

Hazard Assessment

Off-Site Consequence Analysis
Five Year Accident History



Inland Star Distribution Centers, Inc.

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TABLE 1 Worst Case Offsite Consequence Analysis Parameters

Parameters	Worst Case
Chemical	Peracetic Acid
CAS #	79-21-0
Physical State	Liquid at Ambient Temperature
Toxic Endpoint*	1.5 ppm
Flammable Endpoint	N/A
Wind Speed	1.5 m/s
Atmospheric Stability Class	F
Ambient Temperature	77°F (25°C)
Humidity	50%
Height of Release	0 ft
Surface Roughness	Urban
Gas Density (279.7 K @ 1 atm)	5.2
Temp. of Released Chemical	77°F (25°C)
Mitigation	Building
Release Duration	10 mins
Release Rate	0.013 lbs/min
Quantity Released	82 lbs
Distance	0.6 miles (1 kilometer)
Population	2,126
Population (2 significant digits)	2,100

TABLE 2 Alternative Case Offsite Consequence Analysis Parameters

Parameters	Alternate Cases			
Chemical	Peracetic Acid	Epichlorohydrin	Cyclohexylamine	Methyltrichlorosilane
CAS #	79-21-0	106-89-8	108-91-8	75-79-6
Physical State	Liquefied at Ambient Temperature	Liquefied at Ambient Temperature	Liquefied at Ambient Temperature	Liquefied at Ambient Temperature
Toxic Endpoint	1.5 ppm	20 ppm	39 ppm	3ppm
Wind Speed	3.0 m/s	3.0 m/s	3.0 m/s	3.0 m/s
Atmospheric Stability Class	D	D	D	D
Ambient Temperature	77°F (25°C)	77°F (25°C)	77°F (25°C)	77°F (25°C)
Humidity	50%	50%	50%	50%
Release Height	0 ft	0 ft	0 ft	0 ft
Surface Roughness	Urban	Urban	Urban	Urban
Chemical Release Temp.	Ambient (77°F)	Ambient (77°F)	Ambient (77°F)	Ambient (77°F)
Gas Density (279.7 K @ 1 atm)	2.6	3.2	3.42	5.2
Mitigation	NONE	NONE	NONE	NONE
Release Duration	5 min	5 min	5 min	5 min
Evaporation Rate	0.24 lbs/min	2.0 lbs/min	1.3 lbs/min	52 lbs/min
Release Rate to Outside	0.000167 lbs/min	0.00202 lbs/min	0.00109 lbs/min	0.676 lbs/min
Quantity Released	82 lbs	507 lbs	386 lbs	1,000 lbs
Distance	0.1 Miles (0.2 Kilometers)	0.1 Miles (0.2 Kilometers)	0.1 Miles (0.2 Kilometers)	<0.1 Miles (<0.16 Kilometers) Reported as 0.1 Miles
Population	0	0	0	0
Population (2 sig figures)	0	0	0	0

Toxic Endpoint Determination

The toxic endpoint for each of the regulated chemicals is listed in the table below. These endpoints are based on the Emergency Planning Response Guidelines, concentration level 2 (ERPG-2). According to the American Industrial Hygiene Association, the ERPG-2 level is the “maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual’s ability to take protective action.”

TABLE 3 Toxic Endpoints

Chemical	Toxic Endpoint (ERPG-2, ppm)	Molecular Weight	Toxic Endpoint (ERPG-2, mg/L)
Methyltrichlorosilane	3 ppm	149.48 g/mol	0.018 g/mL
Peracetic Acid	1.5 ppm	76.05 g/mol	0.0045 g/mL
Epichlorohydrin	20 ppm	92.53 g/mol	0.076 g/mL
Cyclohexylamine	39 ppm	99.18 g/mol	0.16 mg/L

Using the following conversion equation listed in Appendix D of the Technical Guidance for Hazard Analysis – Emergency Planning for Extremely Hazardous Substances (December 1987), the concentration, listed as parts per million (ppm), can be converted to g/mL:

$$LOC \left(\text{in } \frac{\text{mg}}{\text{L}} \right) = \frac{LOC \text{ (in ppm)}}{1,000} \times \frac{MW}{24.5}$$

Where:

LOC = Level of Concern
 MW = Molecular Weight

Table 3 above lists the converted toxic endpoint in mg/L. These are the values listed in Appendix A of 40 CFR Part 68, which are the endpoints to be used in this Hazard Assessment study.

Worst Case Release Scenario Analysis

Requirement: One worst-case release scenario that is estimated to create the greatest distance in any direction to the toxic endpoint (Table 3) resulting from an accidental release of regulated toxic substances from covered processes under worst-case conditions defined above in Table 1. To determine the worst-case scenario, a worst-case release of each regulated substance will be modeled and the resulting distances to the toxic endpoints will be compared.

