

# Module 7

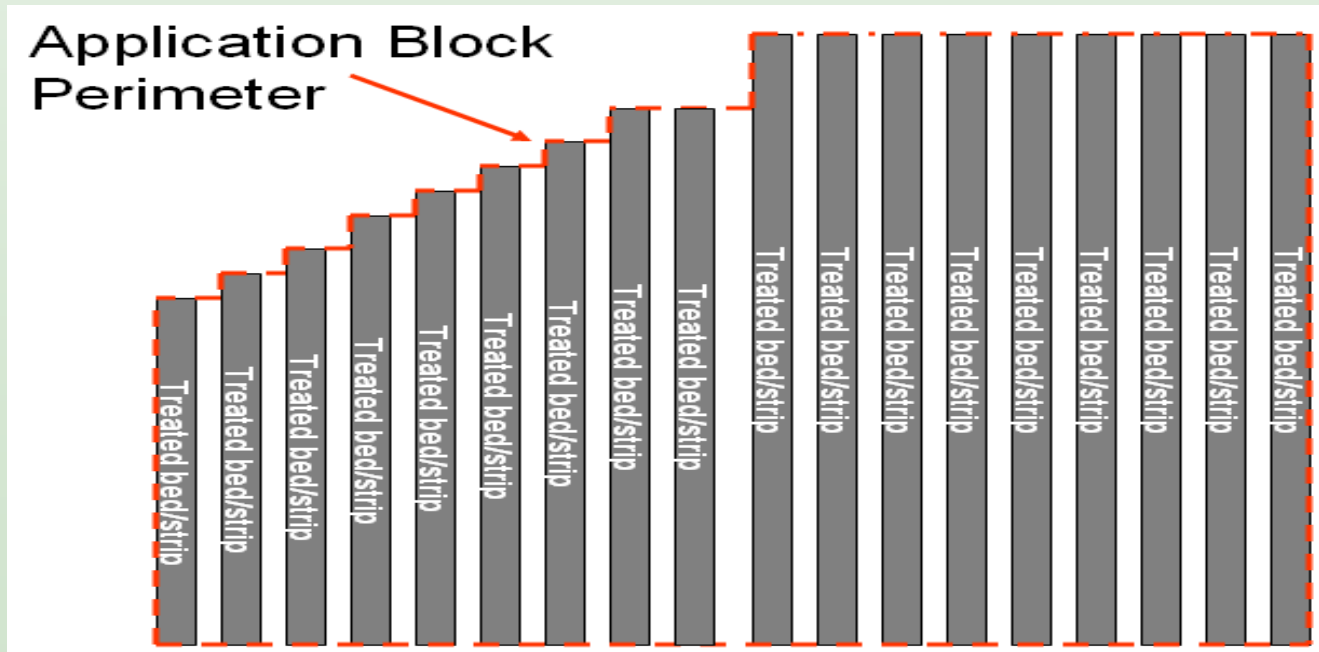
## Soil Fumigant RED Requirements

# Buffer Zones

## Distances, Credits & Posting (2011)

# What is an application block?

- The perimeter of the application block is the border that connects the outermost edges of total area treated with the fumigant product within any 24-hour period (except for center pivot chemigation that occurs over several days)
- The size of the application block is the area within the perimeter of the field where the fumigant is applied.



# What is a Buffer Zone?

- Area around application block
  - Bystanders and pedestrians must be kept out during buffer zone period

- Buffer zone period

begins  when application begins

ends  48 hrs after application ends

# Residential Areas within Buffer Zones

- Buffer zones may include residential areas *if* occupants provide written agreement to *voluntarily vacate*
- For methyl bromide products with <20 % chloropicrin, **air monitoring** inside residences is **required** after buffer zone period ends

