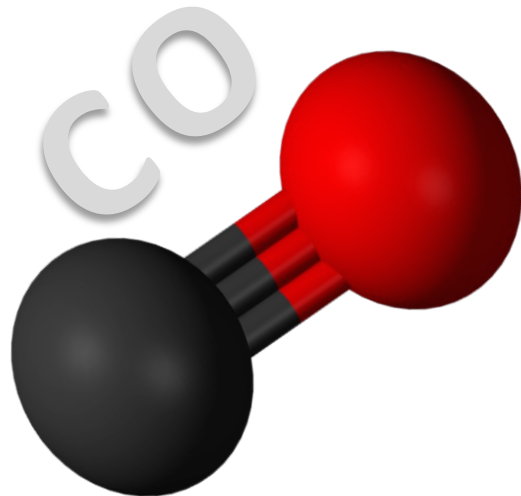




# CO Myth Busters & CO Safety Coalition

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*Charon McNabb  
Founder, NCOAA*

*Kevin Sehlmeier  
Michigan State Fire Marshal, NCOAA Board Member*

## **VISION**

An end to injury and death due to carbon monoxide poisoning.

## **MISSION**

Drive a comprehensive conversation on the public health crisis of chronic and acute carbon monoxide poisoning.

# Two Types of CO Poisoning

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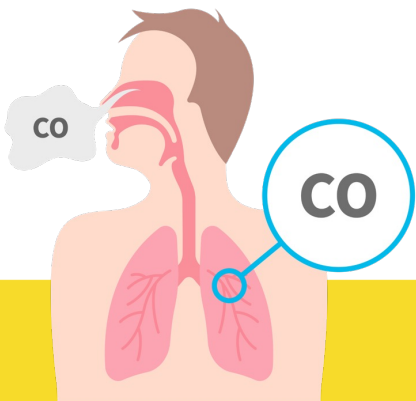


## ACUTE CO POISONING

- ⚠️ Single Exposure to high levels
- ⚠️ Detectable with a blood test
- ⚠️ Treatable with hyperbaric oxygen

## CHRONIC CO POISONING

- ⚠️ Multiple exposures to low levels
- ⚠️ Poorly recognized & no diagnostics
- ⚠️ No treatment



# A MOTHER'S MISSION

SETTING THE ALARM ON A SILENT RISK



# Founder's Story



## 11 Years of CO Poisoning

- Multiple misdiagnoses
- Dozens of Prescriptions
- No Treatment Plan

... Until CO leaks discovered in 2013

1. Furnace #1: Crack in furnace flue
2. Furnace #2 and HWH #1 and HWH #2: Vented thru a single 4" flue
3. Chimney: Built below roofline
4. Gas Dryer: Internal leak



# 6 Gaps in the CO Safety Net

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1.



Detection

2.



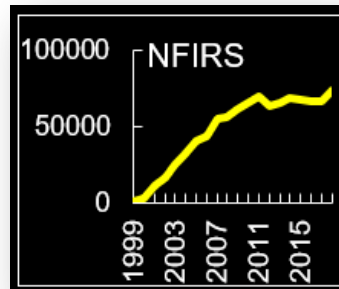
Training & PPE

3.



Warns too Late

4.



Data

5.



Diagnostics

6.

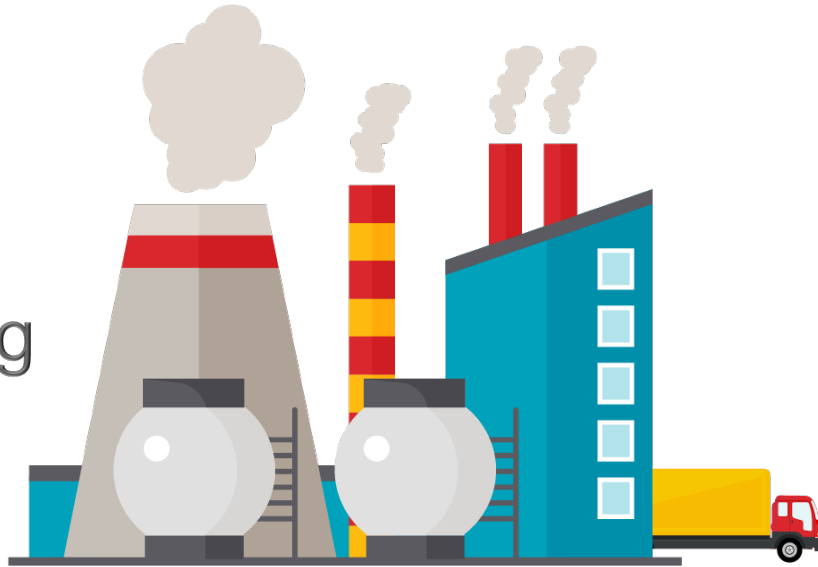


Treatment & Survivor Support

# Gap 1: Lack of Detecting

## CO in INDUSTRIES

- Automotive
- Aviation
- Education
- Hospitality
- Manufacturing
- Marine
- Residential