Determination of the Worst-Case Scenario

According to the RMP regulation, the worst case release quantity is determined as follows:

- For substances in a vessel, the greatest amount held in a single vessel, taking into account administrative controls that limit the maximum quantity; or
- For substances in pipes, the greatest amount in a pipe, taking into account administrative controls that limit the maximum quantity.

The regulated chemicals on-site at Inland Star Distribution Centers Inc. are maintained in various storage vessels. The following table lists the capacity of the largest container for each regulated chemical:

Chemical	Largest Container	Total On-Site	Location
Methyltrichlorosilane	1,000 lbs	4,000 lbs	Area B
Peracetic Acid*	485 lbs	5,000 lbs	Area C
Epichlorohydrin	507 lbs	19,000 lbs	Area B
Cyclohexylamine	386 lbs	14,000 lbs	Area B

*Peracetic Acid is contained within Hydrogen Peroxide at 17%. The analysis is carried out using the quantity of the regulated substance in the mixture and the liquid factor (LFA or LFB) and density factor for the regulated substance in pure form. This is a simple approach that likely will give conservative results.

Determination of Release Rate

For toxic liquids, the following elements must be taken into account when determining the release rate of the worst case release:

- assume that the total quantity in the container is spilled;
- the chemical spills onto a flat, non-absorbing surface;
- the total quantity spilled is assumed to spread instantaneously to a depth of one centimeter (0.033 foot or 0.39 inch) in an undiked area, or to cover a diked area instantaneously;
- the temperature of the released liquid must be the highest daily maximum temperature occurring in the past three years or the temperature of the substance in the vessel, whichever is higher; and
- the release rate to air is estimated as the rate of evaporation from the pool.

First step is to determine the area of evaporation either diked or undiked. The area of the warehouse where the chemicals are stored is 46,867 square feet (Area B) and 16,250 square feet (Area C).

The area of a pool spread instantaneously to a depth of one centimeter is as follows (Equation 3-6, RMP Guidance for OCA, March 2009):

$$A = QS \times DF$$

Where: A = Maximum area of pool (square feet) for depth of one centimeter
 QS = Quantity released (pounds)
 DF = Density Factor (listed in Exhibit B-2, Appendix B)

Chemical	Quantity Released (QS)	Density Factor (DF)	Maximum Area of Pool (A)
Methyltrichlorosilane	1,000 lbs	0.38	380 ft ²
Peracetic Acid*	82 lbs	0.40	32 ft ²
Epichlorohydrin	507 lbs	0.42	213 ft ²
Cyclohexylamine	386 lbs	0.56	216 ft ²

*The largest container of Hydrogen Peroxide is 485 pounds. As discussed above, only 17% of that contains Peracetic Acid, therefore, the quantity of 82 pounds is used in the worst case release calculations.

The temperature of the chemicals must be the highest daily maximum temperature occurring in the past three years or the temperature of the substance in the vessel, whichever is higher. However, the temperature of the chemicals are ambient or at about 77°F (25°F), thus not requiring the use of a different temperature. The release rate to air is estimated as the rate of evaporation from the pool.

Passive Mitigation Systems

The segregated storage areas (3 total) within the warehouse are self-contained, each threshold into/out of the area is raised creating a berm/diked area. However, since a release of a single container of any of the chemicals will be less than the square footage of the warehouse, the bermed/diked area was not utilized in this release scenario.

The chemicals are stored within buildings, allowing for the maximum rate of evaporated liquid exiting the building to be less, therefore, the building will be considered as passive mitigation.

Surface Roughness

Inland Star Distribution Centers, Inc. is located in a highly industrial area with many buildings in the immediate area, therefore urban topography was selected for modeling the scenario.

Distance to Toxic Endpoint

EPA's RMP*Comp software was used to determine the distance to the toxic endpoint. The following parameters were entered into the program for each chemical:

Parameter	Input
Scenario type	Worst-case
Physical state	Liquefied at Ambient Temperature
Quantity released	See container capacity table above
Surrounding terrain type	Urban
Temperature	77°F
Mitigation measures	Building
Area of Pool	See area of pool table above

A summary of the results is the following:

Chemical	Distance to Toxic Endpoint
Methyltrichlorosilane	0.4 miles (0.6 kilometers)
Peracetic Acid	0.6 miles (1 kilometers)
Epichlorohydrin	0.1 miles (0.2 kilometers)
Cyclohexylamine	0.1 miles (0.2 kilometers)

See Appendix A for the RMP*Comp printouts, which displays the results for the worse case release of Peracetic Acid. The release produces the greatest distance to the toxic endpoint at 0.6 miles.

Alternate Release Scenario Analysis

Requirement: At least one alternate release scenario for each regulated toxic substance held in a covered process(es). There are four regulated substances at the Inland Star Distribution Centers, Inc., therefore multiple scenarios are required.