# Roads and Rights-of-Ways within Buffer Zones

Buffers may include roads or rights-of-way only IF

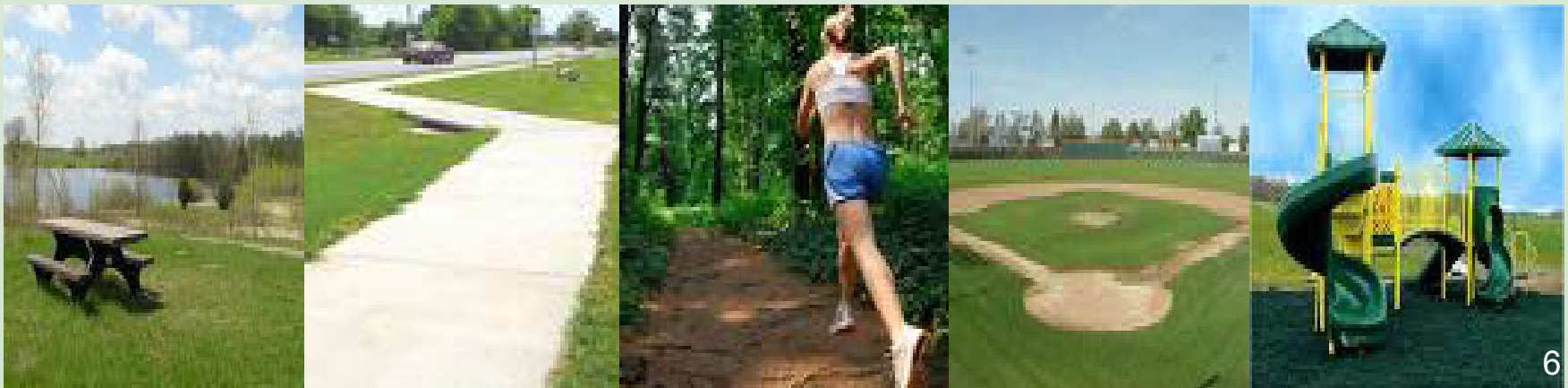
- Area is *unoccupied* during buffer zone period
- Entry by non-handlers is *prohibited*
- Applicators *comply with all* local laws & regulations



# Publicly Owned/Operated Areas within Buffer Zones

Buffers may include public areas only *IF*

- Area is *unoccupied* during buffer zone period
  - Non-handlers prohibited from entering
  - Applicators comply with all local laws and regulations
- AND**
- Have written permission from state/local authorities responsible for management & operation of area



# Transit Through Buffer Zones



- Allowed:
  - Vehicular and bicycle traffic on public and private roadways



- Prohibited:
  - Pedestrians
  - Bus stops or places where people wait for public transit



# Other Agricultural Areas within Buffer Zones

May include agricultural areas owned/operated by another person IF

- buffer zones will *not* overlap, and
- owner/operator provides written agreement that *nobody will enter*





# Overlapping Buffer Zones

- Buffer zones of multiple application blocks may overlap IF
  - at least 12 hours have passed between end of 1<sup>st</sup> and beginning of 2<sup>nd</sup> application\*, and
  - emergency preparedness/response measures implemented if homes, businesses, property are within 300 feet of each buffer zone

\*exception: metam sodium/  
potassium low release height-solid  
stream center pivot applications



# Distances for Buffer Zones

- Product labels will display distances in tables based on
  - application rate
  - application block size
  - application equipment & methods
- Buffer zone “credits”
  - Earned for certain site conditions or application practices that reduce emissions (e.g., certain tarps)

# Buffer Zone/Application Method Scenarios

		Methyl Bromide	Chloropicrin	Metam Sodium/ Potassium	Dazomet
<b>Shank injection</b>	<b>Bedded Tarped</b>	● <sup>2</sup>	● <sup>2</sup>	● <sup>2</sup>	
	<b>Bedded Untarped</b>		● <sup>2</sup>		
	<b>Broadcast Tarped</b>	● <sup>2</sup>	●		
	<b>Broadcast Untarped<sup>1</sup></b>	●	●		
<b>Chemigation, Drip</b>	<b>Tarped</b>		●	●	
	<b>Untarped</b>		●		
<b>Chemigation, Center Pivot</b>	<b>Low Release</b>			● <sup>2</sup>	
	<b>Med Release</b>			● <sup>2</sup>	
	<b>High Release</b>			● <sup>2</sup>	
<b>Chemigation, other</b>				●	
<b>Hand held probe for tree holes</b>		●	●		
<b>Rotor tiller</b>				●	●
<b>Spray Blade</b>					
<b>Hot gas</b>	<b>Outdoor</b>	● <sup>2</sup>			
	<b>Grenhouse</b>	●			

