

# Overview of ENF 2013-07: California Aeration Plan for Structural Fumigations (a.k.a. "CAP 2013")

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# CAP Presentation Overview

## Key Points covered include:

- 3CCR 6780 & B1 fumigation safety plan
- Overview of ENF 2013-07 CAP:
  - ❖ Requirements vs. Advisory Language
  - ❖ Tables 1 & 2
  - ❖ CAP 6 Steps
  - ❖ New CAP Section: “Blow Opens”

# 3CCR 6780 & B1 Fume Options

## 6780(c):

Upon written application by an employer, the director will review and may accept a Fumigation Safety Program that describes methods, work practices, devices, or processes which the Director determines will ensure that employees will not be exposed to concentrations of fumigants in excess of the Permissible Exposure Level

# CAP Fume Prep: Internal Openings

## CAP 2013 Revision:

 **The section stating “Open all operable & accessible doors & windows including attics, storage chests, cabinets etc. has been removed from CAP.**

 **This violation must now be written only as “no” for FAC 12973 only, not as a CAP (3CCR 6780) violation.**

# CAP Fume Prep: Internal Openings

“Direct a circulation fan into each attic”

Each operable attic access must be open ...[but] if there are multiple access areas [to the same attic]...

a circulation fan is NOT required at each access point.

# CAP Fume Prep: External Openings

New CAP 2013: Attached Storage Sheds  
For “storage sheds” under staircase  
or attached on outside of structure...

- ◇ Extra circulation fan not needed in the shed
- ◇ Shed w/operable window: open  $\geq$  3 inches
- ◇ **Shed w/o window:** open door  $\geq$  3 inches  
& secure against unauthorized entry

# CAP Fume Prep: Aeration Devices

New CAP 2013: [Minimum thickness/durability](#)

**+ Aeration ducting, duct covers, inlets,  
and inlet covers...**

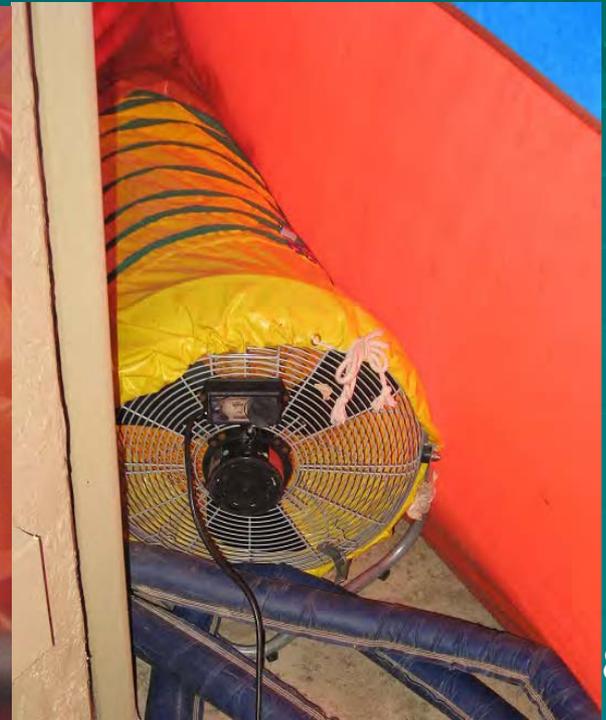
must be constructed of material w/same  
retention & durability capabilities

**(at least 4 mil thickness)**

as required by SF labeling  
& 16 CCR 1970.1(b)

# CAP Fume Prep: Aeration Devices

For tarpaulin fumigations, aeration equipment is installed **PRIOR** to [introduction of] fumigation, so aeration can be initiated from outside the fumigated space



