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Future Impact of the FHA to the Fire Protection Program

Julie Cordero, PE

SNL/NM Fire Marshal



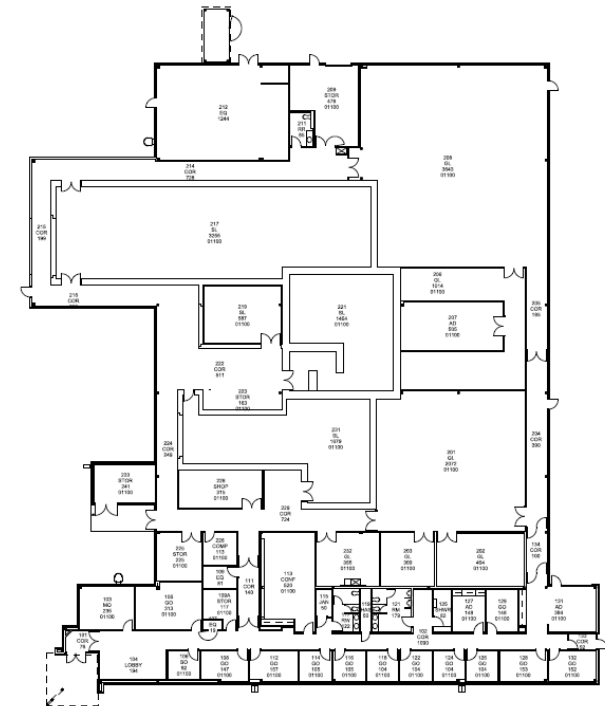
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Hazardous Materials

- 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



Hazard Category	NFPA 704 Designation
Highly Toxic	H4
Flammable Gas	F4
Pyrophoric Gas	F4
Explosive	R4
Organic Peroxide, UD	R4
Unstable Reactive, 4D	R4
Unstable Reactive, 3D	R4

Previous Method of Evaluation

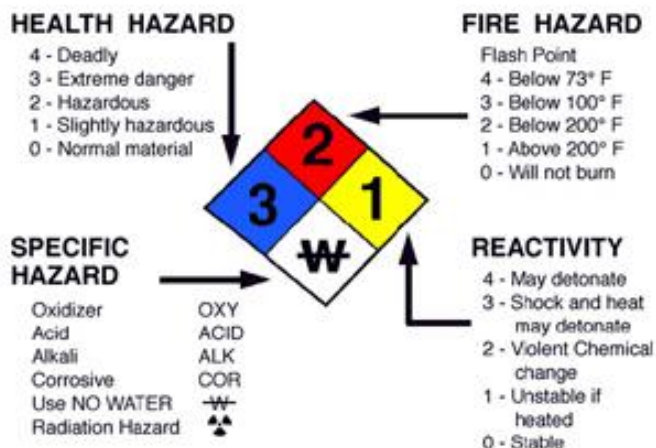
CIS

NFPA 704 Hazard Rating System

CIS Query: Bldg X, Reactivity 4

Total Quantity (Solid): 0.4 lb

Total Quantity (Liq): 4 lbs



Fire Codes

Material	MAQ (Storage ²)
Organic	Solid ³ - 1 lb
Peroxide	Liq ³ - 1 lb
(Unclassified) ¹	Gas - N/A
Unstable	Solid ³ - 1 lb
Reactive	Liq ³ - 1 lb
(Class 4) ¹	Gas ³ - 10 ft ³
Unstable	Solid ^{3,4} - 5 lbs
Reactive	Liq ^{3,4} - 5 lbs
(Class 3)	Gas ^{3,4} - 50 ft ³

