

# CAMEOfm EXERCISES

## CAMEOfm—CHEMICAL LIBRARY

- 1) Open the Chemical Library
- 2) Find the following chemical information:

Chemical Name : \_\_\_\_\_

CAS # : \_\_\_\_\_

UN/NA# : \_\_\_\_\_

NFPA RATINGS:

FIRE	:	2
HEALTH	:	4
REACTIVE	:	2
SPECIAL	:	_____

IDLH : \_\_\_\_\_

ERPG -1, 2, 3 : \_\_\_\_\_

TEEL -1, 2, 3 : \_\_\_\_\_

OTHER INFO: \_\_\_\_\_

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Chemical Name : PHTHALOPHOS

CAS # : \_\_\_\_\_

UN/NA# : \_\_\_\_\_

NFPA RATINGS:

FIRE	:	_____
HEALTH	:	_____
REACTIVE	:	_____
SPECIAL	:	_____

IDLH : \_\_\_\_\_

ERPG-1 : \_\_\_\_\_

ERPG-2 : \_\_\_\_\_

AEGL : \_\_\_\_\_

OTHER INFO: \_\_\_\_\_

# ALOHA EXERCISES

This ALOHA exercise must be performed using ALOHA version 5.3.

Use the Chemical from Question # 1 above (Acetone Cyanohydrin).

Assume the following weather conditions:

Wind Speed	12 mph
Wind Direction	S
Ground Roughness	Open
Partly Cloudy	5
Temperature	90 degrees F
Relative Humidity	50%

Question 1: What is the usual physical state of this substance?

Question 2: What is the Maximum Plume distance at LOC = AEGL-3 for a 1000 gallon release?

Question 3: Develop an ALOHA footprint for 1000 gallons of this substance from a storage tank sited on a concrete pad outside a manufacturing facility. The tank dimensions are:

- Horizontal
- 4 foot diameter
- 1500 gallon capacity
- Tank leak is from 2-inch valve on the bottom of the tank
- Unknown containment area

Set the LOC for the 3 TEEL values.

Question 4: Does ALOHA produce a “footprint” image for all 3 TEEL values? Why?

# MARPLOT EXERCISES

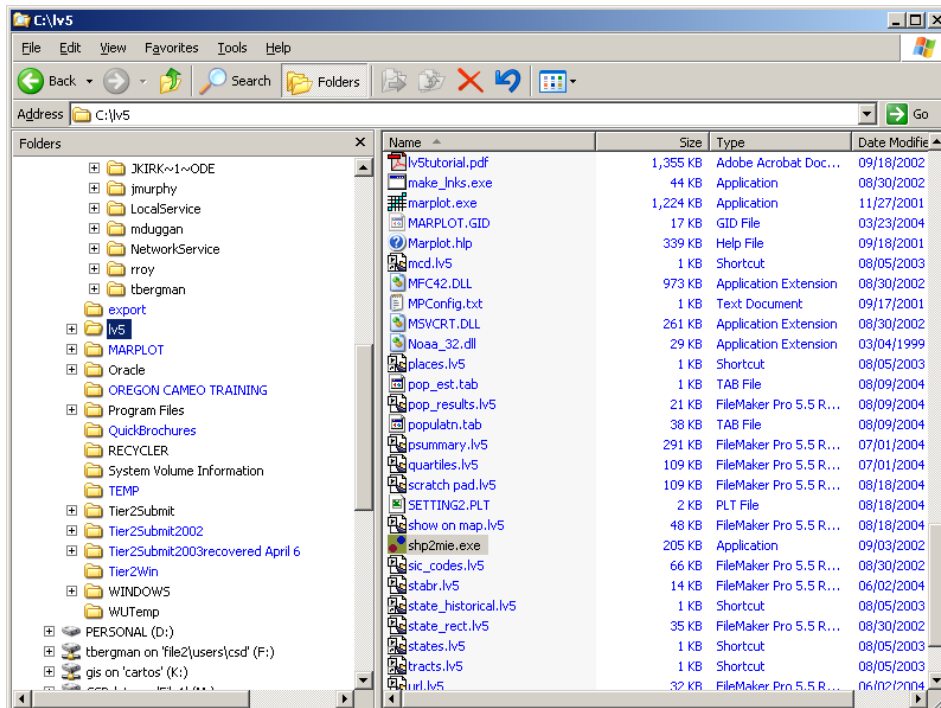
This month's exercise demonstrates how to use the Landview 5 "shp2mie" utility to Import Shape files to MARPLOT.