# CAP Fume Prep: Aeration Ducting

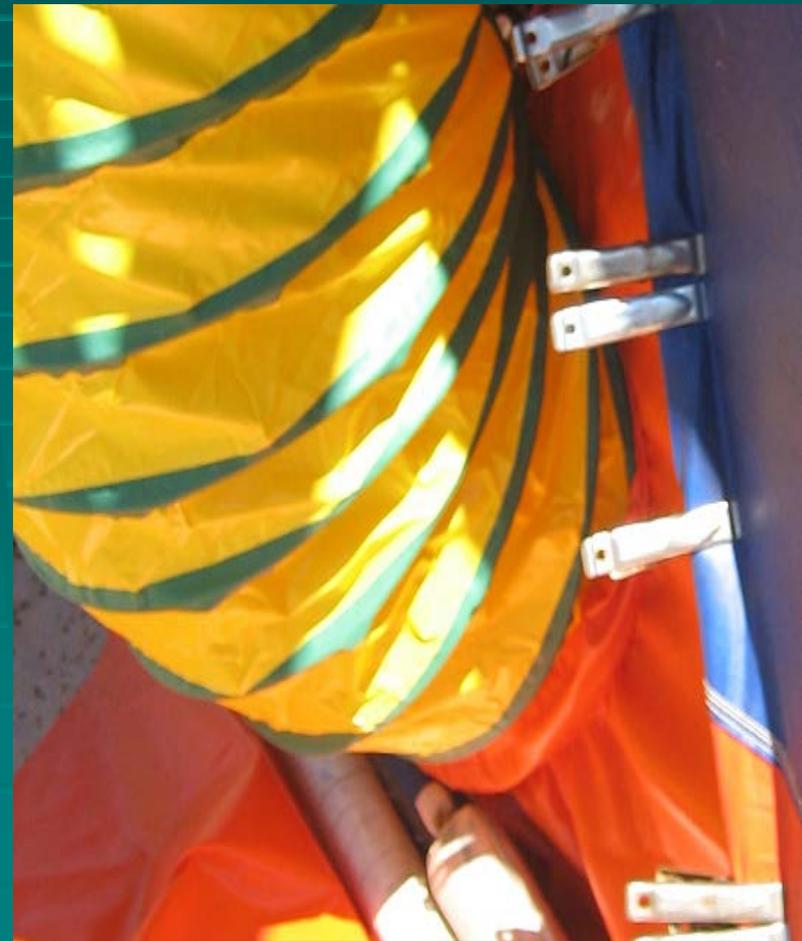
## New CAP 2013: Ducting Reinforcement

- + **Aeration ducting shall be constructed in a manner that maintains its minimum 18-inch diameter without being inflated by the airflow of the fan...**
- + **Intention is for ducting to have the same internal size...whether the fan is operating or not...**

# CAP Fume Prep: Aeration Ducting

## CAP 2013 Revisions: Ducting Installation

- + **Connect [18 inch fan to ducting...] so the ducting does not easily collapse or restrict air flow when installed through the tarpaulin or when it is extended...**



# CAP Fume Prep: Aeration Ducting

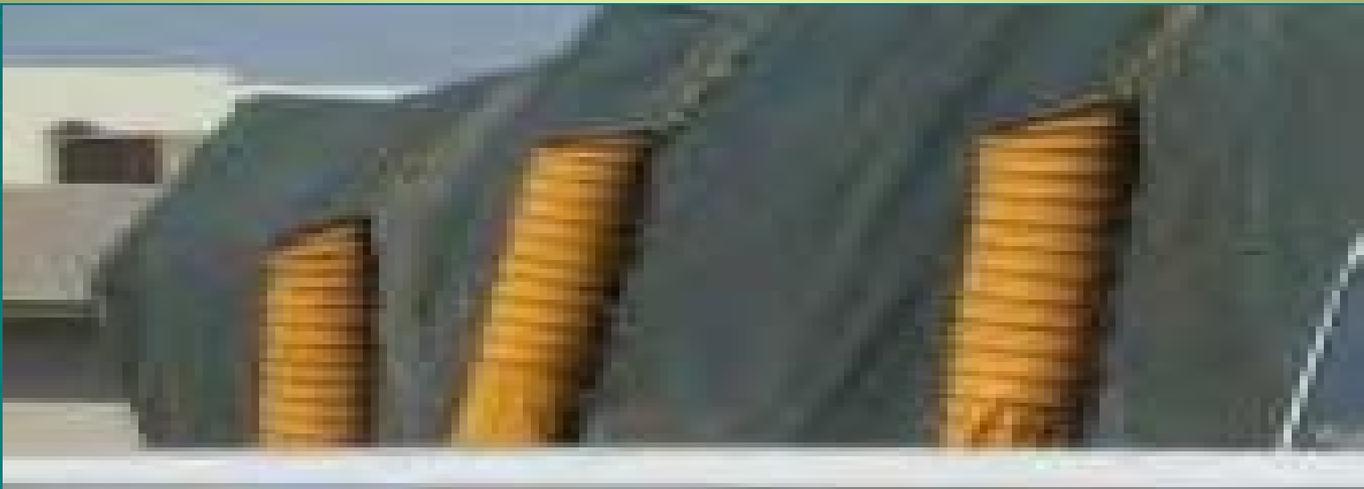
## CAP 2013 Revisions: Ducting Placement

- + **Position the ducting so the release point...is outside the tarp and fumigant is discharged vertically.**
- + **Place aeration ducting in an open area away from sensitive sites such as occupied structures.**

# CAP Fume Prep: Aeration Ducting

## CAP 2013 Revisions: Ducting Placement Advisory

- + Whenever practical, spacing aeration ducting across the side of the structure...helps to facilitate aeration...