## Michigan Residential

Alarm Installs:

Smoke: 42,928

CO: 10,974

*Since 2018*

14% 

of families in the US have  
properly functioning CO  
alarms installed in their homes



# Gap 1: Alarms Not Intuitive

## DO YOU KNOW HOW MANY BEEPS?

- CO detected?
- Smoke detected?
- Battery low?

➤ 50% of Fire Service Didn't Recognize CO Alarm

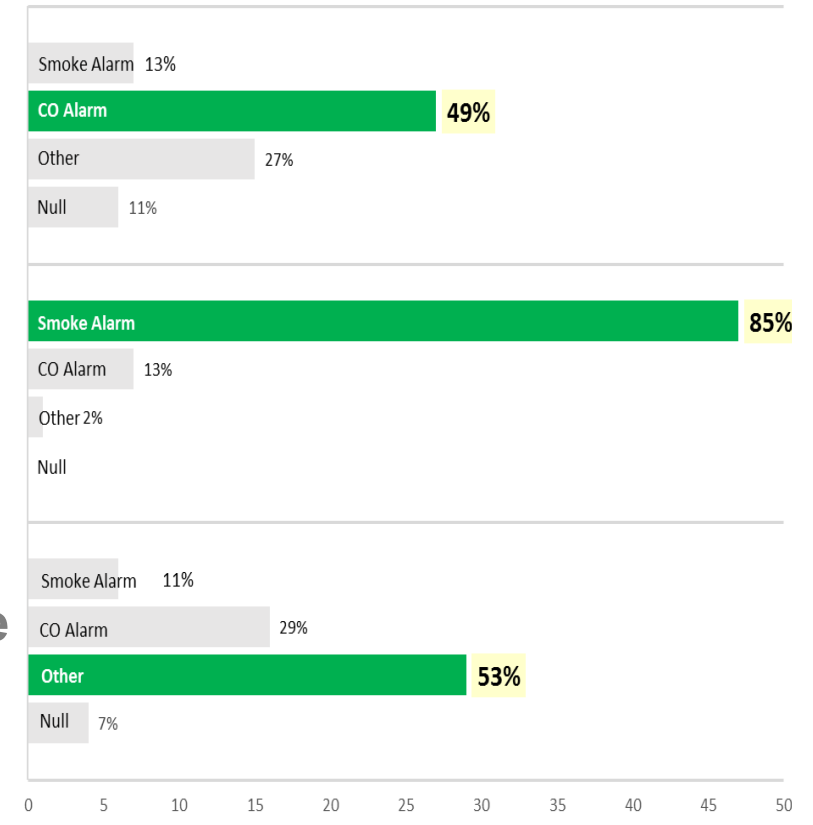
### CO Alarm



### Smoke Alarm



### Microwave





# Gap 2: Training & PPE

## Silent & Deadly Job Hazard



### More training needed for all responders:

- Firefighters, police, EMTs, HVAC installers, plumbers
- Current courses & teach outdated information
- Firefighters killed & injured by CO while in overhaul, fire suppression, surf rescue, wildland fire operations, confined space operations, & live fire training.<sup>1</sup>
- Negative health effects seen by workers include with cardiovascular disease, mental health issues, cancer, etc.



### PPE protects ...



Health



Judgement



Coordination



Temperament



# Gap 3: Alarms Warn Too Late

Underwriters Laboratories 2034 Standard <sup>1,2</sup>		World Health Organization Guidelines	
CO (ppm)	Time	CO (ppm)	Time
70	60 - 240 minutes	<del>6</del> 4 ppm	24 hours
150	10 - 50 minutes	8	8 hours
400	4 - 15 minutes	30	1 hour
		87	15 minutes

## Why 10x the WHO Guidelines?

1) Alarms are designed to ignore CO under 70 ppm

2) CPSC warns consumers, "CO Alarms are Life Safety devices" & further warn they "DO NOT prevent injury"