Shape files feature a ".shp" extension. Landview 5 or 6 includes a utility which converts .shp files to .mie files (mie = MARPLOT Import/Export)

First, you must have a .shp file on your computer, or on a CD, that you wish to display in MARPLOT.

If you don't have a .shp file, I attached a WorldMap.shp file to this e-mail. This is a map of the world John Elkmann of EPA Region 5 sent to me several years ago that I converted to MARPLOT.

1. You must have installed Landview 5 or 6 to your computer.
2. Right-click on the "Start" button
3. Select "Explore"
4. Find the "lv5" folder; usually this will be on your c: drive
5. Left-click once on the lv5 folder; this should display the folder contents in your explore window

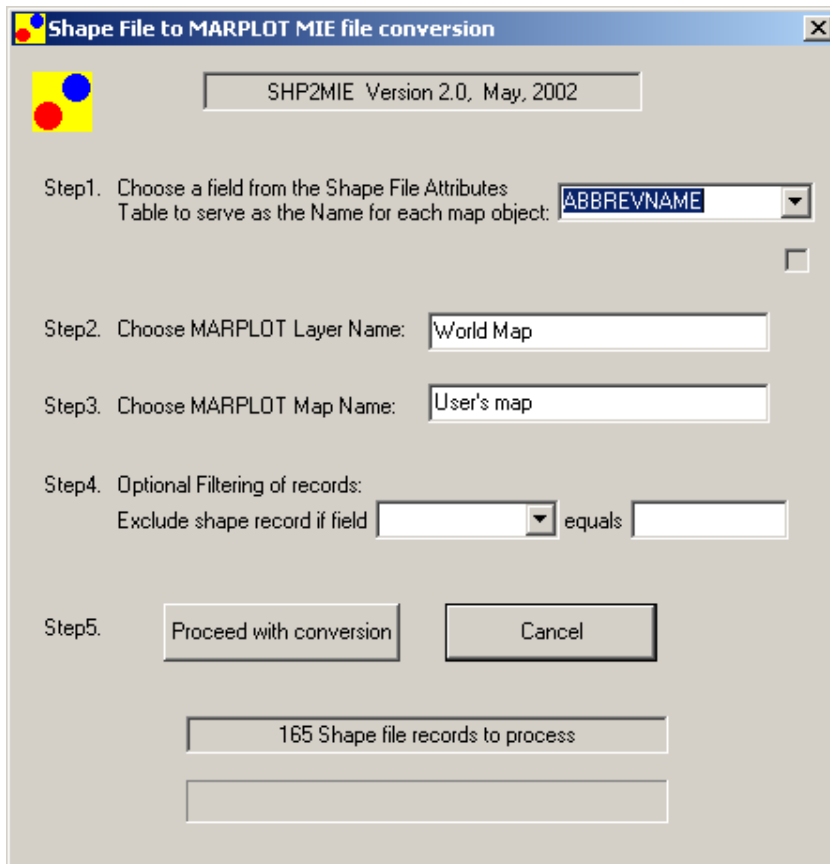


6. double-click the shp2mie.exe file to open it

You will see a “browse” box; you will need to “browse and select” a .shp file. Once you find the .shp file, double-click on it.