Scenarios to Consider

The selected scenarios should:

- Be more likely to occur than the worst-case release scenario;
- Reach an endpoint off-site, unless no such scenario exists; and
- Reach a public receptor, unless no such scenario exists.

The following scenarios were discussed during the July 12, 2016 Hazard Review and Inland Star Distribution Centers, Inc. provided responses to each (see Attachment C).

1. Five Year Accident History.

Section 2750.9 of the CalARP regulation requires Inland Star Distribution Centers, Inc. to include in the five year accident history all accidental releases from the storage of methyltrichlorosilane that resulted in deaths, injuries, or significant property damage onsite, or known offsite deaths, injuries, evacuations, sheltering in place, property damage, or environmental damage.

Response: There have been no releases or near misses in the past five years.

2. Transfer hose releases due to splits or sudden hose uncoupling.

Response: Not applicable – transfer hoses are not used at the facility.

3. Process piping releases from failures at flanges, joints, welds, valves and valve seals, and drains or bleeds.

Response: Not applicable – the facility only stores hazardous chemicals, there is no process.

4. Pressure vessel or pump releases due to cracks, seal failure, or drain, bleed, or plug failure.

Response: Not applicable – the facility only stores hazardous chemicals, there is no process.

5. Vessel overfilling and spill, or overpressurization and venting through relief valves or rupture disks;

Response: Not applicable – the facility only stores hazardous chemicals, there is no process.

6. Shipping container mishandling and breakage or puncturing leading to a spill.

Response: This event is most likely to occur as the business of the facility is to receive, store, and ship material. Forklifts are used for movement of the material. In the event

this occurs, an Associate is present. The incident would be mitigated immediately (within 5 minutes).

Release Rate

The release rate at ambient temperature (77°F) can be determined from the following equation (equation 7-8, RMP Guidance for OCA, March 2009):

$$QR = QS \times 2.4 \times LFA \times DF$$

Where,	QR	=	Release rate (lbs/min)
	QS	=	Quantity released
	2.4	=	Wind speed factor = $3.0^{0.78}$, where 3.0 m/s is the wind speed for the alternate case
	LFA	=	Liquid Factor Ambient
	DF	=	Density Factor

Using the factors listed below, the release rate can be calculated as follows:

Quantity Released, Liquid Factor Ambient & Density Factor	Release Rate (QR)
Methyltrichlorosilane QS = 1,000lbs LFA = 0.057 DF = 0.38	$QR = 1,000 \times 2.4 \times 0.057 \times 0.38 = 52 \text{ lbs/min}$
Peracetic Acid QS = 82 lbs LFA = 0.0029 DF = 0.40	$QR = 82 \times 2.4 \times 0.00299 \times 0.40 = 0.24 \text{ lbs/min}$
Epichlorohydrin QS = 507 lbs LFA = 0.0040 DF = 0.42	$QR = 507 \times 2.4 \times 0.0040 \times 0.42 = 2.0 \text{ lbs/min}$
Cyclohexylamine QS = 386 lbs LFA = 0.0025 DF = 0.56	$QR = 386 \times 2.4 \times 0.0025 \times 0.56 = 1.3 \text{ lbs/min}$

Release Duration

It was determined that a release could go unnoticed for no more than one hour as an Associate is assigned to each area within the warehouse to routinely walk their respective area noting any variances in chemical inventory, assess for damage, inspection of overall cleanliness, and chemical accidents.

A release from the container from mishandling causing a breakage or puncturing leading to a spill would occur while an Associate is present. The Associate would isolate/mitigate the release within five minutes.

Passive Mitigation Systems

Passive mitigation systems may be considered for the analysis of the alternate-case release provided that the mitigation system is capable of withstanding the release event triggering the scenario and would still function as intended. The regulated chemicals are stored within certain buildings, allowing for the maximum rate of evaporated liquid exiting the building to be less, therefore, the building will be considered as passive mitigation.

Distance to Toxic Endpoint

RMP*Comp was used to determine the distance to the toxic endpoint. The parameters discussed in the preceding sections were entered into the program for each chemical:

Parameter	Input
Scenario type	Alternative
Physical state	Liquefied at Ambient Temperature
Release rate calculation	User-specified
Release rate	See release rate table above
Release duration	5 Minutes
Surrounding terrain type	Urban
Mitigation measures	Building

See Appendix B for the RMP*Comp printout for each chemical, which displays the results of the analysis. In addition, Table 2 shows the distance to the toxic endpoint.

Defining Off-Site Impacts

Requirements: Estimate the population within a circle with its center as the point of release and a radius determined by the distance to the toxic endpoint. Identify the presence of institutions (schools, hospitals, and prisons), parks, recreational areas, and major commercial, office, and industrial buildings. List any environmental receptors within a circle with its center as the point of release and a radius determined by the distance to the toxic endpoint.