<sup>1</sup> The only untarped application permitted for MeBr is CA orchard replant

<sup>2</sup> New flux studies have been submitted to EPA that may result in change in buffer distances or credits applied

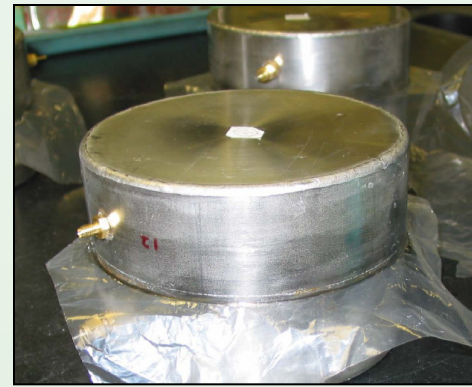
# Buffer Zone Credits

Condition		% Reduction			
		MeBr	Chloropicrin	Metam	Dazomet
Use of high barrier tarp		30 or 60	30 or 60	15 or 30	NA
Organic matter content	> 1% -2%	10	10	10	10
	> 2% -3%	20	20	20	20
	> 3%	30	30	30	30
Clay content > 27%		10	10	10	10
Soil Temp	≤ 50 F (center pivot and shank)	NA	10	20	NA
	> 50-70 F (center pivot and shank)	NA	NA	10	NA
	> 50-70 F (drip irrigation, flood irrigation, and rotary tiller and spray blade applications)	NA	NA	10	NA
Symmetry application system, high barrier tarp, <100 lb ai/A		NA	40 or 70	NA	NA
Potassium thiosulfate seal with water applied over tarp		15	15	NA	NA
Water seal applied over tarp		NA	10	NA	NA
<b>Max reduction</b>		<b>80</b>	<b>80</b>	<b>80</b>	<b>40</b>

# Flux Studies Under Review by EPA

Study Sponsor	Fumigant(s)	Location	Application Type
MBIP	MeBr, Pic	Wasco, CA	Strip, VaporSafe TIF tarped
MBIP	MeBr, Pic	Wasco, CA	Broadcast, LDPE tarped
MBIP	MeBr, Pic	Wasco, CA	Broadcast, VaporSafe TIF tarped
MBIP	MeBr, Pic	Wasco, CA	Broadcast, VaporSafe TIF tarped, KTS under tarp
MBIP	MeBr, Pic	Wasco, CA	Deep 18" Broadcast, VaporSafe TIF tarped
MBIP	MeBr, Pic	Plant City, FL	Raised Bed, TIF
MBIP	MeBr, Pic	Plant City, FL	Hot Gas, TIF
USDA Areawide	Metam, Pic, DMDS	Tifton, GA	Bedded, Blockade Tarped
USDA Areawide	Metam, Pic, DMDS	Tifton, GA	Bedded, LDPE tarped
USDA Areawide	Metam, Pic, DMDS	Tifton, GA	Bedded, LDPE tarped
USDA Areawide	Metam, Pic, 1,3-D	Duette, FL	Bedded, Metallized tarped
USDA Areawide	Metam, Pic, 1,3-D	Duette, FL	Bedded, Guardian VIF tarped
USDA Areawide	Pic, 1,3-D	Ft. Pierce, FL	Broadcast, low disturbance rig with surface compaction, HDPE tarped
USDA Areawide	Pic, 1,3-D	Ft. Pierce, FL	Broadcast, back swept shanks, HDPE tarped
USDA Areawide	Metam, Pic, 1,3-D	Duette, FL	Bedded, Metallized tarped
WI Potato Growers	Metam	Coloma, WI	Broadcast (Dual Injection at 5.5 and 9.5"), water seal (0.1")
WI Potato Growers	Metam	Coloma, WI	Broadcast (Dual Injection at 5.5 and 9.5"), water seal (0.1")
MI Potato Growers	Metam	Howard City, MI	Broadcast (Injection at 12")
MI Potato Growers	Metam	Howard City, MI	Broadcast (Injection at 12"), water seal (0.33")
WA Potato Growers	Metam	Kennewick, WA	Broadcast (Injection at 9")
WA Potato Growers	Metam	Kennewick, WA	Broadcast (Injection at 9"), water seal (0.25")
Metam Alliance	Metam	Bakersfield, CA	Broadcast (daytime), double water seal (0.4" after app, 0.4" at sunset)
Metam Alliance	Metam	Bakersfield, CA	Broadcast (nighttime), double water seal (0.4" after app, 0.4" at sunset)
Metam Alliance	Metam	Modesto, CA	Drench, triple water seal (0.2" after app, 0.2" at sunset of Day 1 and 2)
WSU	Metam	Pasco, WA	Broadcast
WSU	Metam	Pasco, WA	Center Pviot Irrigation-Drizzle Boom
CMTF	Pic	Elkton, FL	Bedded, untarped
CMTF	Pic	Elkton, FL	Bedded, untarped
WI Potato Growers	Pic	Coloma, WI	Bedded, untarped, water seal (0.1 in)