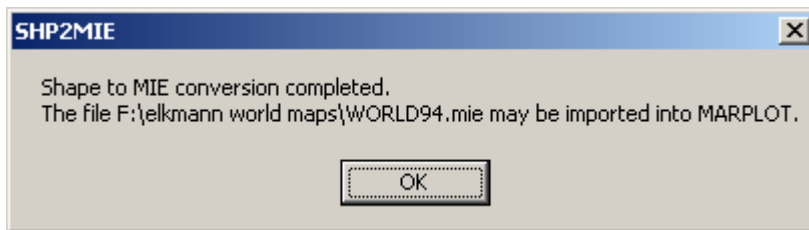
This screen shot is using the WorldMap.shp attached to this e-mail. This process works for any shapefile.

7. proceed with the “steps”; in the example, I am using the “ABBREVNNAME” field from the WorldMap file as the “Object Name”; doesn’t matter what you choose, but you MUST choose a field.
8. I used “World Map” for the MARPLOT Layer Name; again, it doesn’t matter what name you choose, but you MUST enter some name to the field.
9. Probably you should use the User’s Map for the MARPLOT Map Name.
10. Do not “filter any records”
11. Select “Proceed with conversion”



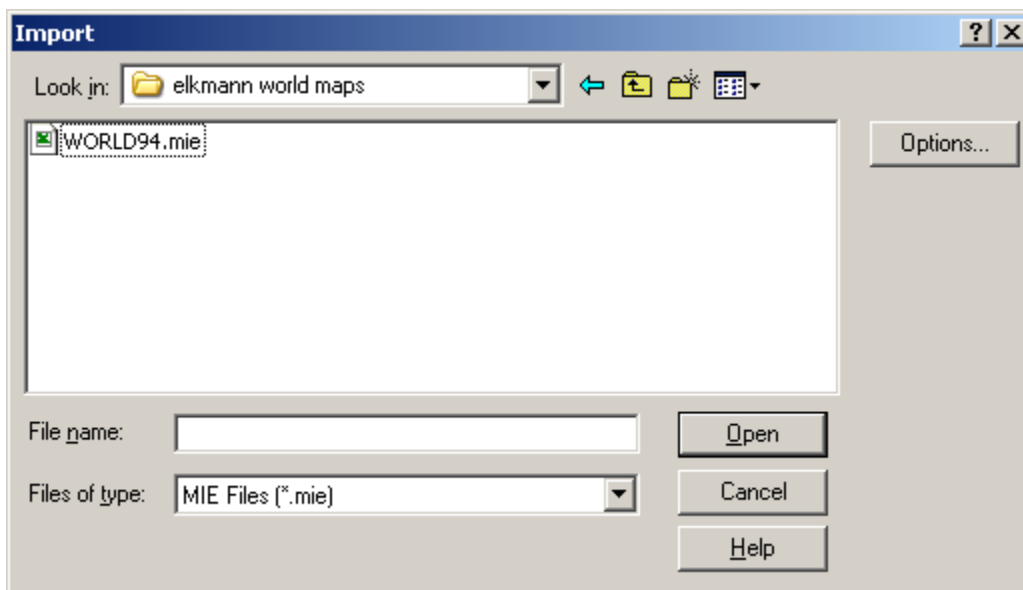
The shp2mie utility will “create” a “.mie” file. Make note of “where” the file is “saved”; in the example below, the new file was saved to f:\elkmann world maps\WORLD94.mie.

You will need to know where the saved file is so you may Import it to MARPLOT!



Import the WORLD94.mie file to MARPLOT.

7. activate MARPLOT
8. select the File menu
9. select “Import”
10. find and select the “new” .mie file you created



11. double-click the .mie file

MARPLOT will Import the file.

One way to “view” the new MARPLOT map.