Population Impact

Using the most current census data (2010) from CAMEO – MARPLOT Version 4.2.5 Mapping Software, the population affected in the worst and alternate case scenarios were estimated and are listed in Table 1 and 2 (see Appendix B for the MARPLOT population data). The estimated population was based on those within a circle with its center at the point of the release and a radius determined by the distance to the toxic endpoint. See Figures 1 and 2 for maps depicting the facility and surrounding impacted areas in the worst and alternate case scenarios.

Utilizing internet resources, such as Yahoo Yellow Pages and Google Earth, sensitive population receptors affected in the worst and alternate case scenarios were identified, see Table 4 below.

TABLE 4 Population Receptors

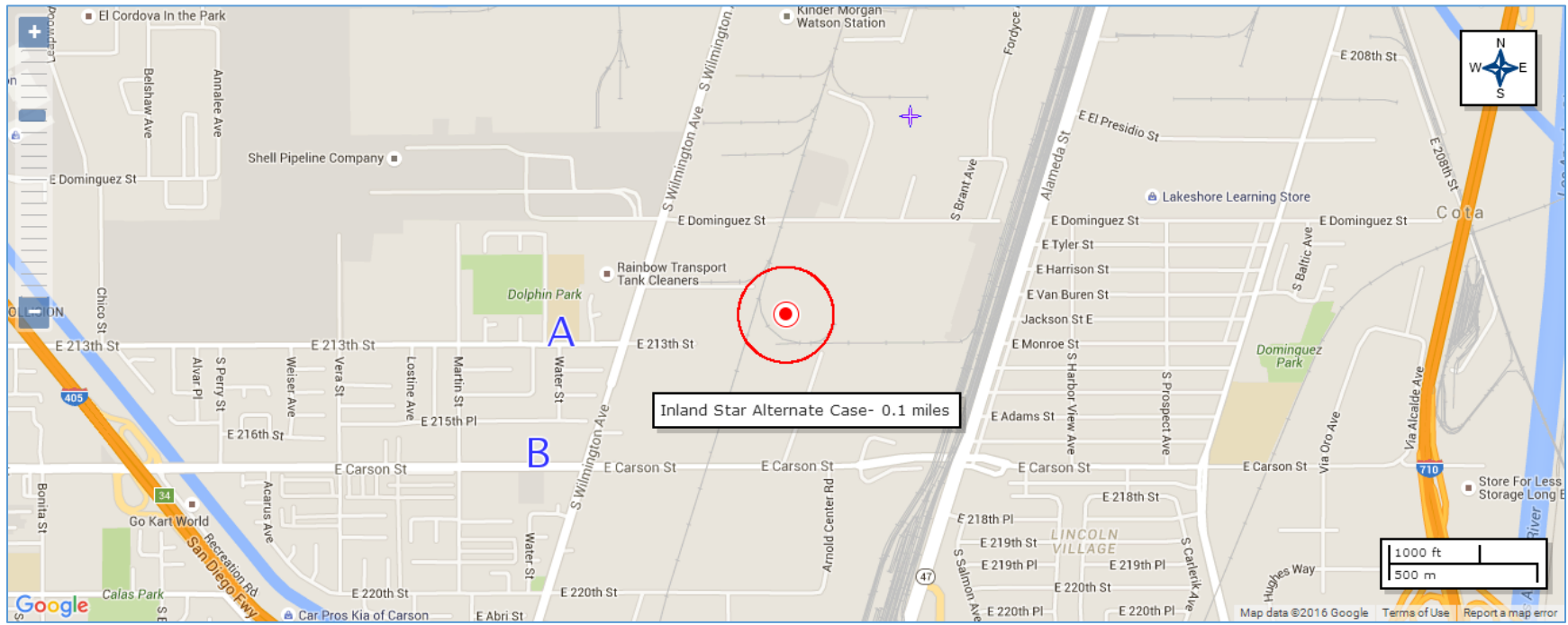
ID*	Name	Address
A	Del Amo Elementary School	21228 Water St, Carson, CA 90745
B	Friendship Children	1717 E Carson St, Carson, CA 90745
N/A	Commercial	Various

*As identified in Figure 1.

Environmental Impact

Internet resources (Google Earth, which contains USGS data) were used to determine the presence of environmental resources within the impacted areas. It was determined that there are no environmental receptors within a circle with its center at the point of the release and a radius determined by the distance to the toxic endpoint, 0.6 miles.