# Gap 4: Surveillance Data

## NO NATIONAL SURVEILLANCE SYSTEM

- **CDC**
  - Estimate deaths & hospitalizations using surveillance activities not primarily designed for CO poisoning
- **National Fire Incident Reporting System (NFIRS)**
  - Voluntary – used by 75% of FDs
  - Reports incidents - not individuals
- **OSHA:** Limited investigated incidences
- **EDs:** Reports symptoms, not individual diagnoses
- **Poison Control**

**INCOMPLETE DATA = BAD DATA**

NFIRS - 1 Basic

MO, CO, YYYY

FD, State, Incident Date, Station, Incident Number, Extinct

Location

Street address

Intersection

In front of

Rear of

Adjacent to

Directions

Incident Type

Aid Given or Received

Actions Taken

Resources

Estimated Dollar Losses & Values

Completed Modules

H1 # Casualties

H2 Hazardous Materials Release

H3 Mixed Use Property

J Property Use

Structures

Clinic, clinic type infirmary

Household goods, sales, repairs

Church, place of worship

Doctor/dentist office

Motor vehicle/boat sales/repairs

Restaurant or cafeteria

Prison or jail, not juvenile

Gas or service station

Bar/taVERN or nightclub

1- or 2- family dwelling

Business office

Elementary school or kindergarten

Multi-family dwelling

Electric generating plant

High school or junior high

Rooming/boarding house

Laboratory/science lab

College, adult ed.

Commercial hotel or motel

Manufacturing plant

Care facility for the aged

Residential, board and care

Livestock/poultry storage (barn)

Hospital

Dormitory barracks

Non-residential parking garage

Warehouse

Food and beverage sales

Food and beverage sales

Warehouse

Playground or park

Vacant lot

Construction site

Crops or orchard

Graded/cared for plot of land

Industrial plant yard

Forest (timberland)

Lake, river, stream

Railroad right of way

Other street

Outdoor storage area

Other street

Dump or sanitary landfill

Highway/divided highway

Open land or field

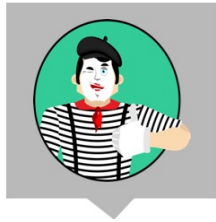
Residential street/driveway

# Gap 5: Insufficient Diagnostics

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## STEP 1: Access Symptoms

CO is the “Great Mimicker”



- Hangover, flu, food poisoning, stress
- Anxiety, depression, emotional issues
- Stroke, cardiac or high blood pressure
- Brain fog, dementia, Parkinson's, Alzheimer's

## STEP 2: Blood Tests

COHb test is problematic



- Invasive, arterial blood draw
- Half-life = 4 hrs. (1 hr. with oxygen)
- Only at ~ 65% of labs
- **No test for chronic poisoning**

# Solution - New Diagnostics

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## IN-FIELD CO DIAGNOSTICS

Special Pricing: \$595

*(Normally \$795)*

[info@microdotcs.com](mailto:info@microdotcs.com)

(877) 374-4062





# Gap 6: Treatment

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## OXYGEN THERAPY IS NOT ENOUGH

**Hyperbaric (HBOT)**  
*Pressurized Oxygen*



### Issues:

- Oxygen removes CO from blood but, pushes it deeper into muscle & tissue
- Risk of brain damage (DNS) ~2x after HBOT
- HBOT may damage weakened cardiac tissue
- Doesn't address damage to brain, thyroid, cardiac tissue, nerve endings, etc.



**Supplemental**  
*Eases heart & lung workload*

**OXYGEN ALONE IS INEFFECTIVE**



How do we overcome  
**multiple** gaps spanning  
**multiple** industries?



# CO Safety Coalition



## ADVISORY COMMITTEE

**International Code Council**

Karl Fippinger

**National Fire Protection Association Research**

Amanda Kimbell

**National Center for Healthy Housing**

Amanda Reddy

**National Carbon Monoxide Awareness Association**

Charon McNabb

**National Association of State Fire Marshals**

Kevin Sehlmeier

## WORKING GROUPS

**Data Surveillance**

**Co-Chairs:**

Patrick Smith, REM Risk Consultants  
Christina Binkowski, NCOAA

**Directive:**

You can have data without information, but you cannot have information without data.

**Science & Innovation**

**Co-Chairs:**

Louise Laing, Crowcon  
Adrian McConnell, CORT

**Directive:**

If you're not detecting, you're just guessing.

**Emergency & Trade Response**

**Co-Chairs:**

John Tippet, NFFF  
Christopher Damm, MSOE Univ

**Directive:**

Protect our Protectors.