# CAP Fume Prep: Aeration Ducting

## CAP 2013 Revisions: Duct Cover

- + The duct cover shall not restrict or block the aeration duct opening after the duct cover is removed...  
[in CAP Step 1]**

# CAP Fume Prep: Aeration Ducting

## “GARLIC TOP”

Industry slang for a duct or its cover that partially or completely collapses on itself

When fan is operating,  
causing obstruction of air flow:

during Aeration Phase

“Garlic Top”

(Full or Partial Blockage)  
would be a CAP Violation



# CAP Fume Prep: Inlet Devices

## CAP 2013 Revisions: Inlet Devices Advisory

- + Objective of inlets...draw in fresh air & promote cross-ventilation
- + Inlet size & spacing across side of structure...influence/help facilitate aeration of the structure

# CAP Fume Prep: Inlet Devices

CAP 2013: 6 Inlet Requirements  
“Inlet Devices MUST...”

1. Maintain the integrity of required opening
2. Have an opening of at least 240 square inches minimum up to a maximum opening of 381 square inches

# CAP Fume Prep: Inlet Devices

CAP 2013: 6 Inlet Requirements

“Inlet Devices MUST...”

3. Have the opening covered w/material allowing ventilation, such as mesh, net, or wire...
4. Be located where the opening is not blocked & will draw in fresh air to create negative pressure & promote cross-ventilation of the structure...

# CAP Fume Prep: Inlet Devices

CAP 2013: 6 Inlet Requirements  
“Inlet Devices MUST...”

5. Have the entire inlet opening be at least 4 feet above exterior grade
6. Be sealed in a way that allows external\* opening during aeration

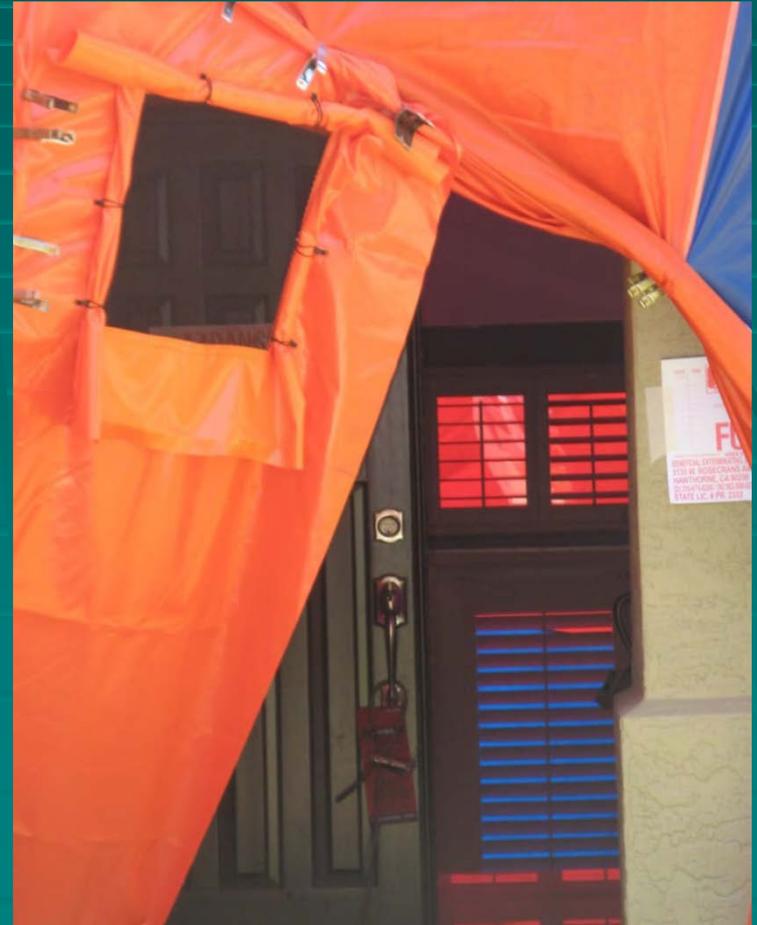
\*INLETS ARE NOT REQUIRED TO BE OPENED “REMOTELY” LIKE DUCTING BECAUSE FANS ARE ALREADY TURNED ON

# CAP Inlet Device Requirements

## Inlet Device Placement

### ADVISORY

- Whenever possible, place inlets on the side opposite from where the aeration ducting is located...