FIGURE 2 Alternate Case Release Scenario
Methyltrichlorosilane, Peracetic Acid, Epichlorohydrin, Cyclohexylamine



Appendix A

RMP*Comp Results – Worst Case Release

RMP*Comp Results – Alternate Case Release

Worst Case Release – RMP*Comp Input

Errors Found

No errors found

Chemical Information

Chemical Name: Peracetic acid

CAS Number: 79-21-0

Chemical Type: Toxic Liquid

Worst-case Analysis

Scenario type: Worst-case Alternative

Quantity released: 82 pounds

Surrounding terrain type: Urban (many obstacles in the immediate area)
 Rural (terrain generally flat and unobstructed)

Liquid temperature: 77 ° Fahrenheit

Mitigation measures

Check the checkbox(es) representing mitigation measure(s) in place in your process, if any.

Release into diked area:

Release into building:

Floor area: 32 square feet

Worst Case Release – RMP*Comp Output

Estimated Distance Calculation

Estimated distance to toxic endpoint: 0.6 miles (1 kilometers)

This is the downwind distance to the toxic endpoint specified for this regulated substance under the RMP Rule. Report all distances shorter than 0.1 mile as 0.1 mile, and all distances longer than 25 miles as 25 miles.

Scenario Summary

Chemical: Peracetic acid

CAS number: 79-21-0

Threat type: Toxic Liquid

Scenario type: Worst-case

Quantity released: 82 pounds

Liquid temperature: 77 F

Mitigation measures:

Floor area: 32 square feet

Release rate to outside air: 0.013 pounds per minute

Evaporation time: 6310 minutes

Surrounding terrain type: Urban surroundings (many obstacles in the immediate area)

Toxic endpoint: 0.0045 mg/L; basis: EHS-LOC; LOC is based on IDLH-equivalent level estimated from toxicity data.

Assumptions about this scenario

Wind speed: 1.5 meters/second (3.4 miles/hour)

Stability class: F

Air temperature: 77 degrees F (25 degrees C)

Methyltrichlorosilane

Alternate Case Release – RMP*Comp Input

Errors Found

No errors found

Chemical Information

Chemical Name: Methyltrichlorosilane

CAS Number: 75-79-6

Chemical Type: Toxic Liquid

Alternative Analysis**Scenario type:** Worst-case Alternative**Release rate calculation:** User-specified Estimated**Release rate:** 52 pounds per min**Release duration:** 5 minutes**Surrounding terrain type:** Urban (many obstacles in the immediate area)
 Rural (terrain generally flat and unobstructed)**Liquid temperature:** 77 ° Fahrenheit**Mitigation measures**

Check the checkbox(es) representing mitigation measure(s) in place in your process, if any.

Release into diked area: **Release into building:** **Floor area:** 380 square feet**Active mitigation to reduce release rate:**

Methyltrichlorosilane

Alternate Case Release – RMP*Comp Output

Estimated Distance Calculation

Estimated distance to toxic endpoint: <0.1 miles (<0.16 kilometers); report as 0.1 mile

This is the downwind distance to the toxic endpoint specified for this regulated substance under the RMP Rule. Report all distances shorter than 0.1 mile as 0.1 mile, and all distances longer than 25 miles as 25 miles.

Scenario Summary

Chemical: Methyltrichlorosilane

CAS number: 75-79-6

Threat type: Toxic Liquid

Scenario type: Alternative

Quantity released: 260 pounds

Release duration: 5 minutes

Release rate: 52 pounds per min

Liquid temperature: 77 F

Mitigation measures:

Floor area: 380 square feet

Release rate to outside air: 0.676 pounds per minute

Evaporation time: 385 min

Surrounding terrain type: Urban surroundings (many obstacles in the immediate area)

Toxic endpoint: 0.018 mg/L; basis: ERPG-2

Assumptions about this scenario

Wind speed: 3 meters/second (6.7 miles/hour)

Stability class: D

Air temperature: 77 degrees F (25 degrees C)

Peracetic Acid

Alternate Case Release – RMP*Comp Input

Errors Found

No errors found

Chemical Information

Chemical Name: Peracetic acid

CAS Number: 79-21-0

Chemical Type: Toxic Liquid

Alternative Analysis

Scenario type: Worst-case Alternative

Release rate calculation: User-specified Estimated

Release rate: 0.24 pounds per min

Release duration: 5 minutes

Surrounding terrain type: Urban (many obstacles in the immediate area)
 Rural (terrain generally flat and unobstructed)

Liquid temperature: 77 ° Fahrenheit

Mitigation measures

Check the checkbox(es) representing mitigation measure(s) in place in your process, if any.

Release into diked area:

Release into building:

Floor area: 32 square feet

Active mitigation to reduce release rate:

Peracetic Acid

Alternate Case Release – RMP*Comp Output

Estimated Distance Calculation

Estimated distance to toxic endpoint: 0.1 miles (0.2 kilometers)

This is the downwind distance to the toxic endpoint specified for this regulated substance under the RMP Rule. Report all distances shorter than 0.1 mile as 0.1 mile, and all distances longer than 25 miles as 25 miles.