# Testing the Permeability of Tarps



- Determine mass transfer coefficient (MTC) for 1,3-D, MeBr, MeI, MITC, chloropicrin, DMDS, sulfuryl fluoride, and PPO
- MTC data may result in additional/revised buffer zone credits for 2011 labels
- Potential performance based credits (in lieu of credits for specific tarp names) with a standard tarp testing protocol

# Tarps Received and Tested by EPA

- FilmTec VIF
- MidSouth VIF
- Guardian VIF
- Raven VaporSafe
- AEP Sun Film High Barrier
- AEP-ONE
- Pliant Regular Black
- Pliant Black Blockade
- Pliant Black/White Blockade
- Pliant Black Metallized
- SARANEX A
- SARANEX B
- Can slit LDPE
- Can slit HDPE
- Can slit Metalized Black
- Can slit Metalized White
- EVOH (High Barrier w/Improved toughness)
- EVOH (Supreme Barrier)
- EVOH (High Barrier)
- Cadillac HDPE
- Cadillac VIF
- Ginegar, Black, Ozgard
- Ginegar VIF, Embossed
- Hytibar

# Web Based Buffer Zone Calculator

- Tool to determine buffer zone distances required by label
- Internet accessible
- Ability to save, retrieve, edit, and print
- Optional; no information collected by EPA
- May integrate into EPA's web-based program for FMPs



# Buffer Zone Calculator (sample screen)

## Terms of Use:

This buffer zone calculator was developed by the US EPA and intended to be used as a tool to aid applicators, growers, enforcement personnel and others determine the buffer zones distances required by soil fumigant labels. The certified applicator supervising the fumigant application must read the product label and verify that the inputs for the application methods, rates, block sizes, buffer zone credits, and calculated results are consistent with the specific product label that is going to be applied before the application begins. If there are any discrepancies between the results of the calculator and the label, the label must be followed.

Accept Terms of Use

Decline The Terms of Use

Enter User Name:

JoeApplicator1

Enter Password:

●●●●●●

Submit User Name and Password

Enter a file name for your run (max 16 characters) OR

Select from a list of prior runs

Block A

Block A

Block A

Block B

test

Continue To Product Info Screen -->

# Buffer Zone Calculator (sample screen)

**EPA reg number:** 11220-10  **Product name:** Tri-Con 50/50

**Company name:** Trical

**Active ingredients:**  
methyl bromide - 50%  
chloropicrin - 49.5%

**Application method:**

- Tarped bedded
- Tarped broadcast
- Deep untarped
- Outdoor tarped hot gas
- Greenhouse tarped hot gas
- Tree hole replacement with hand held probe

**Note:** User must verify that the application methods selected are allowed by product label.

**Soil moisture:**

- Soil moisture is  $\geq 70\%$  and measured with instrument or  $\geq 75\%$  using the USDA Feel and Appearance Method
- Soil moisture is 50 to 69% and measured with instrument or 50 to 75% using the USDA Feel and Appearance Method