1. set up a “search” for objects “with any name” in the new “layer”

**Search Criteria**

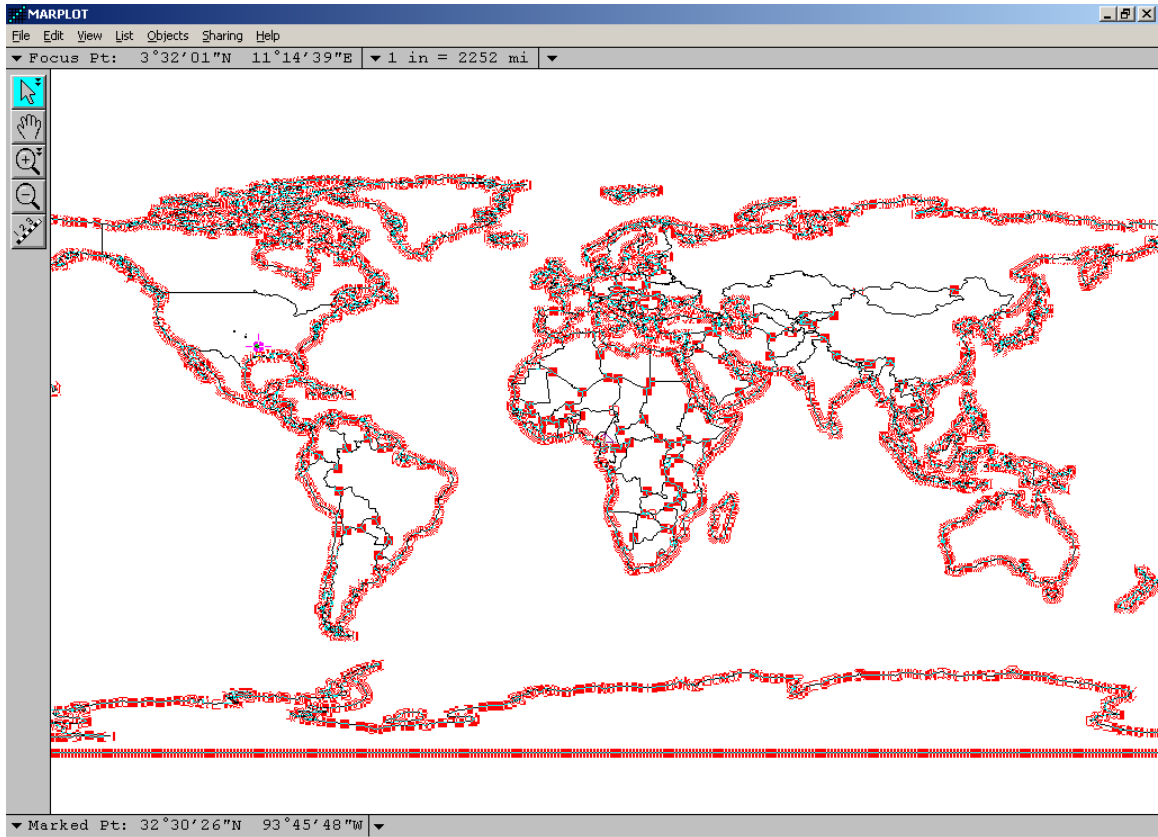
Search for objects:  
with any name

Layer(s) to search:  
Individual Layer...  
World Map

Map(s) to search:  
Maps in View

Search Cancel Help... replace previous collection

Then, do a “Show All on Map”.



Again, this utility works for any .shp file. If you know of any ArcView users in your office, or in your area, you should be able to obtain .shp files from them and use this process to convert them to MARPLOT files.

# ANSWERS

## CAMEOfm—Answers

You will need to set this as an Advanced Search, or use 2 Subset Searches. I used an Advanced Search with the “AND” connector.

**CAMEO Advanced Search**

Module to search: **Chemical Library** Save This Search

Search for any of the following (OR search): Open Saved Search

Search for all of the following (AND search):

Select field:  is equal to  Search for this:

**AND**

Select field:  is equal to  Search for this:

**AND**

Select field:  is equal to  Search for this:

Clear All Fields Add a Choice Remove a Choice Cancel Search

Return to Basic Search

Chemical Name: ACETONE CYANOHYDRIN,  
STABILIZED

CAS # : 75-86-5

UN/NA# : 1541

**NFPA RATINGS:**

FIRE : 2  
HEALTH : 4  
REACTIVE : 2  
SPECIAL : BLANK

IDLH : none listed

TEEL-1 : 5 mg/m<sup>3</sup>

TEEL-2 : 12.5 mg/m<sup>3</sup>  
TEEL-3 : 20 mg/m<sup>3</sup>

OTHER INFO: A colorless liquid. Flash point 165°F. Lethal by inhalation and highly toxic or lethal by skin absorption. Density 7.8 lb / gal (less dense than water). Vapors heavier than air. Produces toxic oxides of nitrogen during combustion. May decompose on contact with water to form acetone and poisonous hydrogen cyanide. Too dangerous to health to expose fire fighters; a few whiffs of vapor could cause death; vapor or liquid could be fatal on penetrating normal protective clothing. Vapor forms explosive mixture with air. Decomposes when heated to 248F or at lower temperature under alkaline conditions, emitting highly toxic hydrogen cyanide. May react violently with water. Contact with sulfuric acid may cause it to explode.

Chemical Name : PHOSMET

CAS # : 732-11-6

UN/NA# : none given

NFPA RATINGS:

FIRE : none given

HEALTH : none given

REACTIVE : none given

SPECIAL : No water

IDLH : none given

TEEL-1 : 0.075 mg/m<sup>3</sup>

TEEL-2 : 0.54 mg/m<sup>3</sup>

TEEL-3 : 40 mg/m<sup>3</sup>

LEL : none given

OTHER INFO: Off-white crystalline solid with an offensive odor. It is an organophosphorus pesticide. This material is very toxic; the probable oral lethal dose for humans is 50-500 mg/kg, or between 1 teaspoon and 1 oz. for a 150 lb. person. It is a cholinesterase inhibitor and has central nervous system effects. Oral lethal doses in humans have been reported at 50 mg/kg. For emergency situations, wear a positive pressure, pressure-demand, full facepiece self-contained breathing apparatus (SCBA) or pressure- demand supplied air respirator with escape SCBA and a fully-encapsulating, chemical resistant suit.

## ALOHA Exercise Answers

*Question 1: What is the usual physical state of this substance?*

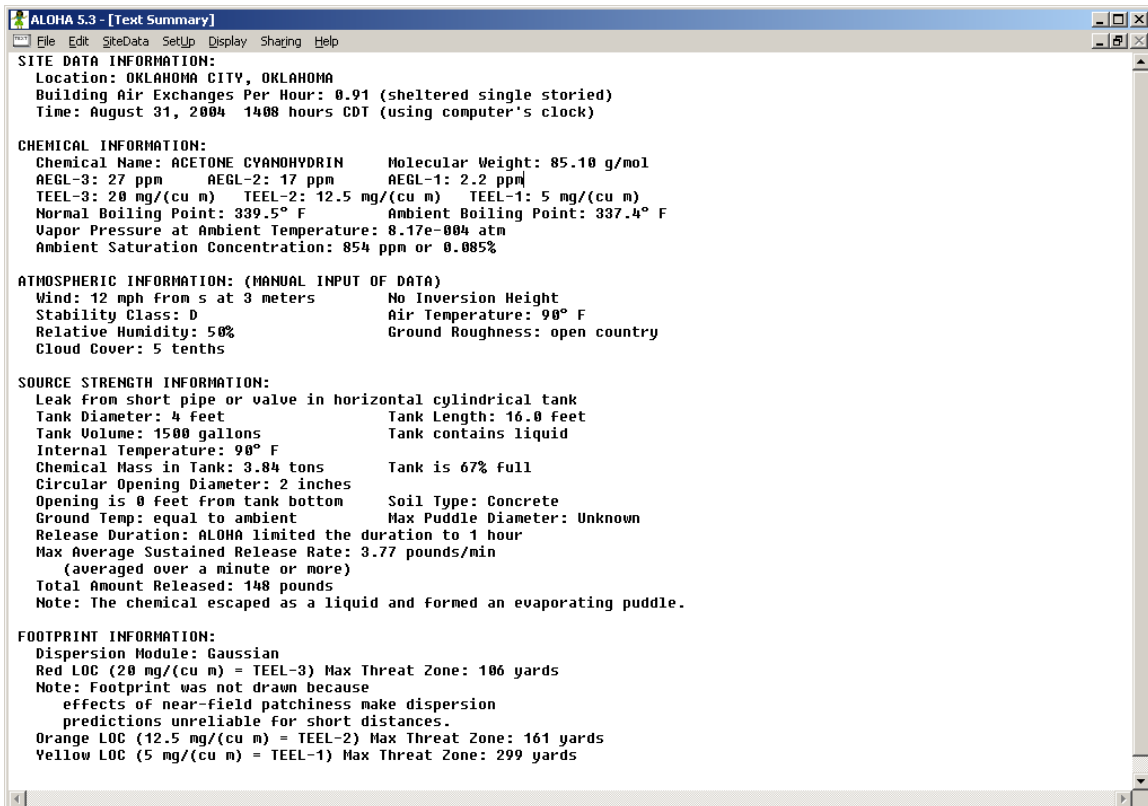
Answer 1: liquid; check CAMEO Chemical Library General Description