Scenario Summary

Chemical: Peracetic acid

CAS number: 79-21-0

Threat type: Toxic Liquid

Scenario type: Alternative

Quantity released: 1.2 pounds

Release duration: 5 minutes

Release rate: 0.24 pounds per min

Liquid temperature: 77 F

Mitigation measures:

Floor area: 32 square feet

Release rate to outside air: 0.000167 pounds per minute

Evaporation time: 7180 min

Surrounding terrain type: Urban surroundings (many obstacles in the immediate area)

Toxic endpoint: 0.0045 mg/L; basis: EHS-LOC; LOC is based on IDLH-equivalent level estimated from toxicity data.

Assumptions about this scenario

Wind speed: 3 meters/second (6.7 miles/hour)

Stability class: D

Air temperature: 77 degrees F (25 degrees C)

Epichlorohydrin

Alternate Case Release – RMP*Comp Input

Errors Found

No errors found

Chemical Information

Chemical Name: Epichlorohydrin

CAS Number: 106-89-8

Chemical Type: Toxic Liquid

Alternative Analysis

Scenario type: Worst-case Alternative

Release rate calculation: User-specified Estimated

Release rate: 2.0 pounds per min

Release duration: 5 minutes

Surrounding terrain type: Urban (many obstacles in the immediate area)
 Rural (terrain generally flat and unobstructed)

Liquid temperature: 77 ° Fahrenheit

Mitigation measures

Check the checkbox(es) representing mitigation measure(s) in place in your process, if any.

Release into diked area:

Release into building:

Floor area: 213 square feet

Active mitigation to reduce release rate:

Epichlorohydrin

Alternate Case Release – RMP*Comp Output

Estimated Distance Calculation

Estimated distance to toxic endpoint: 0.1 miles (0.2 kilometers)

This is the downwind distance to the toxic endpoint specified for this regulated substance under the RMP Rule. Report all distances shorter than 0.1 mile as 0.1 mile, and all distances longer than 25 miles as 25 miles.

Scenario Summary

Chemical: Epichlorohydrin

CAS number: 106-89-8

Threat type: Toxic Liquid

Scenario type: Alternative

Quantity released: 10 pounds

Release duration: 5 minutes

Release rate: 2.0 pounds per min

Liquid temperature: 77 F

Mitigation measures:

Floor area: 213 square feet

Release rate to outside air: 0.00202 pounds per minute

Evaporation time: 4960 min

Surrounding terrain type: Urban surroundings (many obstacles in the immediate area)

Toxic endpoint: 0.076 mg/L; basis: ERPG-2

Assumptions about this scenario

Wind speed: 3 meters/second (6.7 miles/hour)

Stability class: D

Air temperature: 77 degrees F (25 degrees C)

Cyclohexylamine

Alternate Case Release – RMP*Comp Input

Errors Found

No errors found

Chemical Information

Chemical Name: Cyclohexylamine

CAS Number: 108-91-8

Chemical Type: Toxic Liquid

Alternative AnalysisScenario type: Worst-case AlternativeRelease rate calculation: User-specified Estimated

Release rate: 1.3 pounds per min

Release duration: 5 minutes

Surrounding terrain type: Urban (many obstacles in the immediate area)
 Rural (terrain generally flat and unobstructed)

Liquid temperature: 77 ° Fahrenheit

Mitigation measures

Check the checkbox(es) representing mitigation measure(s) in place in your process, if any.

Release into diked area: Release into building:

Floor area: 216 square feet

Active mitigation to reduce release rate:

Cyclohexylamine

Alternate Case Release – RMP*Comp Output

Estimated Distance Calculation

Estimated distance to toxic endpoint: 0.1 miles (0.2 kilometers)

This is the downwind distance to the toxic endpoint specified for this regulated substance under the RMP Rule. Report all distances shorter than 0.1 mile as 0.1 mile, and all distances longer than 25 miles as 25 miles.

Scenario Summary

Chemical: Cyclohexylamine

CAS number: 108-91-8

Threat type: Toxic Liquid

Scenario type: Alternative

Quantity released: 6.5 pounds

Release duration: 5 minutes

Release rate: 1.3 pounds per min

Liquid temperature: 77 F

Mitigation measures:

Floor area: 216 square feet

Release rate to outside air: 0.00109 pounds per minute

Evaporation time: 5950 min

Surrounding terrain type: Urban surroundings (many obstacles in the immediate area)

Toxic endpoint: 0.16 mg/L; basis: EHS-LOC; LOC is based on IDLH-equivalent level estimated from toxicity data.