# CAP Table 1: Inlets

## CAP 2013 Additional: Inlet Size Range

- ◆ In addition to changing the minimum size of each inlet, Table 1 now has a maximum inlet size
- ◆ Total number of inlets required per size of structure in cubic feet with “options”
- ◆ New examples of how to calculate # inlets & DAFs needed for that size structure

# CAP Table 1: # DAFs vs # Inlets

When the structure's size in cubic feet has been determined by the PCB,

review CAP Table 1 for the minimum number of ducted air fans & inlet devices req'd  
[Table 1 # DAFs per cubic feet didn't change]

## CAP 2013 Change In Table 1:

Determining the **total # Inlets** per size of structure is based on a “range” calculation

# CAP 2013 Revision: Inlet Size Range

- ❖ **Minimum Inlet Size decreased from 254 square inches (approx. 16" X 16") to the new minimum inlet size:**

**240 square inches (~15.5" X 15.5")**

**AND**

- ❖ **Now there's also a maximum inlet size 381 square inches (~19.5" X 19.5")**

# CAP 2013 Revision: Inlet Size Range

## ◇ Minimum Inlet Size = 240 square inches

2 inlets this size = 480 sq. inches

3 inlets this size = 720 sq. inches

4 inlets this size = 960 sq. inches

## ◇ Maximum inlet size = 381 square inches

2 inlets this size = 762 sq. inches

3 inlets this size = 1,143 sq. inches

4 inlets this size = 1,524 sq. inches

# CAP Table 2: Aeration Hours

Once the structure's cubic feet is measured and the sulfuryl fluoride label calculations for concentration of fumigant are known, **consult CAP Table 2 to determine minimum number of hours aeration time.**

Example: For  $\leq 16$  ounces SF per 1K cu ft  
**Minimum Aeration Time = 12 hours**

# CAP 2013: Intro To The Steps “Aeration & Reentry”

- ⇒ All of the following CAP steps (1-6) must be completed in sequence...
- ⇒ [But when multiple] tasks in each step, they may be accomplished in any order
- ⇒ Licensee (B1 Operator or Field Representative) must be present for & assure completion of Steps 1-6

# CAP 2013: Step 1 - Initiating Aeration ("Aeration Fans On")

## Step 1

Remove seal(s) from each  
previously installed exterior duct(s)  
and

Activate aeration fans from outside  
(by "remote activation")



# CAP Step 2

(Initiating Aeration: “Inlets Opened”)

## Step 2

[“After ALL (ducted) aeration fans are activated...”]

Remove inlet cover (seals) from each of the previously installed inlet devices



# CAP Step 3 ("Fans Off")

## Step 3

Anytime after the required # hours  
of aeration specified in Table 2  
are completed...

Turn off  
the aeration fans

# CAP Step 4 (“Tarps Off”)

## Step 4

(After fans turned off)

Remove all tarpaulins  
and/or seals  
from the structure...

Do Not Enter  
structure w/o SCBA  
or Continuous  
Monitoring until  
Step 6 completed



# CAP Step 5

## Licensee assures:

- \* IF central air/heating systems, turn on the fan/blower ONLY for each operational unit...
- \* OR a circulation fan may be placed in front of furnace inlet to blow air into the heating/cooling ducts
- \* Remove all chloropicrin pans from the fumigated space

# CAP Step 6

## (Ready To Clear For Re-entry)

\* Next measure the concentration of fumigant  
in breathing zones  
using approved fumigant detection device  
per the registered label.

If structure tests  $\leq 1.0$  ppm, it's ready for  
Certification...

# CAP Step 6 (Clear For Re-entry)

OR...

\* If concentration measures  $> 1.0$  ppm,  
or warning agent detected,

open operable doors & windows for  
additional ventilation (usually a few minutes)

until detection device confirms  $\leq 1.0$  ppm &  
structure may be re-occupied

# CAP 2013 New Section: “Blow Opens”



Photo contribution for training purposes from Santa Barbara CAC

# CAP 2013 Additional: “Blow Opens”

- ◇ CAP 2013 new section states the options depending upon what time in the fume process the tarps open...
- ◇ First paragraph clarifies PCB must still comply with 3CCR 6780 for “blow opens” ...
- ◇ Determine SF level in the exterior workspace before resealing or removing tarps. If SF level > 1.0 ppm in the exterior use SCBA when reseal/remove tarps...