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

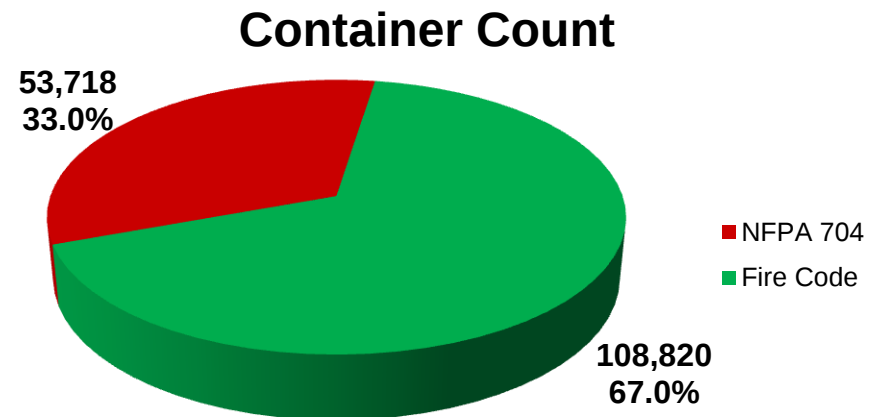
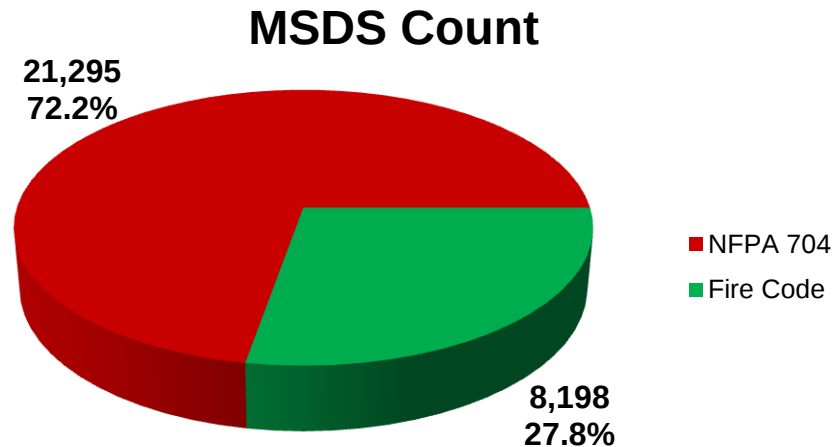
MAQ Tool