Assumptions about this scenario

Wind speed: 3 meters/second (6.7 miles/hour)

Stability class: D

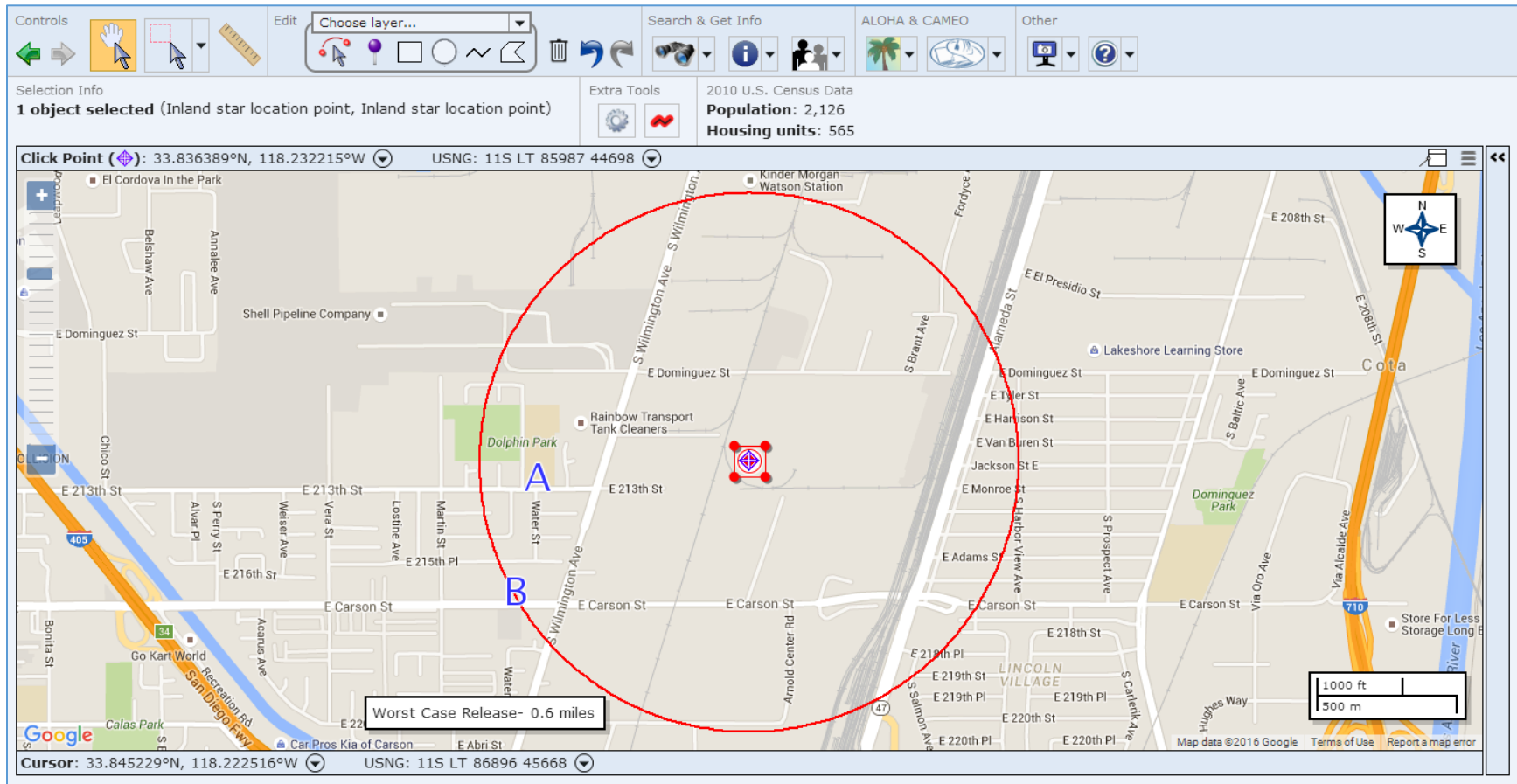
Air temperature: 77 degrees F (25 degrees C)