# Buffer Zone Calculator

Application rate:  lbs product/acre

Application block size  acres

Enter broadcast equivalent rate IF the application method is bedded or strip

## Tarps/high barrier films used:

- |  |  |
|--|--|
| <input type="radio"/> Canslit Heatstrip (30% reduction)          | <input type="radio"/> Eval/Mitsui TIF (1.38 mil) (60% reduction)   |
| <input type="radio"/> Canslit Metalized (30% reduction)          | <input type="radio"/> Hytblock 7 Black (0.00125") (60% reduction)  |
| <input type="radio"/> Olefinas Embossed VIF (60% reduction)      | <input type="radio"/> XL Black Blockade (0.00125") (60% reduction) |
| <input type="radio"/> Klerks VIF (60% reduction)                 | <input type="radio"/> Hytibar (1.5 mil) (60% reduction)            |
| <input checked="" type="radio"/> Pliant Blockade (60% reduction) | <input type="radio"/> IPM Clear VIF (1.38 mil) (60% reduction)     |
| <input type="radio"/> Bromostop (1.38 mil) (60% reduction)       |  |

Tarp is not listed above (no credit)

Potassium thiosulfate (KTS) applied with 1/4 to 1/2 inch of water over a tarp (15% reduction)

## Organic content of the soil in the application block:

- < 1% (no credit)
- > 1% to 2% (10% reduction)
- >2% - 3% (20% reduction)
- > 3% (30% reduction)

## Clay content of the soil in the application block:

- < 27% (no credit)
- > 27% (10% reduction)

## Buffer Zone Calculator Results

**Date and time of calculation:** 7/28/2010 9:31:56 AM

**Product name:** Tri-Con 50/50

**EPA reg no:** 11220-10

**Active ingredients:**

    methyl bromide - 50%

    chloropicrin - 49.5%

**Application method:** Tarped bedded

**Soil moisture:**

Soil moisture is  $\geq 70\%$  and measured with instrument or  $\geq 75\%$  using the USDA Feel and Appearance Method

**Application rate:** 240 lbs product/acre

**Application block size:** 20 acres

**Buffer zone without credits:** 323 feet

**Buffer zone credits applied:**

    Pliant Blockade (60% reduction)

**Total percent of reduction with credits:** 60 % reduction

**Buffer zone with credits:** 130 feet

# Posting Buffer Zones

- At usual points of entry
  - roads, sidewalks, walking paths, and bike trails
  
- Along likely routes of approach
  - area between a buffer and road or residential area
  