# CAP 2013 Additional: “Blow Opens”

If fume is “finished”  
(estimated # hours exposure long enough  
to control the pest treated):

⇔ Can be resealed & aerated using CAP

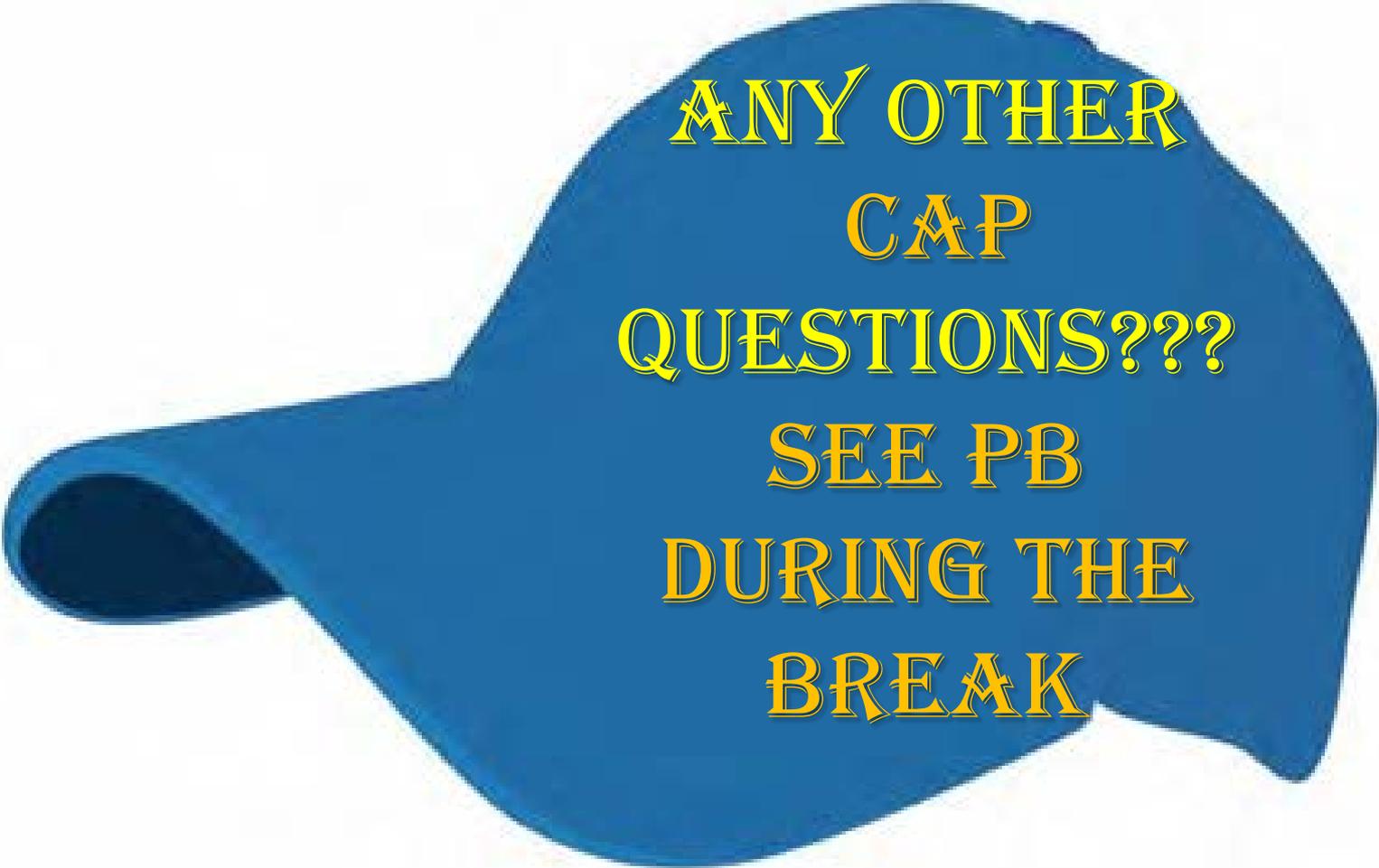
OR

⇔ If cannot be resealed, tarps can be  
removed BUT aeration must be  
completed using SF labeling “Aeration  
Procedure 1 or 2”

# CAP 2013 Additional: “Blow Opens”

If fume is NOT “finished”  
(insufficient # hours exposure  
to control the pest treated):

- ↔ Can be resealed, more fumigant added if necessary, & aerated using CAP
- ↔ If cannot be resealed (fume job to be rescheduled), tarps can be removed BUT aeration must be completed using SF labeling “Aeration Procedure 1 or 2”



ANY OTHER  
CAP  
QUESTIONS???

SEE PB  
DURING THE  
BREAK