Appendix B

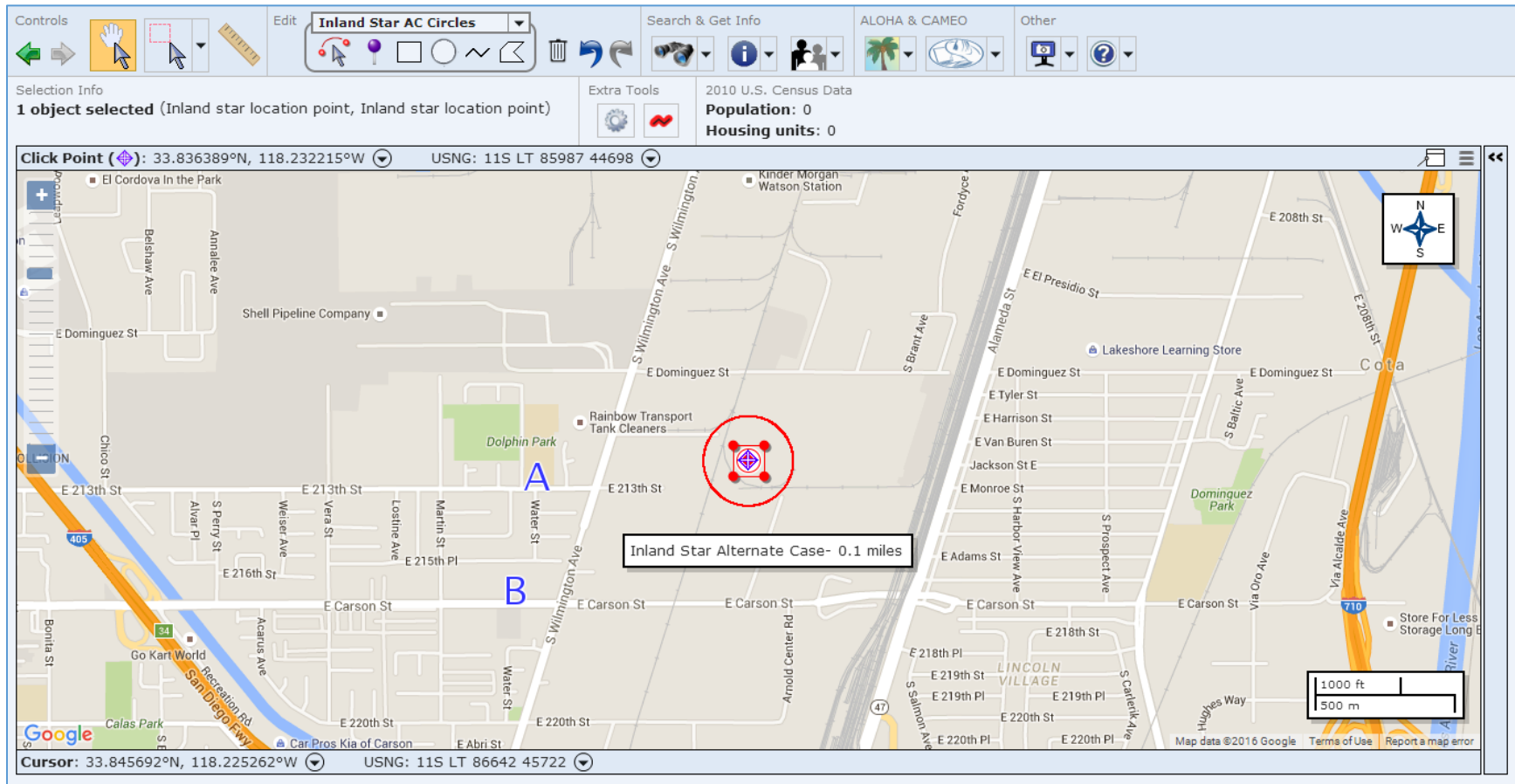
MARPLOT Population Data – Worst Case Release

MARPLOT Population Data – Alternate Case Release

Worst Case Release Population Data (Peracetic Acid)



Alternate Case Release Population Data
Methyltrichlorosilane, Peracetic Acid, Epichlorohydrin, Cyclohexylamine



Appendix C

Hazard Assessment Question List

Hazard Assessment Questions

Worst Case Scenario

Chemical	Container Size	Total On-Site
Epichlorohydrin	507	19,000
Cyclohexylamine	386	14,000
Peracetic acid	2,600	5,000
Methyltrichlorosilane	1,000	4,000

Mitigation: Dikes/Inside a Building

Alternate Case Scenario

Accident History: There have been no releases or near misses in the past five years.

Could the following events occur, please explain:

1. Transfer hose releases due to splits or sudden hose uncoupling.

Answer: Not Applicable

2. Process piping releases from failures at flanges, joints, welds, valves and valve seals, and drains or bleeds.

Answer: Not Applicable

3. Presses vessel or pump releases due to cracks, seal failure, or drain, bleed, or plug failure.

Answer: Could occur with the Methyltrichlorosilane. It's contained within a "bubbler" tank. Tank pressure is set at 240 psi.

4. Vessel overfilling and spill, or overpressurization and venting through relief valves or rupture disks.

Answer: Not Applicable

5. Shipping container mishandling and breakage or puncturing leading to a spill.

Answer: This event is most likely to occur as the business of the facility is to receive, store, and ship material. Forklifts are used for movement of the material. In the event this occurs, an Associate is present. The incident would be mitigated immediately (within 5 minutes).

Temperature: Ambient

Square Footage:

Date of most Recent PHA: July 12, 2016

Allen Lewis

Print Name

7/12/2016

Date