- Unless a physical barrier such as a fence prevents access

Roadway

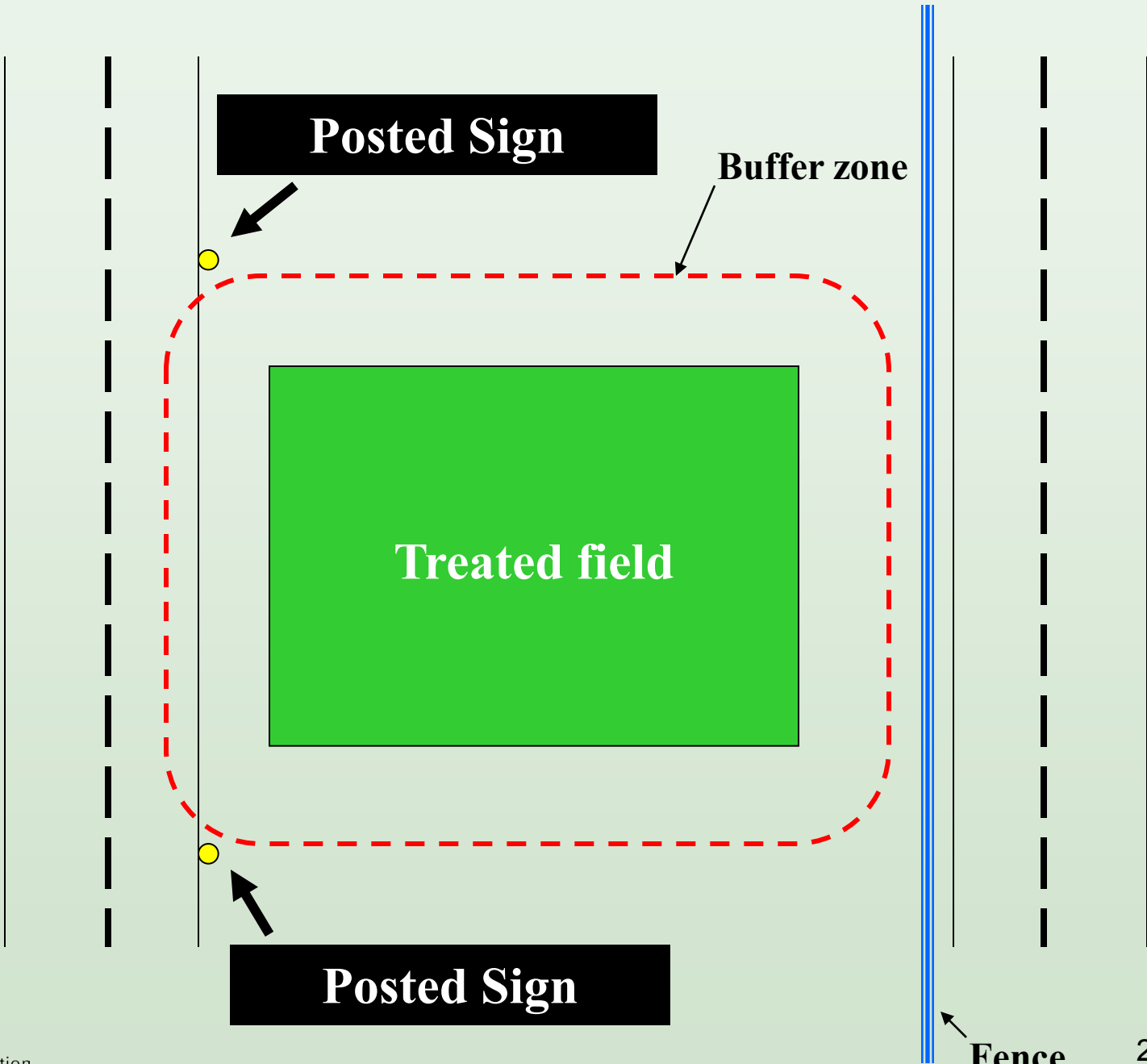
Posted Sign

Buffer zone

Treated field

Posted Sign

Fence



# Buffer zone sign must include:



- “Do Not Walk” symbol
- “DO NOT ENTER/NO ENTRE,”
- “[Name of fumigant, name of product] Fumigant BUFFER ZONE”
- certified applicator contact information

# Signs for Posting Buffer Zones

- Must be:
  - facing in the direction people approach the area
  - legible
  - posted before application and remain until end of buffer zone period
  - removed within 3 days after end of buffer zone period
  - Signs will be available at points of sale