- 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

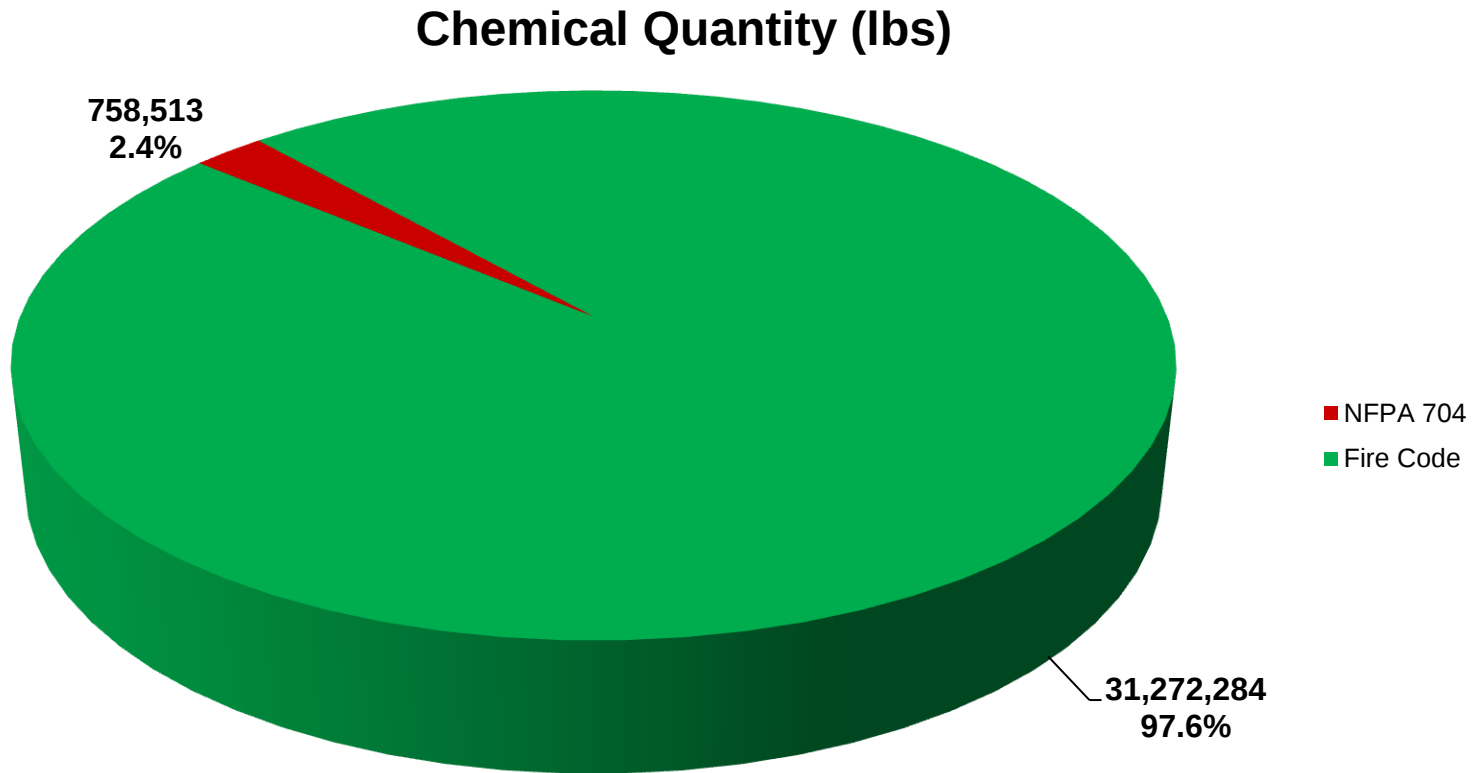
Fire Code Classification Efforts

- 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



Fire Code Classification Progress



Building and Fire Safety MAQ Hazardous Materials

Get Started

- MAQ Rollup Tool
- Evaluations
- Administrative MAQs
- MAQ Process Flow Chart
- MAQ FAQs

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

Welcome to the Hazardous Materials Maximum Allowable Quantities (MAQ) Assessment Site.

Site ☒ SNL/NM ☐ SNL/CA ☐ SNL/NV

Building

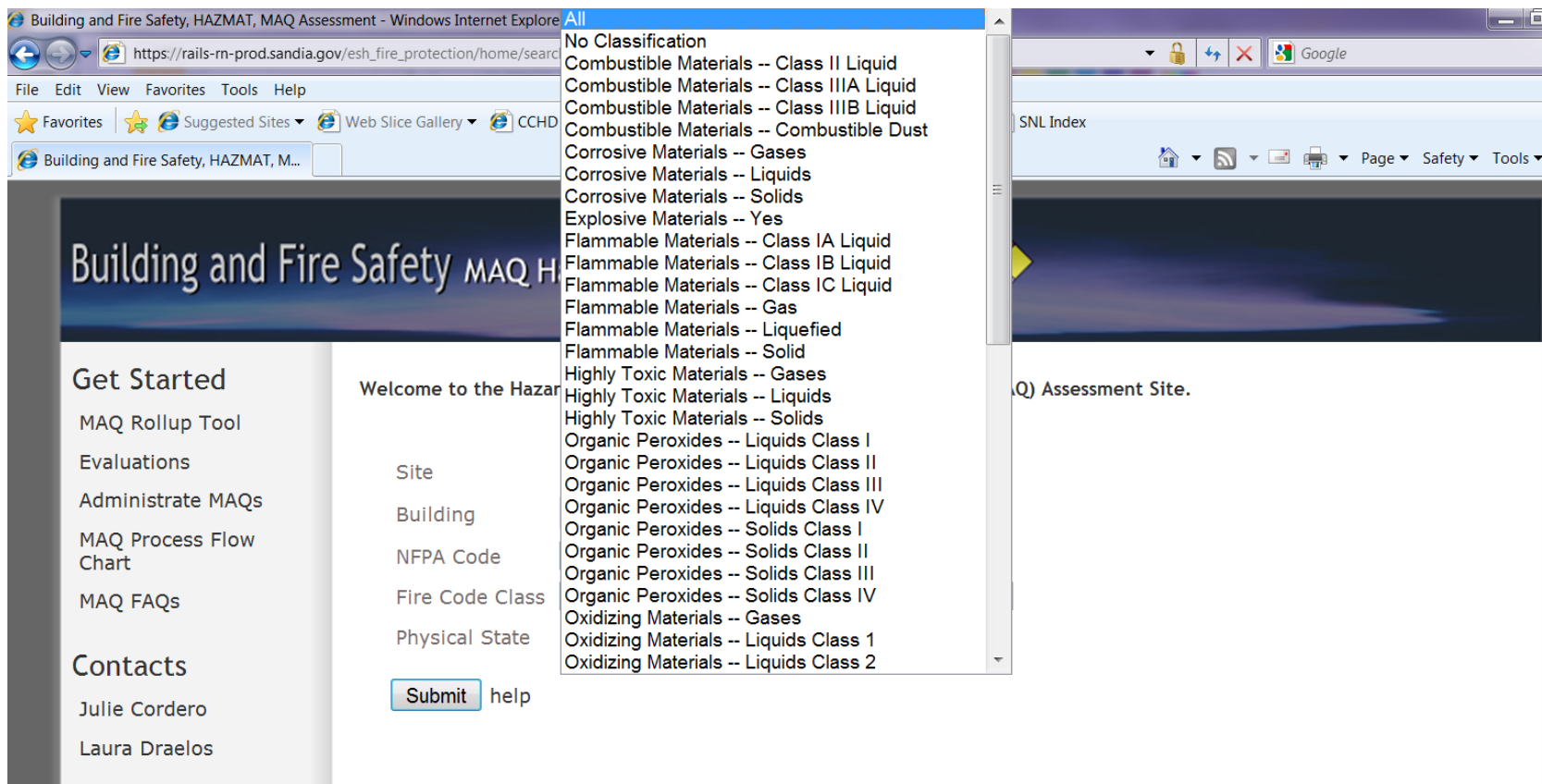
NFPA Code

Fire Code Class

Physical State ☒ Solid ☒ Liquid ☒ Gas ☒ Aerosol

[help](#)