*Question 2: What is the Maximum Plume distance at LOC = AEGL-3 for a 1000 gallon release?*

Answer 2: 2.2 miles

*Question 3: Develop an ALOHA footprint for 1000 gallons of this substance from a storage tank sited on a concrete pad outside a manufacturing facility.*

Answer 3.



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ALPHA 5.3 - [Text Summary]
File Edit SiteData SetUp Display Sharing Help

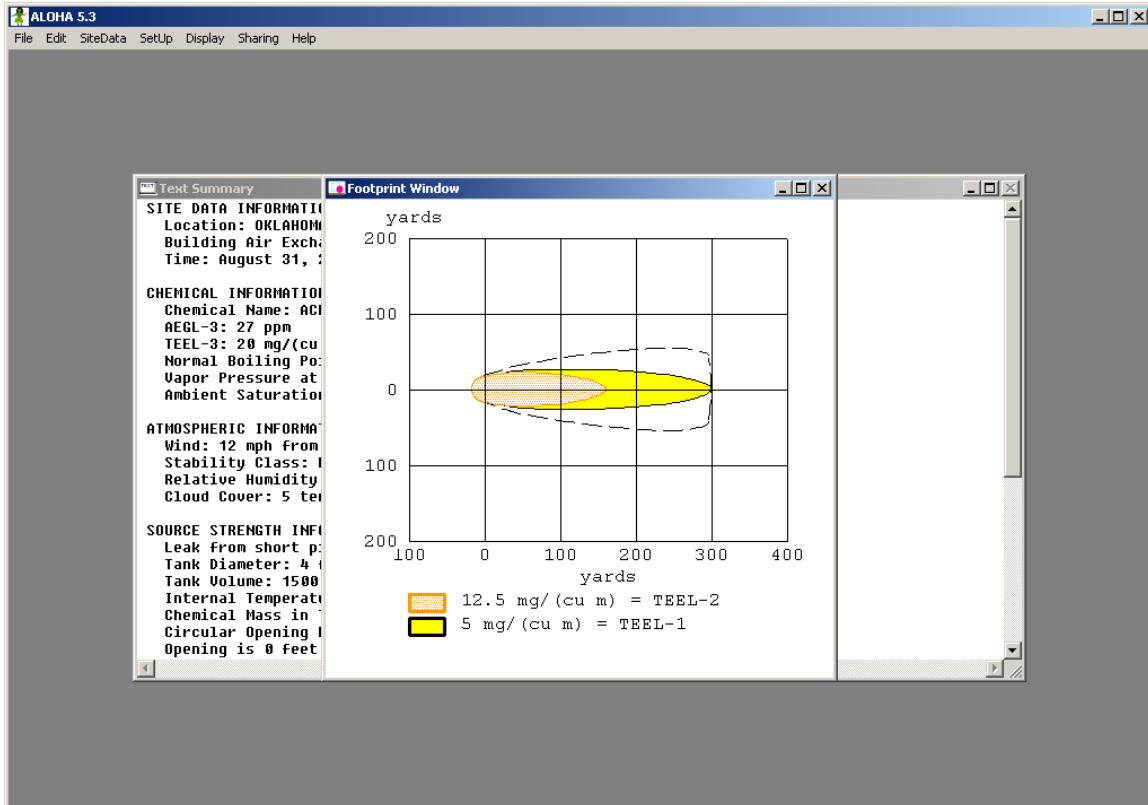
SITE DATA INFORMATION:
Location: OKLAHOMA CITY, OKLAHOMA
Building Air Exchanges Per Hour: 0.91 (sheltered single storied)
Time: August 31, 2004 1408 hours CDT (using computer's clock)