**Codes, Standards & Regulations**

**Co-Chairs:**

Richard Roberts, Honeywell  
Adam Sayler, City of Seward

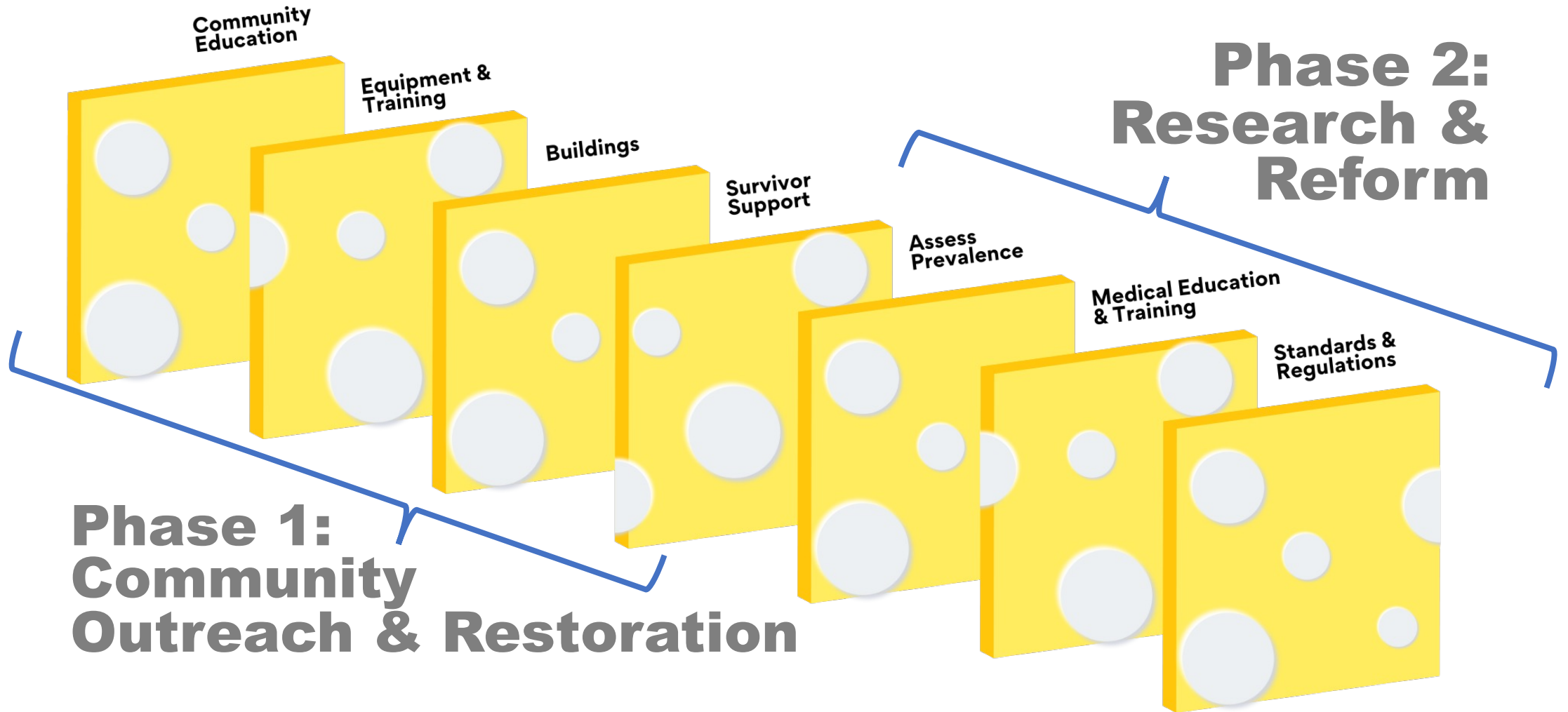
**Directive:**

Safety doesn't happen by accident.