# Treated Area Posting Signs (already required on labels)



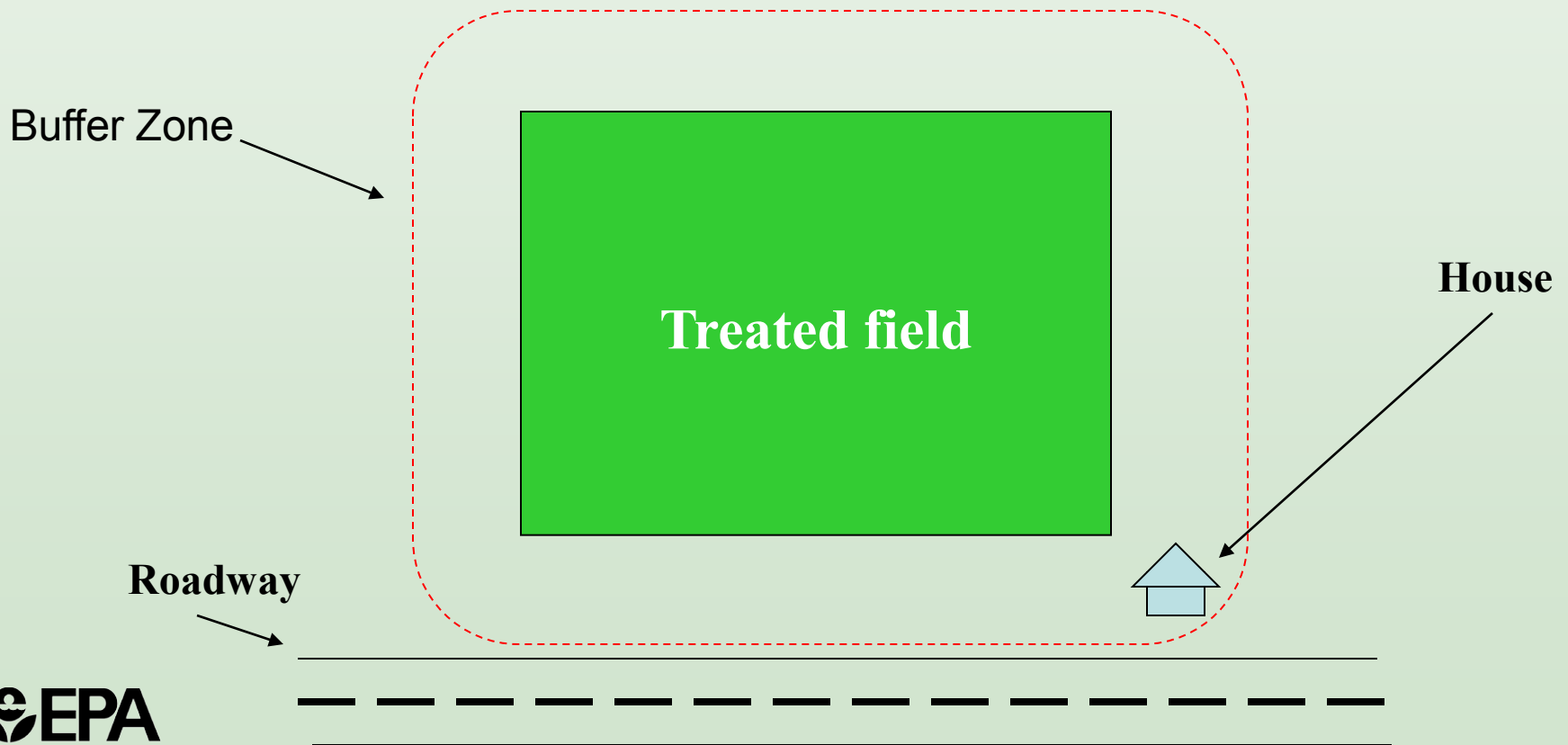
# Review Question

*True or False?*

1. The “buffer zone period” starts after the fumigant has stopped being delivered to the soil and is in effect for 48 hours.

# Review Question:

2. The occupants of the home located in the buffer zone has provided a written agreement that they will *voluntarily* vacate the buffer zone during the entire buffer zone period. Is this permitted?