CHEMICAL INFORMATION:
Chemical Name: ACETONE CYANOHYDRIN      Molecular Weight: 85.10 g/mol
AEGL-3: 27 ppm      AEGL-2: 17 ppm      AEGL-1: 2.2 ppm
TEEL-3: 20 mg/(cu m)  TEEL-2: 12.5 mg/(cu m)  TEEL-1: 5 mg/(cu m)
Normal Boiling Point: 339.5° F      Ambient Boiling Point: 337.4° F
Vapor Pressure at Ambient Temperature: 0.17e-004 atm
Ambient Saturation Concentration: 854 ppm or 0.085%

ATMOSPHERIC INFORMATION: (MANUAL INPUT OF DATA)
Wind: 12 mph from s at 3 meters      No Inversion Height
Stability Class: 0      Air Temperature: 90° F
Relative Humidity: 50%      Ground Roughness: open country
Cloud Cover: 5 tenths

SOURCE STRENGTH INFORMATION:
Leak from short pipe or valve in horizontal cylindrical tank
Tank Diameter: 4 feet      Tank Length: 16.0 feet
Tank Volume: 1500 gallons      Tank contains liquid
Internal Temperature: 90° F
Chemical Mass in Tank: 3.84 tons      Tank is 67% Full
Circular Opening Diameter: 2 inches
Opening is 0 feet from tank bottom      Soil Type: Concrete
Ground Temp: equal to ambient      Max Puddle Diameter: Unknown
Release Duration: ALOHA limited the duration to 1 hour
Max Average Sustained Release Rate: 3.77 pounds/min
(averaged over a minute or more)
Total Amount Released: 148 pounds
Note: The chemical escaped as a liquid and formed an evaporating puddle.

FOOTPRINT INFORMATION:
Dispersion Module: Gaussian
Red LOC (20 mg/(cu m) = TEEL-3) Max Threat Zone: 106 yards
Note: Footprint was not drawn because
effects of near-field patchiness make dispersion
predictions unreliable for short distances.
Orange LOC (12.5 mg/(cu m) = TEEL-2) Max Threat Zone: 161 yards
Yellow LOC (5 mg/(cu m) = TEEL-1) Max Threat Zone: 299 yards
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*Question 4: Does ALOHA produce a “footprint” image for all 3 TEEL values? Why?*

Answer 4: ALOHA will not produce a footprint for the “red” LOC given these conditions. ALOHA has calculated that the TEEL-3 = 20 mg/m<sup>3</sup> maximum distance is 106 yards, and thus is not “drawn” due to the fact that ALOHA “predictions are unreliable for short distances”.

#### FOOTPRINT INFORMATION:

Dispersion Module: Gaussian

Red LOC (20 mg/(cu m) = TEEL-3) Max Threat Zone: 106 yards

Note: Footprint was not drawn because effects of near-field patchiness make dispersion predictions unreliable for short distances.

Orange LOC (12.5 mg/(cu m) = TEEL-2) Max Threat Zone: 161 yards

Yellow LOC (5 mg/(cu m) = TEEL-1) Max Threat Zone: 299 yards

3)