MAQ Tool



Building and Fire Safety, HAZMAT, MAQ Assessment - Windows Internet Explorer

https://rails-rn-prod.sandia.gov/esh_fire_protection/home/search

File Edit View Favorites Tools Help

Favorites Suggested Sites Web Slice Gallery CCHD

Building and Fire Safety, HAZMAT, M...

Building and Fire Safety MAQ H...

Get Started

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- Evaluations
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Welcome to the Hazardous Materials (HAZMAT) MAQ Assessment Site.

Submit help

All

- No Classification
- Combustible Materials -- Class II Liquid
- Combustible Materials -- Class IIIA Liquid
- Combustible Materials -- Class IIIB Liquid
- Combustible Materials -- Combustible Dust
- Corrosive Materials -- Gases
- Corrosive Materials -- Liquids
- Corrosive Materials -- Solids
- Explosive Materials -- Yes
- Flammable Materials -- Class IA Liquid
- Flammable Materials -- Class IB Liquid
- Flammable Materials -- Class IC Liquid
- Flammable Materials -- Gas
- Flammable Materials -- Liquefied
- Flammable Materials -- Solid
- Highly Toxic Materials -- Gases
- Highly Toxic Materials -- Liquids
- Highly Toxic Materials -- Solids
- Organic Peroxides -- Liquids Class I
- Organic Peroxides -- Liquids Class II
- Organic Peroxides -- Liquids Class III
- Organic Peroxides -- Liquids Class IV
- Organic Peroxides -- Solids Class I
- Organic Peroxides -- Solids Class II
- Organic Peroxides -- Solids Class III
- Organic Peroxides -- Solids Class IV
- Oxidizing Materials -- Gases
- Oxidizing Materials -- Liquids Class 1
- Oxidizing Materials -- Liquids Class 2

SNL Index

MAQ Assessment Site.

Building and Fire Safety MAQ Hazardous Materials

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MAQ Rollup Tool
Evaluations
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MAQ Process Flow
Chart
MAQ FAQs

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Resources

Building and Fire
Safety Home
Chemical Inventory
System (CIS)

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

-  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

Bldg	State	Rolled Up Qty	MAQ	Fire Code Class	Comments	Details
	Gas	334.78 CUFT	2000 CU. FT 	Flammable -- Gas	Select no-notification reason 	Show Export Details
					☐ Notify All	Evaluate

MAQ Tool

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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

☒ Show all

Bldg	State	Rolled Up Qty	MAQ	Fire Code Class	Comments	Details		
720	Gas	334.78 CUFT	2000 CU. FT 	Flammable -- Gas	Select no-notification reason   	Hide Export Details		
					☐ Notify All	Evaluate		
SUMMARY								
Fire Code Class				Total Qty				
flammable - Gas				334.78 CUFT				
DETAILS								
Location	FP Rolled Up Qty	Purchase Date	Name	Fire Code Class	Health	Fire	Reactivity	Special
AQ00019550	McWatters, Bruce Ray	☒ DO NOT NOTIFY						
NM/720	200.00 CUFT	04/25/1995	NITROGEN (10%)/HYDROGEN (BAL)	flammable - Gas	1	0	0	N
AQ00636696	Perry, Daniel Lee	☒ DO NOT NOTIFY						
NM/720	25.43 CUFT	08/22/2007	ETHYLENE	flammable - Gas	2	4	2	U
AQ00727357	Perry, Daniel Lee	☒ DO NOT NOTIFY						
NM/720	20.00 CUFT	09/24/2009	HYDROGEN	flammable - Gas	1	4	0	U

Building and Fire Safety MAQ Hazardous Materials

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System (CIS)

Site:	SNL/NM
NFPA Codes:	All
Fire Code Class:	Flammable -- Class IA Liquid
Physical States:	Solid, Liquid/Aerosol, Gas
Assessed By:	Julie V Cordero
Date of Assessment:	2012-05-08

-  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

Bldg	State	Rolled Up Qty	MAQ	Fire Code Class	Comments	Details
	Liquid/Aerosol	24.37 GAL 243.7 LBS	300 LBS	Flammable -- Class IA Liquid	Select no-notification reason 	Show Export Details
					☐ Notify All	Evaluate

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



Questions