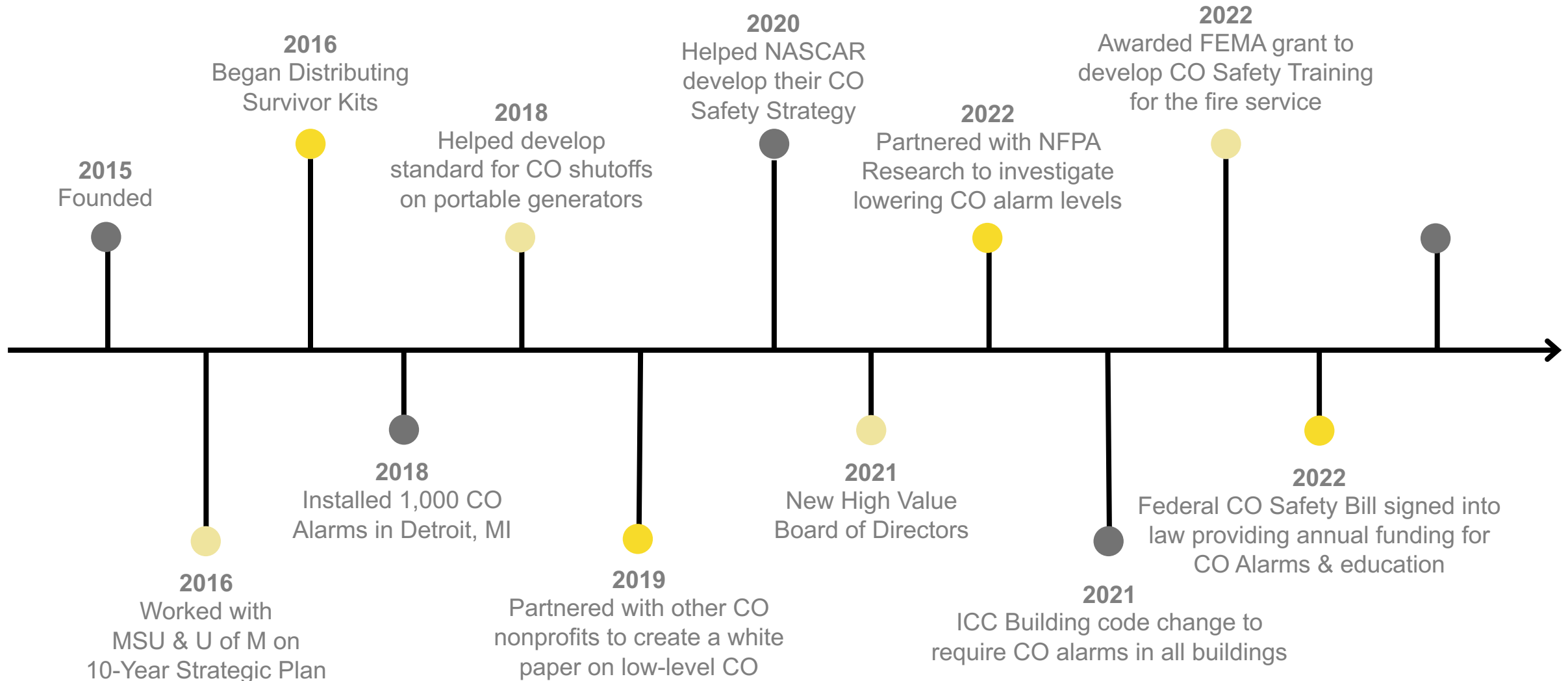
# Mitigation Strategy



## Phase 2: Research & Reform



# Impact Report



# Priorities

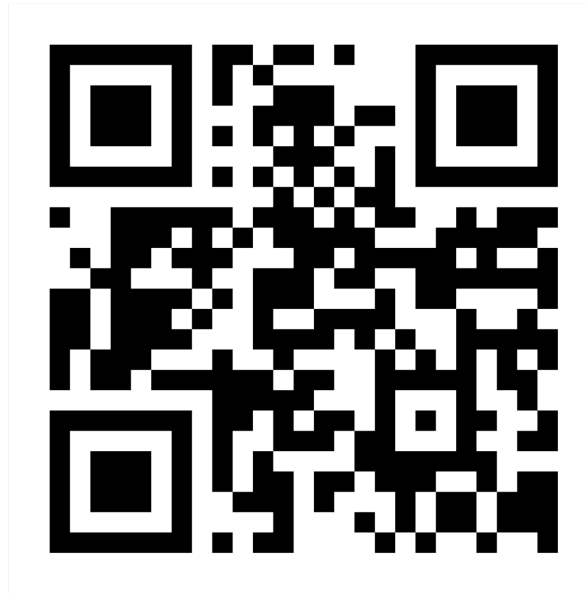
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- Complete CO Safety training for firefighters – FEMA funded
- Launch Coalition and Work Groups – Oct 2023
- Fundraise
- Conferences
  - Local support – if support is available
  - National support – if travel is covered
- Plan Summit 2024

# Our Strength is our Partners

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*Join The Coalition*