
</tr>
<tr>
<td>Fire Code Class:</td>
<td>Flammable -- Class IA Liquid</td>
</tr>
<tr>
<td>Physical States:</td>
<td>Solid, Liquid/Aerosol, Gas</td>
</tr>
<tr>
<td>Assessed By:</td>
<td>Julie V Cordero</td>
</tr>
<tr>
<td>Date of Assessment:</td>
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<th>MAQ</th>
<th>Fire Code Class</th>
<th>Comments</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Liquid/Aerosol</td>
<td>24.37 GAL, 243.7 LBS</td>
<td>300 LBS</td>
<td>Flammable -- Class IA Liquid</td>
<td>Select no-notification reason</td>
<td>Show</td>
</tr>
</tbody>
</table>

- Notify All
- Export Details
- Evaluate
- Show

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Future MAQ Tool Enhancements

- Summarized reports for Managers & ES&H Coordinators
  - Prior to notifying lab owners
- Printer friendly reports
- Rolled up quantities based on control areas
Secretary of Energy Achievement Award for IBL

United States Department of Energy
Secretary's Achievement Award
Presented to
The National Nuclear Security Administration Ion Beam Laboratory Project

The Ion Beam Laboratory project team is recognized for delivering this state-of-the-art facility six months ahead of schedule and nearly $6 million dollars under budget. This was accomplished while achieving LEED Gold certification. Through the exceptionally close working relationships between all project stakeholders, the project overcame numerous challenges to deliver a facility that is unlike any other laboratory in the Department of Energy or NNSA complex. Critical to this project was a complex series of sensitive equipment moves. One specific move involved the relocation of a 100,000 pound, 40 foot long accelerator with an internal glass tube sensitive to pressure, temperature, and sudden movements. The combined project team planned and executed this and many other moves flawlessly and without incident. The day-to-day cooperation between all stakeholders was superb and a true model as to how projects across the Department should be executed. Accordingly, the project team is to be commended for a job well done.

Dr. Steven Chu
Secretary of Energy
April 2012
Questions