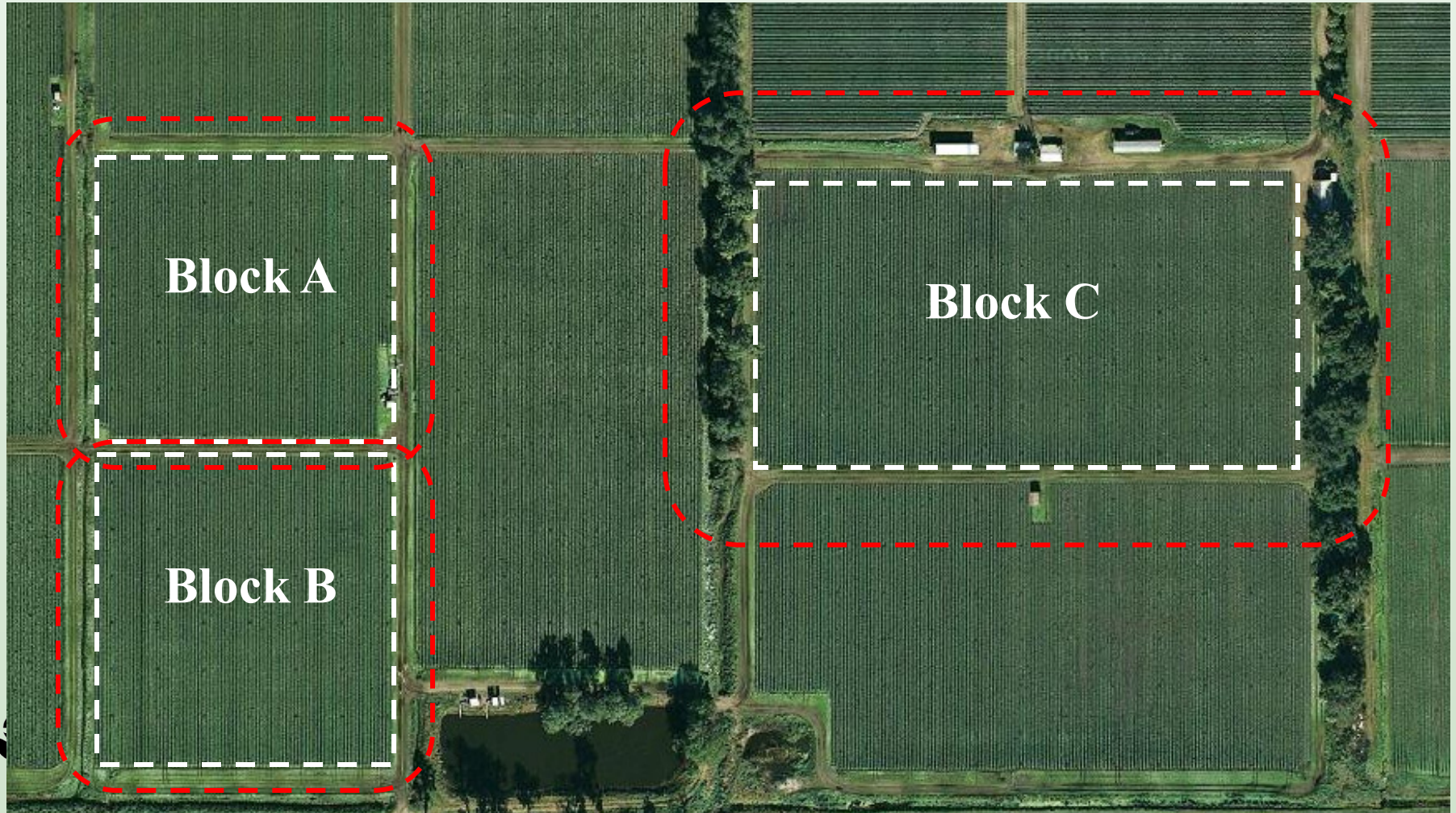
### Review Question #3:

Block A: starts Monday/noon and ends same day at 8:30 pm

B: “ Tuesday/7:00am “ “ 5:00pm

C: “ Monday/9:00am “ “ 4:00pm

The buffer zones for each block are marked below. Is this permitted?



# Review Questions

*True or False?*

4. In 2011, labels will have new requirements for posting treated areas.
5. EPA may revise buffer zone distances and credits on 2011 labels based on new data.

# Summary

- Buffer zone
  - is the area around application block
  - ends 48 hours after application ends
  - is based on application rate, equipment & method, and size of block
- Can
  - calculate buffer zone area using table on label, or EPA web-based tool
  - earn credits to decrease buffer zone size
  - include residential & public property, roads, rights-of-way
  - allow transit, but pedestrians & areas such as bus stops are prohibited
- May overlap with another buffer zone if conditions are met
- Area must be posted before application; signs are removed 3 days after end of buffer zone period
- Posting treated areas is not a new requirement!

# EPA Contact Information

- Leader:
  - John Leahy (703) 305-6703
- Team Leaders:
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  - Cathryn O'Connell (703) 308-0136
- Chemical Review Managers:
  - Methyl bromide: Susan Bartow (703) 603-0065
  - Metam sodium: Dana Friedman (703) 347-8827  
and  
Jose Gayoso (703) 347-8652
  - Dazomet: Dana Friedman (703) 347-8827
  - 1,3-D & Chloropicrin: Andrea Carone (703) 308-0122

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[www.epa.gov/oppsrrd1/reregistration/soil\\_fumigants](http://www.epa.gov/oppsrrd1/reregistration/soil_fumigants)